Final Environmental Impact Statement for the

# IMPLEMENTATION OF ENERGY, WATER, AND SOLID WASTE SUSTAINABILITY INITIATIVES at Fort Bliss, Texas & New Mexico

December 2013

Photo Credit: US Army

**Prepared For:**
HQ, US Army Garrison, Fort Bliss
ATTN: IMBL-ZA
1741 Marshall Road
Fort Bliss, TX 79916

**Prepared By:**
United States Army Environmental Command and
Directorate of Public Works Environmental Division
Fort Bliss

This page intentionally left blank.

# FINAL
# ENVIRONMENTAL IMPACT STATEMENT

**Implementation of Energy, Water, and Solid Waste Sustainability Initiatives**

**Fort Bliss, Texas and New Mexico**

**December 2013**

This page intentionally left blank.

**IMPLEMENTATION OF ENERGY, WATER, AND SOLID WASTE SUSTAINABILITY INITIATIVES AT FORT BLISS, TEXAS AND NEW MEXICO**

**FINAL ENVIRONMENTAL IMPACT STATEMENT**

**PREPARED FOR:**

Brant V. Dayley
Colonel, US Army
Commanding

19 December 13
Date

**REVIEWED BY:**

Vicki G. Hamilton, R.A.
Chief, Environmental Division
Directorate of Public Works

17 December 2013
Date

Alfredo J. Riera, P.E.
Director of Public Works
Fort Bliss, Texas

12/17/13
Date

**APPROVED BY:**

Sean MacFarland
Major General
US Army Commanding

27 Dec 13
Date

This page intentionally left blank.

## FINAL ENVIRONMENTAL IMPACT STATEMENT

**Lead Agency:** Department of the Army

**Cooperating Agency:** U.S. Air Force (Holloman Air Force Base)

**Title to Proposed Action:** Implementation of Energy, Water, and Solid Waste Sustainability Initiatives at Fort Bliss, Texas and New Mexico, Final Environmental Impact Statement

**Affected Jurisdictions:** El Paso County, Texas, and Doña Ana County and Otero Counties, New Mexico

**Review and Comment:** Written comments should be forwarded to: Mr. John Kipp, Attn: FB Net Zero EIS, IMBL-PWE; Building 624, Pleasonton Road, Fort Bliss, TX 79916-6812, or email comments to: john.m.kipp6.civ@mail.mil. The document is available online at: https://www.bliss.army.mil/DPW/Environmental/EISDocuments2.html.

**Document Designation:** Final Environmental Impact Statement

**Abstract:**

This environmental impact statement (EIS) for the implementation of energy, water, and solid waste sustainability initiatives at Fort Bliss evaluates the Proposed Action for meeting the United States Department of the Army's (Army's) Net Zero goals, which include the implementation of conservation policies and procedures, as well as the construction of new facilities to reclaim water and generate renewable energy. The Army's Proposed Action would support Fort Bliss' goal of becoming a Net Zero Installation for energy, water, and solid waste and also would facilitate compliance with various laws and executive orders regarding energy conservation and greenhouse gas emission reductions. The Proposed Action is needed to increase Fort Bliss' energy and water security and to meet legislative requirements, executive orders, and policy requiring increased energy, water, and waste efficiency. The development of Net Zero plans would also guide the Installation's sustainability efforts for many years to come as the Installation plans for increased energy efficiency, reduced energy and water use, and greater efficiency in processing and reuse of solid waste. Seven alternatives were evaluated in this EIS including the No Action Alternative. The action alternatives include Alternative 2, implementation of conservation policies and procedures; Alternative 3, construction of a water reclamation pipeline; Alternative 4, construction and operation of a waste-to-energy (WTE) plant; Alternative 5, construction and operation of a geothermal energy facility; Alternative 6, construction of dry-cooled concentrating solar power technology, and Alternative 7, the implementation of other renewable energy technologies and projects that are compatible with Installation planning criteria. Actions discussed as part of Alternative 2 that implement conservation policy and procedures would be implemented at Fort Bliss as part of all action

alternatives. This EIS evaluates the potential environmental impacts associated with implementation of each alternative. The preferred alternative (Proposed Action) consists of the six action alternatives (Alternatives 2 through 7). It also evaluates the action's cumulative impacts in combination with other past, present, and reasonably foreseeable future actions. Mitigation measures are described to minimize adverse impacts.

# EXECUTIVE SUMMARY

## INTRODUCTION

Fort Bliss has prepared this final environmental impact statement (EIS) to examine the potential environmental effects of implementing Net Zero initiatives for energy, water, and waste resources in accordance with the National Environmental Policy Act of 1969 (NEPA), the regulations of the President's Council on Environmental Quality, and the United States (U.S.) Department of the Army (Army) Regulation 200-1 and 32 Code of Federal Regulations §651, *Environmental Analysis of Army Actions*. The Army has prepared a Final Programmatic Environmental Assessment to broadly evaluate the implementation of Net Zero.

On 19 April 2011, the Army approved the Fort Bliss proposal to begin planning Net Zero implementation. As part of the approved proposal, Fort Bliss would plan to implement Army Net Zero goals by 2020. These initiatives are designed to increase Installation sustainability at Fort Bliss and foster regional coordination to conserve energy and water, while reducing waste production. Implementation of these sustainability initiatives would require considerable changes in Installation policy, tenant operations, individual behavior, and new infrastructure.

## PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to fully implement the Army's Net Zero energy, water, and waste goals to ensure that the Installation's critical missions can be sustained into the future. The Army's goal is to implement the Net Zero program at Fort Bliss by 2020. By implementing Net Zero at Fort Bliss, the Installation would exceed federal energy, water, and waste mandates, while achieving enhanced security, increased efficiency, and reduced operating costs, all while improving Installation sustainability. In achieving Net Zero goals, the Army intends to promote progress toward realizing the following objectives by:

- Complying with mid- to long-term government mandates and goals regarding renewable energy use and greenhouse gas (GHG) emission reduction
- Enhancing the energy security of Fort Bliss to support critical operations
- Integrating renewable energy development activities with natural and cultural resource management requirements
- Better positioning the Installation for compliance with long-term renewable energy and GHG-emission reduction mandates
- Reducing land required for landfills and increase waste stream efficiency

- Preserving water resources to support an enduring mission at Fort Bliss and demonstrating commitment to the local community by conserving such resources

The Army faces significant near- and long-term threats (e.g., natural disasters, climate change, and sabotage) that can affect its access to energy and water resources in the quantity, quality, and cost needed to carry out its national defense mission. The Proposed Action for Net Zero would allow Fort Bliss to meet its needs to:

- Better insulate itself from potential disruptions to its energy supply due to vulnerable energy infrastructure and logistical mechanisms that add risk to its missions
- Be better prepared to address both short- and long-term variations in water supply and quality (due to drought conditions and increased water usage by the community)
- Preserve raw materials for future use and minimize solid waste generation
- Reduce operating costs to help maintain mission operations during periods of constrained fiscal resources, access to natural resources, or uncertain future constraints
- Reduce the demand for services provided by off-Installation service providers (e.g., utility companies) to extend Fort Bliss' ability to continue operations during potential service interruptions

The Army currently derives less than 2.1 percent of its energy from renewable energy sources, and it must more than triple this amount of electricity derived from renewable sources in 2013 to meet the requirements of the Energy Policy Act of 2005. As an Installation, Fort Bliss currently derives less than 5 percent of its energy from renewable sources.

With regard to water usage, Fort Bliss is in an area of Texas and New Mexico that has experienced extreme drought in recent years. A continuation of current policies and practices for water usage at Fort Bliss would not contribute to ensuring the sustainability of the water resource in the region.

Currently, Fort Bliss recycles or reuses approximately 25 percent of its solid waste stream and disposes of the remainder in landfills. While the amount of recycled or diverted waste has more than tripled in the last 3 years (from 8 percent in 2009), Fort Bliss recognizes that much of the waste currently going to landfill can be reduced, re-purposed, recycled, and re-used to increase efficiency of its operations. The sanitary landfill on Fort Bliss land is very near capacity. As a result, it currently receives only a small amount of the Installation's waste. The majority of the Installations' waste is conveyed off-site, primarily to the Greater El Paso Landfill in Clint, Texas.

### Net Zero

Fort Bliss' vision is to appropriately manage the Installation operations, material, and natural and cultural resources with a goal of achieving Net Zero status. Currently, the Army faces significant threats to its energy and water supply requirements, both home and abroad. Addressing energy security and sustainability is operationally necessary, financially prudent, and essential to mission accomplishment. The goal is to manage Fort Bliss' energy and water resources on a Net Zero basis, including reducing and repurposing solid waste. In doing so, Fort Bliss would improve the Installation's long-term sustainability through anticipated cost reductions, while improving mission capability, quality of life, relationships with local communities, and preserving options for the Army's future. Fort Bliss recognizes the need to improve efficiencies in energy, water, and waste management for the benefit of current and future missions and has initiated planning efforts to implement Net Zero sustainability goals.

The Army Net Zero approach comprises five interrelated steps: reduction, re-purpose, recycling and composting, energy recovery, and disposal.

- Reduction includes maximizing energy efficiency in existing facilities, implementing water conservation practices, and eliminating generation of unnecessary waste.
- Re-purposing involves diverting energy, water, or waste to a secondary purpose with limited processes.
- Recycling or composting involves management of the solid waste stream, development of closed loop systems to reclaim water, or cogeneration where two forms of energy (heat and electricity) are created from one source.
- Energy recovery can occur from converting unusable waste to energy and by utilizing sources of renewable energy such as solar and underground geothermal water sources.
- Disposal is the final step and last resort after the last drop of water, the last bit of thermal energy, and all other waste mitigation strategies have been fully exercised (U.S. Army 2010a).

### Energy and Water Security

Energy and water security are concepts that are increasingly viewed as essential to ensuring and protecting the long-term viability of Installation operations. Safe and reliable access to energy and water are critical to virtually all activities on Army installations. The Army has increasingly recognized the threats to its installations and operations posed by the increasing costs of centrally distributed, over-burdened, utility-provided energy grids, as well as the vulnerabilities posed by potential disruption of energy and water to installations. Many of these challenges were directly addressed by the 2010 Quadrennial Defense Review, which cited the need for Department of Defense (DoD) installations to "assure access to reliable supplies of energy and water to meet operational needs" (DoD 2010). The current state of dependence on fossil fuels and a vulnerable electric transmission and distribution grid and public water supplies jeopardize the security of the Installation and its critical training and operational missions. Increasing Installation energy and water security to protect future operations is a central tenet of the Net Zero concept and of *The US Army Energy Strategy for Installations*, signed 8 July 2005, which states the importance of integrating Army energy and water use improvements with a broad focus on sustainability.

### Legislative Requirements, Executive Orders, and Policy Requiring Increasing Energy, Water, and Waste Efficiency

In addition to increasing Installation efficiency, reducing resource consumption, and improving energy security, the Army and Fort Bliss must meet the requirements of numerous federal statutes, executive orders, and mandates that require changes in our nation's energy consumption and production and reduction in GHG emissions. The Army and Fort Bliss must strive to attain the energy targets outlined in the Energy Policy Act of 2005, which requires that in fiscal years (FY) 2010–2012, 5.0 percent of the total electricity consumed by the federal government shall come from renewable energy sources. The required percentage of electricity consumed from renewable sources rises to at least 7.5 percent in FY 2013. Under Executive Order 13423, at least 50 percent of the renewable energy used must come from "new renewable sources" placed in service after 1 January 1999. In addition, Executive Order 13423 requires federal agencies to reduce GHG emissions through reduction of energy intensity by 3 percent annually through FY 2015 or by 30 percent by 2015. Along with these requirements, the National Defense Authorization Act of 2007 requires that the DoD produce or procure no less than 25 percent of the total quantity of electric energy it consumes within its facilities and in its activities during FY 2025 and each fiscal year thereafter from renewable energy sources. Numerous other statutes and requirements also create a framework that increases the need for the Army to take action.

## PROPOSED ACTION

The Army's Proposed Action is to implement Net Zero energy, water, and waste goals by 2020 at Fort Bliss while meeting energy mandates for renewable energy production and GHG emissions reduction. In doing so, the Army will increase Fort Bliss' energy and water security and ensure the future military mission for future generations. The Proposed Action consists of multiple, related, and interconnected proposed projects to implement Net Zero goals, comply with federal and Army energy mandates, and meet the Army's energy and water security objectives. Figure ES-1 shows potential project areas.

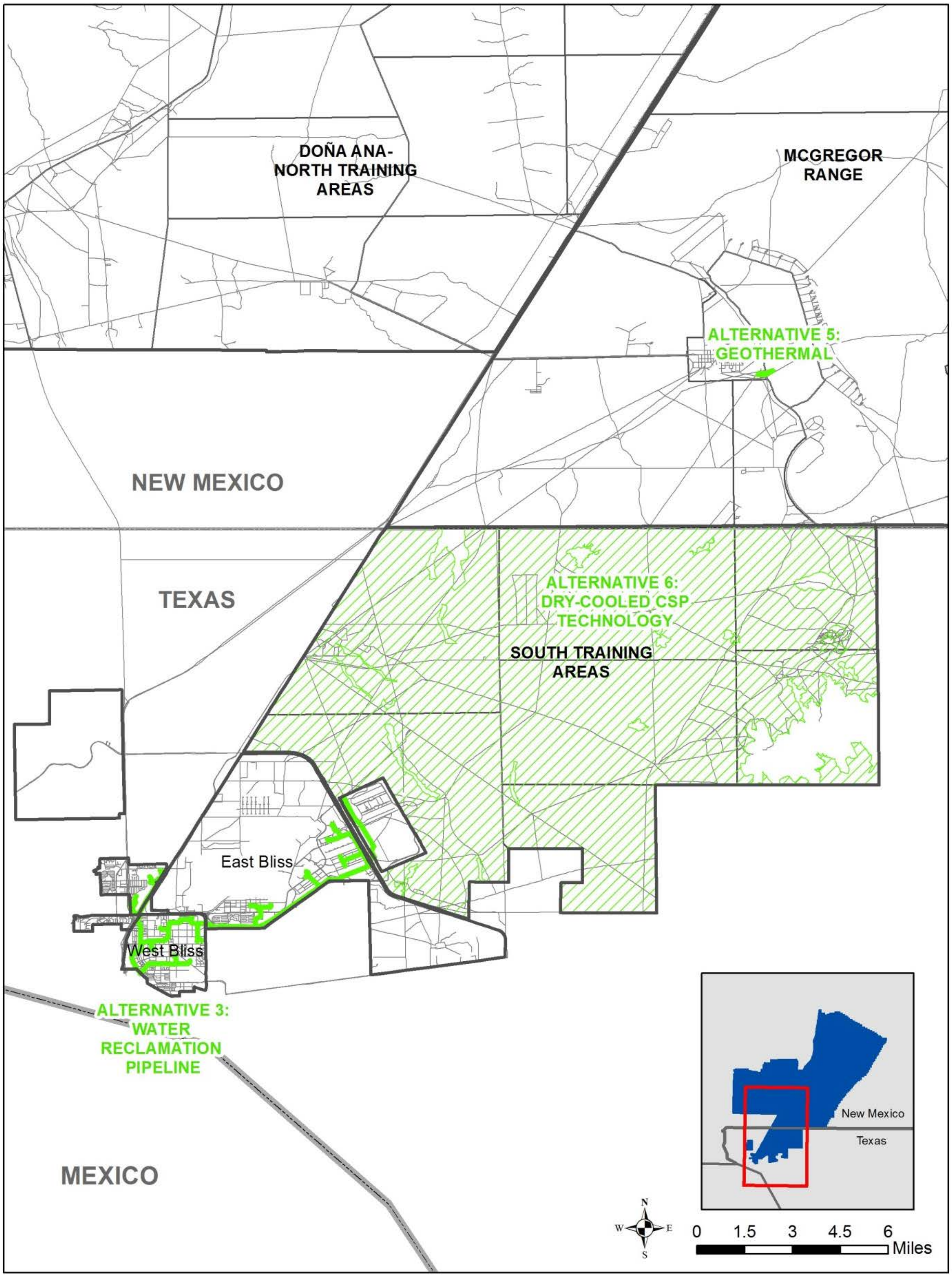



**Figure ES-1. Proposed Fort Bliss Net Zero Project Locations**

### Proposed Energy Actions

The Proposed Action includes the following potential energy actions for implementation at Fort Bliss for Net Zero energy:

- Reduction through behavior change, followed by maximizing energy efficiency and conservation
- Cogeneration, heat energy recovery, energy storage, and re-use
- Renewable/alternative energy construction, operation, and maintenance

### Proposed Water Actions

The Proposed Action includes the following potential actions for implementation at Fort Bliss for Net Zero water:

- Reduction through behavior change, followed by maximizing water efficiency and conservation
- Implementation of water repurpose/recycle/recovery measures

### Proposed Waste Actions

The Proposed Action includes the following potential actions for implementation at Fort Bliss for Net Zero waste:

- Assess baseline conditions
- Expand or augment existing Installation policies to reduce consumption and demand where possible
- Reduce through modification of purchasing practices
- Implement re-purposing actions to divert waste to a secondary purpose with limited processes
- Divert waste by recycling and composting to increase solid waste diversion rates through more aggressive recycling and/or composting
- Recover energy from waste that cannot be cost-effectively avoided, re-purposed, recycled, or composted through use as feedstock in a WTE plant

## ALTERNATIVES

Fort Bliss conducted a rigorous screening process to determine which technologies and Installation sites are available to support implementation of the Net Zero initiative. In order to be considered a viable alternative and carried forward for analysis, the alternative had to meet the following screening criteria:

- Mission compatibility
- Electrical tie-in potential (renewable energy)
- Energy/water projects located on or directly adjacent to the Installation to provide enhanced energy and water security
- Geophysical factors
- Cultural and environmental factors
- Safety and unexploded ordnance
- Water use intensity

Seven alternatives were carried forward for analysis in this EIS. These alternatives include the No Action Alternative and six action alternatives. The preferred alternative (Proposed Action) consists of the six action alternatives (Alternatives 2 through 7). A more detailed discussion of each screening criteria and how it was applied can be found in Section 2.2 of the Final EIS.

### Alternative 1 – No Action

Under the No Action Alternative, Fort Bliss would not pursue additional Net Zero initiatives to accelerate reduction of energy, water, and waste consumption beyond those policies and procedures that are currently in place. The increasing costs of centralized utility-provided energy and the potential disruption of Installation energy and water supplies would continue to be threats to the Army and Installation operations. The failure to implement Net Zero initiatives would make it less likely that federal mandates, goals, and policies pertaining to renewable energy production, energy use, water conservation, and waste reduction would be met. This alternative would hinder Fort Bliss' energy, water, and waste programs to meet future demands and would not provide the Army with needed information to assist other installations in improving their respective programs.

### Alternative 2 – Conservation Policies and Procedures

Under Alternative 2, Fort Bliss would continue to implement policies, procedures, best management practices, and actions described under the Proposed Action with the exception of the construction of large-scale, renewable energy projects or the water reclamation pipeline. Alternative 2 would also include actions related to Net Zero communities and would include small-scale, renewable energy projects. Actions discussed as part of Alternative 2 that implement conservation policy and procedures would be implemented as part of all action alternatives.

### Alternative 3 – Water Reclamation Pipeline

Under Alternative 3, Fort Bliss would pursue the construction and use of a water reclamation pipeline ("purple pipe") to provide reclaimed water for secondary uses on Fort Bliss, including landscaping, golf course irrigation, central cooling towers, and central wash facility for cleaning tactical vehicles returning from training in the field (Figure ES-1). The purple pipe would connect to a conduit pipe from the city of El Paso's wastewater treatment plant. Construction of the purple pipe would involve trenching approximately 24 miles of pipe.

### Alternative 4 – Waste-to-Energy Plant

Waste-to-energy (WTE) refers to technologies that use municipal solid waste to either: 1) produce steam to power a generator to produce electricity; or 2) convert biomass waste into a combustible fuel through microbiological processes. The fuel is then used to power an electrical generator. A WTE plant would allow Fort Bliss to divert the portion of its solid waste that would otherwise require transport for landfill deposition. Electricity generated from the plant could be handled in two ways: 1) it could be fed directly into the regional transmission grid with the Installation receiving credit for this power from the electric utility; 2) or Fort Bliss would own the power generated and distribute it on lines located wholly within the Installation boundaries, i.e., "behind the meter," thus providing its own electrical power.

The EIS analysis process has determined that a WTE plant at a particular location on Fort Bliss is not feasible in the near future. Alternative 4 is included in this Final EIS to provide basic information about WTE technologies and provide programmatic-level discussion that could serve as a starting point for further NEPA analysis that would be required if a decision were made that deems it appropriate to initiate NEPA on a WTE plant proposal. No areas within Fort Bliss are currently identified as possible locations for a WTE plant or electrical line routes. Likewise, the size of a possible WTE plant (in terms of electrical generating capacity) and technology are not known at this point. If Alternative 4 were selected in the Record of Decision, further NEPA analysis based on the technology and location selected, would be required before a WTE plant could be constructed and operated.

### Alternative 5 – Geothermal Energy Facility

Under Alternative 5, Fort Bliss would work with the Department of Interior and private development firms to advance geothermal development on McGregor Range. Geothermal energy plants use the heat from reservoirs of hot water found below the earth's surface to produce energy.

The exact geothermal technology and the amount of energy that could be produced have not been determined as of yet as a new study on the geothermal resource is currently ongoing. Based on previous studies; however, it has been estimated that the resource could support up to a 20-megawatt (MW) facility. The facility would be located by Davis Dome, McGregor Range Camp. Additionally this alternative could potentially be integrated with solar thermal technology to maximize generation efficiency by increasing the temperature of the geothermal resource.

### Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Under Alternative 6, Fort Bliss would develop a 50-MW dry-cooled concentrating solar power (CSP) parabolic trough facility on up to 300 acres of land in the South Training Areas. CSP is designed to convert the sun’s energy to heat and then use that heat to produce electricity. A parabolic trough system concentrates solar energy along a line-shaped receiver, typically a fluid-filled pipe positioned at the focus of parabolic-shaped reflectors. For optimal performance, the reflective surfaces of CSP technologies must track the sun (keeping the sun’s incident rays perpendicular to the reflecting surface), and reflectors and/or concentrators must exhibit good optical characteristics. Parabolic trough CSP systems typically use a heat-transfer fluid (usually synthetic oil) to transfer the heat generated at the solar collectors to a heat exchanger where steam is produced to drive a conventional steam turbine generator.

### Alternative 7 –Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as biomass, large-scale wind, and solar photovoltaic (PV) facilities, may be developed on Fort Bliss if such projects meet the appropriate screening criteria presented in the EIS. Renewable energy projects may also require use of small-scale, natural gas-powered generators to help create a more consistent supply of electricity. Implementation of Alternative 7 would allow the Army to adaptively implement future energy projects that would assist the Installation with meeting the Army’s Net Zero energy goals. All energy projects considered for implementation would require the appropriate level of supplemental NEPA analysis tiered to this EIS prior to a decision to implement the project.

## ENVIRONMENTAL CONSEQUENCES

This EIS presents the existing environment and the potential environmental consequences that could occur with the implementation of the No Action or action alternatives. Table ES-1 summarizes the environmental impacts associated with each alternative for each resource topic evaluated in this EIS.

This page intentionally left blank.

**Table ES-1. Summary of Environmental Consequences for Alternatives**

| Resource | Alternative 1: No Action | Alternative 2: Conservation Policies and Procedures | Alternative 3: Water Reclamation Pipeline | Alternative 4: WTE Plant | Alternative 5: Geothermal Energy Facility | Alternative 6: Dry-cooled CSP Technology | Alternative 7: Implement Other Renewable Energy Technologies | Alternatives Combined |
|---|---|---|---|---|---|---|---|---|
| Air Quality | Beneficial impacts from existing policies and programs to reduce GHGs, including planned renewable energy projects. Some reductions in GHG emissions would be realized; however, Fort Bliss would likely not fully meet its GHG reduction mandates. | Beneficial impacts as a result of reduction in energy consumption and corresponding decrease in pollution-emitting equipment. | No impacts from operations. Less than significant impacts from temporary construction emissions. | Anticipated less than significant to significant but mitigable impacts from WTE plant construction and operational emissions. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Beneficial indirect impacts from replacement of fossil fuel energy production with renewable energy sources. Less than significant impacts from construction and operation emissions. | Beneficial indirect impacts from replacement of fossil fuel energy production with renewable energy sources. Less than significant impacts from construction and operation emissions. | Beneficial indirect impacts from replacement of fossil fuel energy production with renewable energy sources. Less than significant impacts from construction and operation emissions. | Beneficial impacts as a result of reduction in energy consumption and corresponding decrease in pollution-emitting equipment and from replacement of fossil fuel energy production with renewable energy sources. Less than significant to significant but mitigable impacts from WTE plant construction and operational emissions. Less than significant impacts from construction and operation of geothermal energy facility and dry-cooled CSP. |
| Airspace | No impacts | No impacts | No impacts | Negligible impacts as WTE facility would be located in compliance with all FAA height and distance requirements relating to the proximity of the boiler stack(s) to Biggs AAF and El Paso International Airport. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts from CST glare-potential. No impacts from construction and operation of the geothermal energy facility. | Less than significant impacts from CSP glare-potential. | Less than significant impacts if implemented following screening and environmental criteria. | Less than significant impacts resulting from solar array glare potential. |
| Biological Resources | No impacts | Less than significant impacts to vegetation, wildlife, and sensitive species resulting from construction-related ground disturbance and noise. Less than significant impact to migratory birds and bats from operation of small-scale wind turbines. | Significant but mitigable impacts to vegetation from irrigation with reclaimed water. Less than significant impacts to wildlife and sensitive species resulting from construction-related ground disturbance and noise. | Less than significant impacts to vegetation, wildlife, and sensitive species resulting from loss of vegetation/ habitat from facility and road construction and disturbance to wildlife and sensitive species from construction-related noise. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts to vegetation, wildlife, and sensitive species resulting from loss of vegetation/ habitat from facility and road construction and disturbance to wildlife and sensitive species from construction-related noise. | Less than significant impacts to vegetation, wildlife, and sensitive species resulting from loss of vegetation/ habitat from facility and road construction and disturbance to wildlife and sensitive species from construction-related noise. | Less than significant impacts to vegetation, wildlife, and sensitive species resulting from loss of vegetation/habitat from facility and road construction and disturbance to wildlife and sensitive species from construction-related noise. | Significant but mitigable impacts to vegetation from irrigation with reclaimed water. Less than significant impacts to vegetation, wildlife, and sensitive species resulting from loss of vegetation/ habitat from facility and road construction and disturbance to wildlife and sensitive species from construction-related noise. Less than significant impact to migratory birds and bats from operation of small-scale wind turbines. |
| Cultural Resources | No Impacts | Less than significant impacts to cultural resources resulting from potential modifications to historic architectural resources. Section 106 process would be completed prior to implementation of construction. | Significant but mitigable impacts to parade-ground vegetation from irrigation with reclaimed water. Less than significant impacts to cultural resources from the pipeline construction. Section 106 process would be completed prior to construction. | Less than significant impacts to archeological sites from possible disturbance from construction. Section 106 process would be completed prior to construction. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts to cultural resources, resulting from construction disturbance and dependent on an archaeological survey. Section 106 process would be completed prior to construction. | Less than significant impacts to cultural resources resulting from construction disturbance. Section 106 process would be completed prior to construction. | Less than significant impacts to cultural resources resulting from construction disturbance. Section 106 process would be completed prior to construction. | Significant but mitigable impacts to parade-ground vegetation from irrigation with reclaimed water. Less than significant impacts to cultural resources from construction. Section 106 process would be completed prior to construction. |
| Energy Demand and Generation | No beneficial impacts would be realized from reduced Fort Bliss energy demand through Net Zero implementation. | Beneficial impacts to energy demand from reduced energy demand resulting from implementation of conservation policies and procedures. | Negligible impacts from construction of a water reclamation pipeline | Beneficial impacts toward increased energy security as a result of renewable energy generation and its contribution to meet Net Zero energy goals. | Beneficial impacts to energy generation due to increased onsite renewable energy generation. This alternative alone would not generate enough renewable energy to meet Net Zero energy goals. | Beneficial impacts to energy generation due to increased on-site renewable energy generation. This alternative alone would not generate enough onsite renewable energy to meet Net Zero energy goals. | Development would be compatible with environmental screening criteria; however, impacts are not fully characterized at this time. Additional NEPA would be completed to fully characterize impacts. | Beneficial impacts to energy generation due to increased renewable energy generation. |

| Resource | Alternative 1: No Action | Alternative 2: Conservation Policies and Procedures | Alternative 3: Water Reclamation Pipeline | Alternative 4: WTE Plant | Alternative 5: Geothermal Energy Facility | Alternative 6: Dry-cooled CSP Technology | Alternative 7: Implement Other Renewable Energy Technologies | Alternatives Combined |
|---|---|---|---|---|---|---|---|---|
| Geology and Soils | No Impacts | Negligible impacts to soils from ground disturbance. | Less than significant impacts to soils, resulting from construction-related ground disturbance, soil removal, increased erosion potential, and reclaimed water irrigation. No impacts to geologic features. | Less than significant impacts to soils, resulting from construction-related ground disturbance and increased erosion potential and no impacts to geologic features. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts to soils, resulting from construction-related ground disturbance and increased erosion potential and less than significant impacts to geologic features from the construction of the wells. | Significant impacts to soils, resulting from construction-related ground disturbance and increased erosion potential. No impacts to geologic features. | Less than significant impacts to soils, resulting from construction-related ground disturbance and increased erosion potential and less than significant impacts to geologic features from construction. | Significant impacts to soils, resulting from combined construction-related ground disturbance and increased erosion potential. |
| Hazardous Waste, Hazardous Materials, and Safety | No Impacts | Beneficial impacts from the reduction in waste generation. | Less than significant impacts from the potential for minor petroleum leaks from construction equipment. | Less than significant impacts from the potential for leaks and spill of chemicals and petroleum products from the operation of all facilities. Less than significant impacts from handling and disposal of ash. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts from the potential for leaks of petroleum products related to the construction and operation of the facilities. | Less than significant impacts from the potential for leaks of petroleum products related to the construction and operation of the facilities. | Less than significant impacts from the potential for leaks of petroleum products related to the construction and operation of the facilities. | Less than significant impacts from the potential for leaks of petroleum products related to the construction and operation of the facilities. |
| Land Use | No Impacts | Negligible impacts from small changes to land use. | Minor impacts resulting from construction and the small alteration of existing land use. | Less than significant impacts due to alteration of existing land use from construction. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts due to alteration of existing land use from construction. | Significant impacts from the conversion of training land to developed land. Less than significant impacts due to alteration of existing land use from construction. | Less than significant impacts due to alteration of existing land use from construction. | Significant impacts from the conversion of training land to developed land. Less than significant impacts due to alteration of existing land use from construction. |
| Noise | No Impacts | Negligible Impacts | Less than significant impacts from noise during construction. | Less than significant impacts from noise during construction and operation of the WTE plant. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts from noise during construction. | Less than significant impacts from noise during construction. | Less than significant impacts from noise during construction. | Less than significant impacts from noise during construction and operation under each alternative. |
| Socioeconomics and Environmental Justice | No Impacts | Beneficial impacts to economic growth associated with the procurement of goods and services. Potential less than significant impacts to the local economy from increased utility rates | Beneficial impacts to economic growth associated with the procurement of goods and services. Negligible impacts to housing, government and emergency services, and utilities. No impacts to environmental justice and the protection of children. | Beneficial impacts to economic growth associated with the procurement of goods and services and facility operation and to housing. Less than significant impacts to government and emergency services, and utilities. If a potential location and technology are identified, appropriate additional NEPA analysis to include environmental justice would be performed. | Beneficial impacts to economic growth associated with the procurement of goods and services and to housing. Less than significant impacts to government and emergency services, and utilities. No impacts to environmental justice and the protection of children. | Beneficial impacts to economic growth associated with the procurement of goods and services and to housing. Less than significant impacts to government and emergency services, and utilities. No impacts to environmental justice and the protection of children. | Beneficial impacts to economic growth or housing could occur depending on the scale and type of future renewable energy sources. Less than significant impacts to government and emergency services and utilities are expected and no impacts to environmental justice or protection of children are expected. | Beneficial impacts to economic growth associated with the procurement of goods and services and to housing. Less than significant impacts to government and emergency services, and utilities. |
| Water Resources | No Impacts. No beneficial impacts to water resources and aquifer recharge would be realized from implementation of Net Zero water goals. | Beneficial impacts to surface water and groundwater supply sources from the implementation of conservation policies and procedures. | Beneficial impacts from the reuse of wastewater for secondary purposes. Less than significant impacts to surface and groundwater from construction. | Less than significant impacts to surface and groundwater from construction and water requirements for the operation of the WTE plant. Potential for significant impacts to water resources if water supply was primarily from potable water. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts to surface and groundwater from construction and potential for contamination of groundwater from facility operation. | Less than significant impacts to surface and groundwater from construction and water requirements associated with facility operation. | Less than significant impacts to surface and groundwater from construction and facility operation. | . Less than significant impacts to surface and groundwater from construction and potential for contamination of groundwater from facility operation. Potential for significant impacts to water resources if water supply for Alternative 4 was primarily from potable water. |

| Resource | Alternative 1: No Action | Alternative 2: Conservation Policies and Procedures | Alternative 3: Water Reclamation Pipeline | Alternative 4: WTE Plant | Alternative 5: Geothermal Energy Facility | Alternative 6: Dry-cooled CSP Technology | Alternative 7: Implement Other Renewable Energy Technologies | Alternatives Combined |
|---|---|---|---|---|---|---|---|---|
| Transportation and Traffic | No Impacts | No Impacts | Less than significant impacts from construction traffic. | Anticipated less than significant to significant but mitigable impacts from construction and operations traffic. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed to determine traffic impacts. | Less than significant impacts from construction traffic and no impacts from traffic associated with facility operation. | Less than significant impacts from construction traffic and traffic associated with facility operation. | Less than significant impacts from construction traffic and traffic associated with facility operation. | Less than significant to significant but mitigable impacts from construction and operations traffic under Alternative 4. Less than significant impacts from construction traffic and traffic associated with facility operation under Alternatives 3, 5, and 6. |

Notes: AAF = Army Airfield, CSP = concentrating solar power, CST = concentrating solar thermal, FAA = Federal Aviation Administration, GHG = greenhouse gas, NEPA = National Environmental Policy Act, WTE = waste-to-energy

This page intentionally left blank.

# TABLE OF CONTENTS

## LIST OF APPENDICES

# LIST OF FIGURES

# LIST OF TABLES

This page intentionally left blank.

# 1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

## 1.1 Introduction

Fort Bliss has prepared this final environmental impact statement (EIS) to examine the potential environmental effects of implementing Net Zero initiatives for energy, water, and waste resources in accordance with the National Environmental Policy Act of 1969 (NEPA), the regulations of the President's Council on Environmental Quality (CEQ), and the United States (U.S.) Department of the Army (Army) Regulation 200-1, and 32 Code of Federal Regulations (CFR) §651, *Environmental Analysis of Army Actions*.

On 19 April 2011, the Army approved the Fort Bliss proposal to begin planning Net Zero implementation. As part of the approved proposal, Fort Bliss would plan to implement Army Net Zero goals by 2020.[1] Implementation of these sustainability initiatives would require considerable changes in Installation policy, tenant operations, individual behavior, and new infrastructure. Because of a potential for significant adverse environmental impacts associated with the implementation of the Army's Proposed Action at Fort Bliss, the Army is completing this EIS to fully evaluate and involve the public as it pursues the suite of policy changes and other actions that would make Fort Bliss a Net Zero Installation.

The EIS is a public document used to determine and evaluate the potential environmental consequences of proposed projects, identify mitigation measures to lessen or eliminate adverse effects, and examine feasible alternatives to the projects. The intended audience of the EIS is Army decision-makers, interested government agencies, non-government organizations, tribes, and the public. The effects analyses in this report are based on a variety of sources and the best available information at the time of preparation. The information contained in this EIS will be reviewed and considered by the Army prior to the final decision on how to proceed with the implementation of the Proposed Action, if at all.

## 1.2 Study Area

Fort Bliss is a critical, multi-mission, Army Installation located on approximately 1.12 million acres in Texas and New Mexico (Figure 1-1). Fort Bliss is the Army's second-largest Installation and consists of East Bliss, West Bliss, and the Fort Bliss Training Center (FBTC). East Bliss includes Biggs Army Airfield (AAF) and the Brigade Combat Team (BCT) and Infantry Brigade Combat Team (IBCT) areas.

---

[1] See the Army's website at: http://army-energy.hqda.pentagon.mil/netzero/.

West Bliss includes the Main Post, William Beaumont Army Medical Center (WBAMC), and Logan Heights. The FBTC has three large geographic segments: the South Training Areas (STA) in Texas and the Doña Ana Range-North Training Areas (NTA) and McGregor Range in New Mexico. Fort Bliss is home to the 1st Armored Division. The primary mission of Fort Bliss is to support training of heavy brigades and prepare troops for deployment.

Because of its location within Texas and New Mexico, Fort Bliss falls within the regulatory area of both the Public Utility Commission of Texas and the New Mexico Public Regulation Commission. Fort Bliss is located within the Western Interconnection power grid and the area of the Western Electricity Coordinating Council, which is the regional entity responsible for coordinating and promoting bulk electric system reliability in that interconnection. El Paso Electric Company (EPEC) is the main provider of electricity to Fort Bliss and the region. Rio Grande Electric is the primary distributor of power to Fort Bliss.

## 1.3 Project Background

Fort Bliss' vision is to appropriately manage the Installation operations, materials, and natural and cultural resources with a goal of achieving Net Zero status (defined later in this section). Currently, the Army faces significant challenges in meeting its energy and water supply requirements, both at home and abroad. Addressing energy security and sustainability is operationally necessary, financially prudent, and essential to mission accomplishment. The goal is to manage Fort Bliss' energy and water resources on a Net Zero basis, including reducing and repurposing solid wastes. In doing so, Fort Bliss would improve the Installation's long-term sustainability through anticipated cost reductions, while improving mission capability, quality of life, relationships with local communities, and preserving options for the Army's future. Fort Bliss recognizes the need to improve efficiencies in energy, water, and waste management for the benefit of current and future missions and has initiated planning efforts to implement Net Zero sustainability goals as defined by the Army.

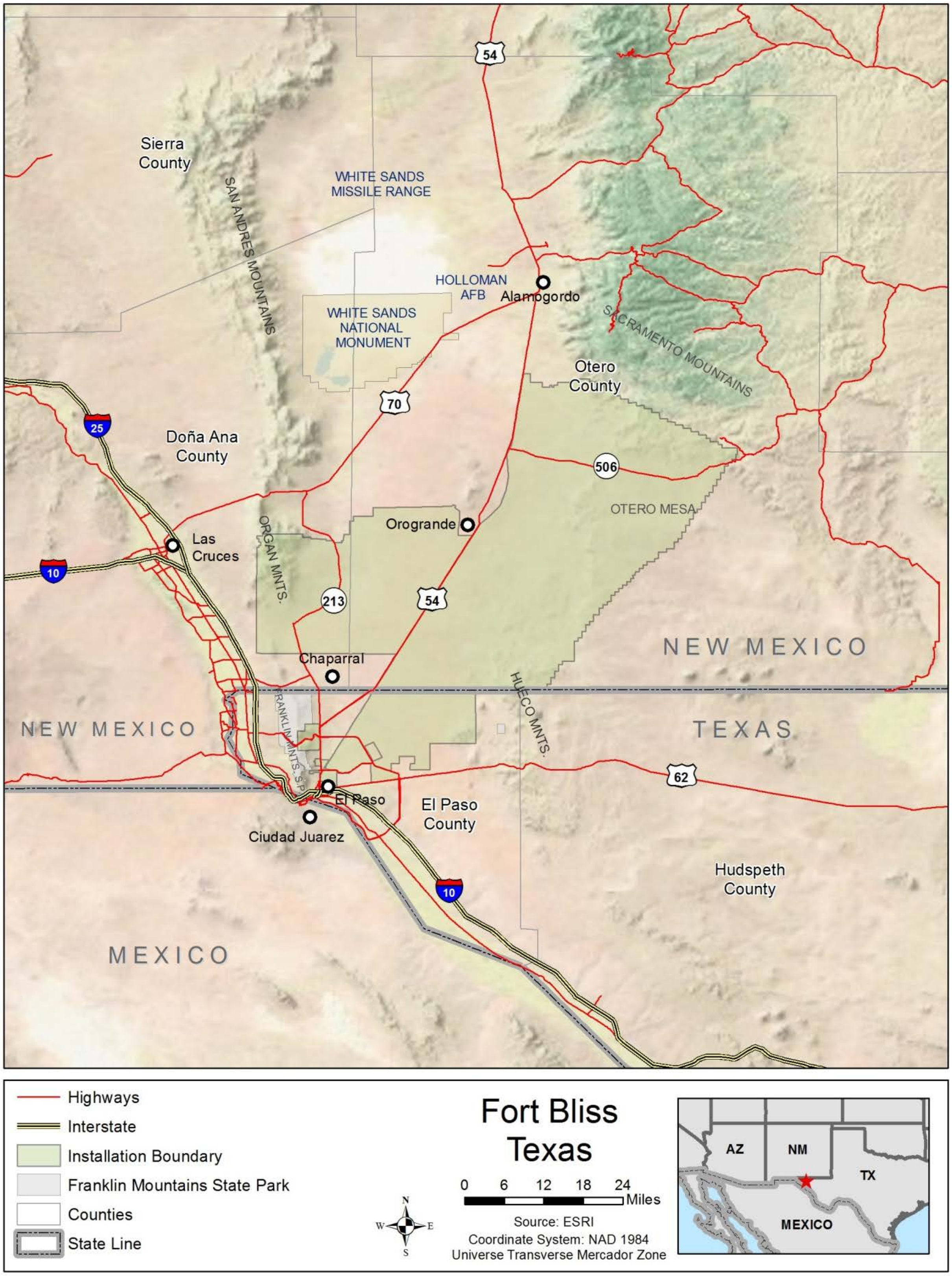



**Figure 1-1. Fort Bliss Location**

### 1.3.1 Net Zero Definitions and Approach

The Army defines Net Zero energy, water, and waste as follows:

- Energy – A Net Zero energy installation is an installation that produces as much energy onsite as it uses over the course of a year.
- Water – A Net Zero water installation limits the consumption of freshwater resources and returns water back to the same watershed so as not to deplete the groundwater and surface water resources of that region in quantity or quality over the course of a year.
- Waste – A Net Zero waste installation is an installation that reduces, reuses, and recovers waste streams, converting them to resource values with zero landfill requirements over the course of a year.

The Army Net Zero approach comprises five interrelated steps: reduction, re-purpose, recycling and composting, energy recovery, and disposal (Figure 1-2). Each step is a link toward achieving Net Zero status. Reduction includes maximizing energy efficiency in existing facilities, implementing water conservation practices, and eliminating generation of unnecessary waste. Re-purposing involves diverting energy, water, or waste to a secondary purpose with limited processes. Recycling or composting involves management of the solid waste stream, development of closed-loop systems to reclaim water, or cogeneration where two forms of energy (heat and electricity) are created from one source. Energy recovery can occur by converting unusable waste to energy, renewable energy, or geothermal water sources. Disposal is the final step and last resort after the last drop of water, the last bit of thermal energy, and all other waste mitigation strategies have been fully exercised (U.S. Army 2010a).


**Figure 1-2. The Net Zero Process Hierarchy**

The Net Zero vision is a holistic approach to addressing energy, water, and waste at Army installations. The Net Zero vision ensures that sustainable practices will be instilled and managed throughout the appropriate levels of the Army, while also maximizing operational capability, resource availability, and well-being of Soldiers, families, and civilians.

### 1.3.2 Energy and Water Security

Energy and water security are concepts that are increasingly viewed as essential to ensuring and protecting the long-term viability of installation operations. Safe and reliable access to energy and water are critical to virtually all activities on Army installations. The Army has increasingly recognized the threats to its installations and operations posed by the increasing costs of centrally distributed, over-burdened, utility-provided energy grids, as well as the vulnerabilities posed by potential disruption of energy and water supplies. Many of these challenges were directly addressed by the 2010 Quadrennial Defense Review (QDR), which cited the need for Department of Defense (DoD) installations to "assure access to reliable supplies of energy and water to meet operational needs" (DoD 2010). The current state of dependence on fossil fuels and a vulnerable electric power and transmission grid and public water supplies jeopardize the security of the Installation and its critical training and operational missions. Increasing Installation energy and water security to protect future operations is a central tenet of the Net Zero concept and of *The US Army Energy Strategy for Installations*, signed 8 July 2005, which states the importance of integrating Army energy and water use improvements with a broad focus on sustainability (Office of Deputy Under Secretary of Defense [ODUSD] 2005a). Implementation of the Net Zero initiative at Fort Bliss would help reduce consumption, conserve resources, and increase efficiencies in resource usage while protecting future operations. The implementation of Net Zero at Fort Bliss would also help the Army to achieve the five major initiatives of the Energy Strategy for Installations (ODUSD 2005a), which include:

- Eliminating energy waste in existing facilities
- Increasing energy efficiency in renovation and new construction
- Reducing dependence on fossil fuels
- Conserving water resources
- Improving energy security

### 1.3.3 Legislative Requirements, Executive Orders and Policy Requiring Increasing Energy, Water, and Waste Efficiency

In addition to increasing Installation efficiency, reducing resource consumption, and improving energy security, the Army and Fort Bliss must meet the requirements of numerous federal statutes, executive orders, and mandates that require changes in our nation's energy consumption and production and reduction in greenhouse gas (GHG) emissions. Table 1-1 summarizes these mandates, including identified performance targets.

**Table 1-1. Summary of Legislation and Executive Orders Affecting Energy, Water Consumption, and Waste Generation**

| Federal Mandate | Net Zero Area | Performance Target |
|---|---|---|
| Energy Policy Act of 2005 | Electricity use for federal government from renewable sources | At least 3% of total electricity consumption (FY 2007–2009), 5% (FY 2010–2012), 7.5% (FY 2013+) |
| Executive Order 13423 | Energy use in federal buildings | Reduce 3% per year for 30% total by FY 2015 (FY 2003 baseline) |
| | Total consumption from renewable sources | At least 50% of required annual renewable energy consumed from “new” renewable sources |
| | Fleet vehicle alternative fuel use | Increase by 10% annually to reach 100% (FY 2005 baseline) |
| Energy Independence and Security Act of 2007 | Total consumption from renewable sources | 25% by FY 2025—“Sense of Congress” |
| | Hot water in new/renovated federal buildings from solar power | 30% by FY 2015 if life-cycle is cost-effective |
| | Fossil fuel use in new/renovated federal buildings | Reduce 55% by FY 2010; 100% by FY 2030 |
| Executive Order 13514 | GHG emission reduction | DoD Goal: Reduce Scope 1 and 2 GHGs by 34% by FY 2020<br>DoD Goal: Reduce Scope 3 GHG emissions by 13.5% by FY 2020 |
| | Net Zero buildings | All new buildings that enter design in FY 2020 and after achieve Net Zero energy by FY 2030 |
| | Water consumption | Reduce consumption by 2% annually for 26% total by FY 2020 (FY 2007 baseline) |
| | Waste minimization | Divert at least 50% of solid waste and 50% of construction and demolition waste by FY 2015 |
| National Defense Authorization Act of 2007 | Renewable fuels use | Directs the Secretary of Defense to consider renewable fuels in aviation, maritime, and ground transportation fleets. |
| | Facility renewable energy use | Produce or procure 25% of the total quantity of facility energy needs, including thermal energy, from renewable sources starting in FY 2025 |

Notes: DoD = Department of Defense, FY = fiscal year, GHG = greenhouse gas

## 1.4 Purpose and Need for Action

The purpose of the Proposed Action is to fully implement the Army’s Net Zero energy, water, and waste goals to ensure that the Installation’s critical missions can be sustained into the future. The Army’s goal is to implement the Net Zero program at Fort Bliss by 2020. By implementing Net Zero at Fort Bliss, the Installation would exceed federal energy, water, and waste mandates, while achieving enhanced security, increased efficiency, and reduced operating cost, all while improving Installation sustainability. Implementation of Net Zero at Fort Bliss would ensure a holistic and long-term approach is in place to support an enduring mission at Fort Bliss that, in turn, supports DoD, Army, and other federal government goals and objectives for increasing use of renewable energy, lowering GHG emissions, and reducing the Army's reliance on fossil fuels. In achieving Net Zero goals, the Army intends to promote progress toward realizing the following objectives:

- Compliance with mid- to long-term government mandates and goals regarding renewable energy use and GHG-emission reduction
- Enhancement of the energy security of Fort Bliss to support critical operations
- Integration of renewable energy development activities with natural and cultural resource management requirements
- Better positioning of the Installation to comply with long-term renewable energy and GHG-emission reduction mandates
- Reduction in the land required for landfills and increase in waste stream efficiency
- Preservation of water resources to support an enduring mission at Fort Bliss and demonstration of a commitment to the local community by conserving such resources

In working toward these objectives, the Army and Fort Bliss would support implementation of goals, strategies, mandates, and directives outlined in the 2010 QDR; Office of the Secretary of Defense Policy - DoD Instruction 4170.11 (DoD 2009); DoD Energy Manager's Handbook (ODUSD 2005b); Army Regulation 420-1, *Army Facilities Management* (U.S. Army 2009a); the *Army Energy and Water Campaign Plan* (U.S. Army 2007a), and those mandates included in Table 1-1.[2] These documents highlight and address the need to increase the production and use of power derived from renewable energy sources.

The Army faces significant near-term and long-term threats (e.g., natural disasters, climate change, and sabotage) that can affect its access to energy and water resources in the quantity, quality, and cost needed to carry out its national defense mission. The Proposed Action for Net Zero would allow Fort Bliss to meet its needs to:

[2] See the Army's Energy Program website for access to these documents: http://army-energy.hqda.pentagon.mil/.

- Better insulate itself from potential disruptions to its energy supply due to vulnerable energy infrastructure and logistical mechanisms that add risk to its missions
- Be better prepared to address both short- and long-term variations in water supply and quality (due to, for example, drought conditions and increased water usage by the community)
- Preserve raw materials for future use and minimize solid waste generation
- Reduce operating costs to help maintain mission operations during periods of constrained fiscal resources, limited access to natural resources, or uncertain future constraints
- Reduce the demand for services provided by off-Installation service providers (e.g., utility companies) to extend Fort Bliss' ability to continue operations during potential service interruptions

### 1.4.1 Need for Net Zero Energy

The Proposed Action is needed because the Army currently derives less than 2.1 percent of its energy from renewable energy sources, and it must more than triple this amount of electricity derived from renewable sources by 2013 to meet the requirements of Energy Policy Act of 2005. As an Installation, Fort Bliss currently derives less than 5 percent of its energy from renewable sources.

Fort Bliss energy use in fiscal year (FY) 2011 includes energy use in buildings, facilities, and exterior lighting as reported in utility bills from EPEC, Amerigas, other propane suppliers, and Texas Gas Service Company (Table 1-2). Figure 1-3 illustrates the composition of energy sources at Fort Bliss. All energy use on East and West Bliss and the training areas is included in the baseline. The energy baseline does not include energy use at privatized Installation housing.

**Table 1-2. Fort Bliss FY 2011 Energy Baseline**

| Energy Source | Site Energy Use (variable units) | Site Energy Use (MMBtu) |
|---|---|---|
| El Paso Electric Co. | 257,255,000 kWh | 877,754 |
| Various suppliers of propane | 164,202 gallons | 15,681 |
| Texas Gas Service Co. | 606,344 kcf | 625,141 |
| Total | | 1,518,576 |

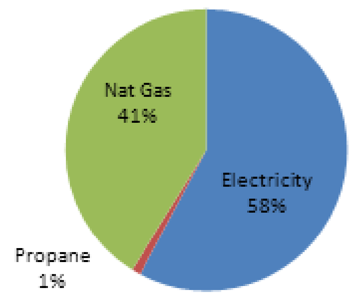


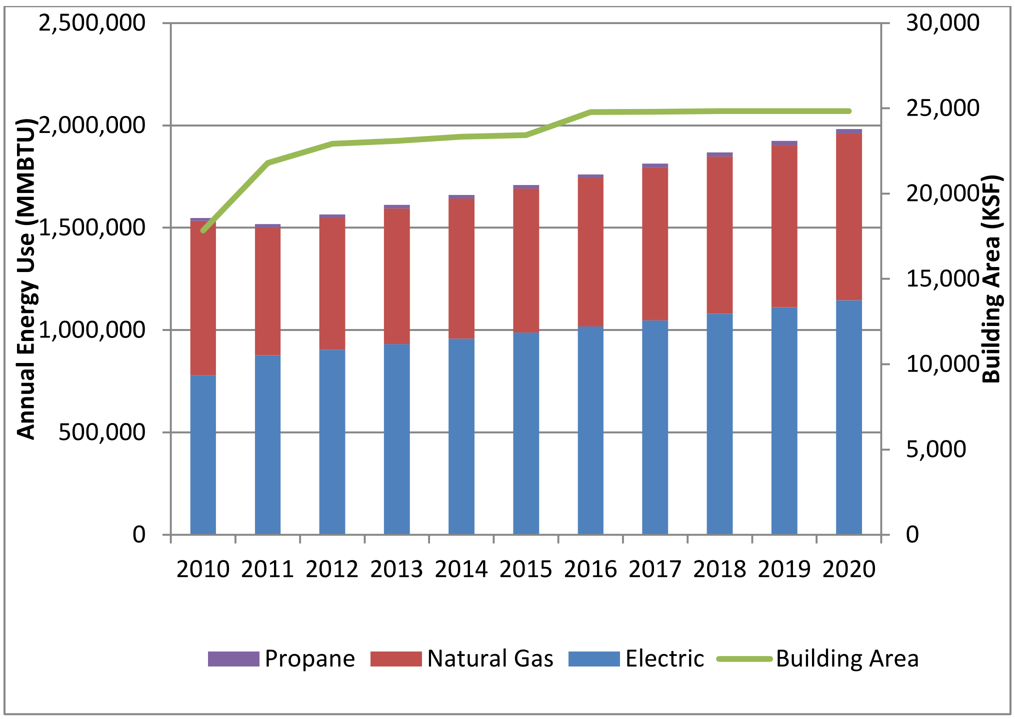

**Figure 1-3. Energy Source Composition at Fort Bliss**

Source: NREL (2012)
Note: kcf = thousand cubic feet, kWh = kilowatt-hours, MMBTU = million British thermal units

Energy use has grown in recent years along with the square footage of buildings at Fort Bliss. The building area grew from approximately 10 million $feet^2$ in 2005 to 21.8 million $feet^2$ in 2011 and is expected to increase another 3 million $feet^2$ by 2020. Figure 1-4 shows the actual and projected energy use as it corresponds to the growing building area from 2010 to 2020. The energy intensity of buildings is expected to decrease largely because of the efficiency of the new buildings constructed between 2008 and 2014, but also because of energy efficiency measures being implemented in older buildings.

To achieve Net Zero energy by 2020, Fort Bliss needs to plan using FY 2020 energy use estimates. Three percent annual growth from the 2011 baseline was assumed for forecasting electrical and thermal (natural gas and propane) consumption. Total building area in thousand square feet was provided by Fort Bliss Directorate of Public Works (DPW) Master Planning's Real Property Planning and Analysis System. The total 2020 electric and thermal delivered energy required is estimated as shown in Table 1-3.

A continuation of current policies and practices for energy usage at Fort Bliss would neither lead to the replacement of fossil fuel-based energy with renewable energy sources nor lead to an enhancement of energy security. In implementing the Net Zero initiatives, Fort Bliss would be an active participant and regional leader in ensuring the sustainability of energy resources not just for the Installation but also for the surrounding community while improving energy security for the Installation's critical mission activities.




Source: NREL (2012)

**Figure 1-4. Projected Future Energy Use at Fort Bliss**

**Table 1-3. Projected 2020 Fort Bliss Electric and Thermal Energy Requirements**

| Energy Source | Energy (Variable Units) | Energy (MMBtu) |
|---|---|---|
| Electric | 335,659,425 kWh | 1,145,270 |
| Propane | 214,246 gallons | 20,460 |
| Natural gas | 791,141 kcf | 815,667 |
| Thermal | 836,127 MMBtu | 836,127 |
| Total | | 1,981,397 |

Source: NREL (2012)

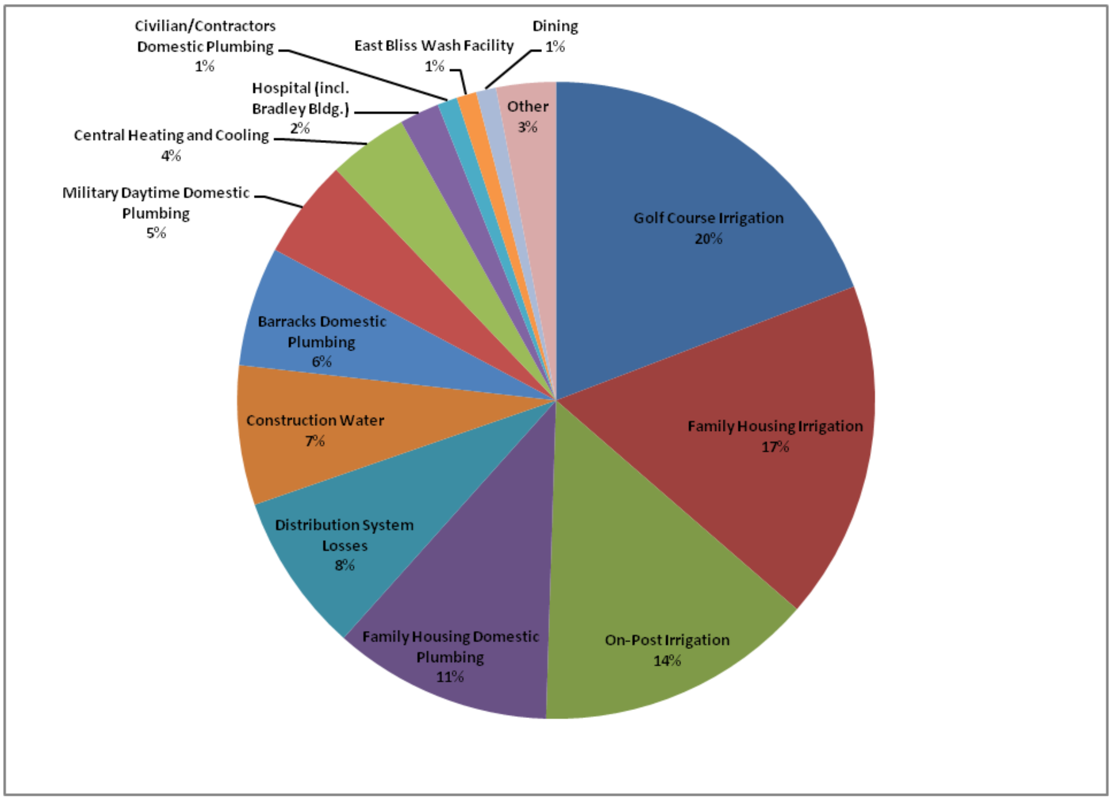
Note: kcf = thousand cubic feet, kWh = kilowatt-hours, MMBTU = million British thermal units

### 1.4.2 Need for Net Zero Water

Fort Bliss is in an area of Texas and New Mexico that has experienced extreme drought in recent years. Water is a scarce commodity at the Installation, and water conservation plans are in place (U.S. Army 2010b). Military water use is only about 3 percent as large as the municipal use in the El Paso-Ciudad Juarez area (U.S. Army 2010b). El Paso obtained an average of 24 percent of its water supply from the Rio Grande as of 2002, and the remainder from the Hueco Bolson and Mesilla Bolson aquifers. Substantial growth is occurring in the area with the factories on the Mexican side of the border and general urban growth near Fort Bliss increasing demand for water. El Paso is expected to grow from 700,000 in 2009 to more than 1.5 million by 2050, and Ciudad Juarez from 1.4 million in 2009 to more than 3.5 million in 2050 (Jenicek et al. 2009). There are places where both aquifers are overdrawn (The Watercourse 2001). It has been estimated that Fort Bliss' main water supply, the Hueco Bolson Aquifer, is capable of providing an adequate water supply for 70 years, but that the aquifer is a non-renewable resource given current withdrawal rates (Jenicek et al. 2009). Implementation of Net Zero would forestall the need for Fort Bliss to import water. Upstream demands on the Rio Grande and on other waters in New Mexico also affect availability of water at Fort Bliss with growing populations in Albuquerque and other New Mexico towns and increased interest in drawing from the Rio Grande (Jenicek et al. 2009).

Fort Bliss' on-site wells draw from three well fields: Tobin, Pike, and Biggs. Each well field contains multiple wells. Fort Bliss has rights to water drawn from its wells, and the cost of this water is limited to the pumping, distribution, and treatment. When necessary, Fort Bliss supplements its potable water supply with purchased water from the El Paso Water Utilities (EPWU). These two water sources meet all of the potable water needs at Fort Bliss, except irrigation of the two on-site golf courses—these have their own dedicated, nonpotable water supply. In 2011, Fort Bliss used 2.16 billion gallons of potable water with an additional 320 million gallons of nonpotable freshwater used to irrigate the two golf courses. Of the total 2011 water use, Fort Bliss produced 68 percent and purchased 32 percent from EPWU.

Estimated end-use demand totals were approximately 1.72 billion gallons annually, however, indicating a discrepancy between reported supply and demand of 30 percent (approximately 761 million gallons). The unknown portion of potable water use is likely composed of multiple miscellaneous water-consuming processes such as fire system testing, line flushing, and underestimated or unaccounted for irrigation, as well as improper metering or a lack of meter reporting. Nearly half of all potable water use on the Installation is for irrigation, by far the largest use of water (Figure 1-5). On-post irrigation represents between 210 and 274 million gallons of water consumption annually. Family housing irrigation water use annually ranges between 233 and 363 million gallons. The annual distribution system losses were estimated at 128 million gallons, or 7.4 percent of reported end uses.




Source: NREL (2012)

**Figure 1-5. Fort Bliss Annual Water Consumption by End Use**

With the exception of range wastewater that is directed to on-site oxidation ponds, Fort Bliss discharges most of its wastewater to the EPWU wastewater system. It is routed to the EPWU Haskell wastewater treatment plant (WWTP), where it is treated and discharged either to the Rio Grande or to the American Canal, where it is used for agricultural purposes in the Lower Valley. In 2011, Fort Bliss sent approximately 1.37 billion gallons of waste water to the WWTP, representing 55 percent of Fort Bliss' total water usage.

Fort Bliss draws upon water resources in the El Paso region, and implementation of Net Zero water initiatives would help ensure that more water is re-directed for recharge of El Paso's aquifers, which would benefit regional water resources. In implementing the Net Zero initiatives, Fort Bliss would be an active participant and regional leader in ensuring the sustainability of water resources for both the Installation and also the surrounding community.

### 1.4.3 Need for Net Zero Waste

Fort Bliss recycled 3,470 tons (19.7 percent) of the total solid waste generated at the Installation and disposed of 14,113 tons of solid waste in FY 2009/2010. Currently, the recycling program at Fort Bliss includes paper, plastics, metals (i.e. steel and alumnum cans), range brass, electronics, untreated wood, hazardous materials, used oil, batteries, and yard waste, all of which are not sorted by type prior to arriving at the handling facility (R.W. Beck 2011). Currently, Fort Bliss recycles or reuses approximately 25 percent of its solid waste stream and disposes of the remainder in landfills. The Fort Bliss municipal solid waste (MSW) landfill is nearing capacity, which has necessitated off-Installation landfilling of solid waste. If Fort Bliss were able to recover all available recyclables, it would increase the diversion rate at the Installation from 19.7 percent to 39.6 percent. If Fort Bliss were to capture the maximum amount of potential material from its recycling program, it has the potential to generate between approximately $51,500 and $283,000 in revenue, depending on material markets (R.W. Beck 2011). While the amount of waste recycled or diverted has more than tripled in the last 3 years (from 8 percent in 2009), Fort Bliss recognizes that much of the waste currently going to landfill can be reduced, re-purposed, recycled, or re-used to increase efficiency of operations.

The total volume of waste that Fort Bliss generates is projected to increase proportionally with growth, resulting in increased disposal costs, fuel usage, GHG emissions, and an increase in traffic volume on local roadways. The distance to the Clint Landfill, currently the primary off-Installation disposal site, is approximately 50 miles round-trip. The implementation of Net Zero waste initiatives would reduce waste disposal in landfills, increase recycling and material reuse, and limit negative effects associated with off-Installation disposal.

## 1.5 Decision to be Made

The Army decision to be made is whether to execute the proposed sustainability initiatives for energy, water, and waste resources at Fort Bliss and, if so, which alternatives to pursue. Chapter 2 discusses the alternatives under consideration to help Fort Bliss meet Net Zero goals. One or a combination of the Proposed Action alternatives may be chosen. The Army will prepare a Record of Decision (ROD) that includes identification of its preferred alternative and mitigation measures that are essential to the reduction of identified adverse impacts. It is important to note that most of the action alternatives ultimately would be financed, constructed, and operated by private developers. While this EIS attempts to analyze all of the alternatives in as much detail as possible, additional project-specific NEPA analysis may be necessary for most of the alternatives as design concepts are finalized to ensure a full understanding of the environmental impacts and required mitigations.

## 1.6 Scope of Environmental Analysis

This EIS identifies, documents, and evaluates the potential environmental effects of proposed sustainability initiatives at Fort Bliss in accordance with NEPA implementing regulations issued by the CEQ (40 CFR §§1500–1508) and the Army (32 CFR §651). The purpose of the EIS is to inform decision makers and the public of the potential environmental consequences of the Proposed Action and alternatives along with associated mitigation. To understand the environmental consequences of the decision to be made, the EIS qualitatively and quantitatively evaluates the environmental impacts of implementation of potential policy changes, construction and operation of facilities, or other actions on Fort Bliss associated with the sustainability initiative alternatives analyzed. Under NEPA, the analysis of environmental conditions only addresses those areas, or regions of influence (ROI), and environmental resources with the potential to be affected by the Proposed Action or alternatives. Locations and resources with no potential to be affected are not analyzed. The ROI, which includes all areas and lands that might be affected, may vary by resource.

The Army's NEPA regulation calls for the environmental analysis to be proportionate to the nature and scope of the action, the complexity and level of anticipated effects on important resources, and the capacity of Army decisions to influence those effects in a productive, meaningful way from the standpoint of environmental quality. Project areas, construction activities and time frames, and facility design features for each of the proposed alternatives have been identified to the fullest extent possible at this time. In the absence of specific information, the analysis conservatively estimated the environmental impacts of the Proposed Action and addressed potential broad-level environmental impacts.

For this Proposed Action, some project areas and design features may be modified through the consultation and design process. If this type of change occurs, the Army would conduct the appropriate supplemental NEPA evaluations to determine and disclose any change in potential environmental impacts. The associated agency consultation, coordination, and permitting/plan development and submittals will also take place if the changes warrant such actions. CEQ regulations address "tiering" for subsequent narrower analyses that will rely on and incorporate the information as provided in this EIS.

## 1.7 Related Environmental Documents

The following environmental documents are related to the scope of the Proposed Action evaluated in this EIS:

#### Programmatic Environmental Assessment Army Net Zero Installations

The Final Programmatic EA analyzes the potential environmental impacts of implementing Net Zero at Army installations world-wide (U.S. Army 2012a). The Net Zero program would require Army installations to evaluate the feasibility of, and then implement to the maximum extent practicable and fiscally responsible: 1) producing as much renewable energy on the Installation as it uses annually; 2) limiting the consumption of freshwater resources and returning water back to the same watershed so as not to deplete the groundwater and surface water resources of that region in quantity or quality; and 3) reducing, reusing, and recovering waste streams and converting them to resource value with zero solid waste disposed in landfills. This document can be accessed at: http://usarmy.vo.llnwd.net/e2/c/downloads/259794.pdf.

#### Environmental Assessment for Solar Photovoltaic Facilities on the Training Ranges, Fort Bliss, Texas and New Mexico

Fort Bliss proposes to construct, operate, and maintain solar photovoltaic (PV) technology to supply supplemental power to outlying range camps and the IBCT area of East Bliss to meet the federal government's near-term requirements for use of renewable energy. It is estimated that the Proposed Action would generate 73,000 megawatt-hours (MWh) per year, which would supply approximately 15 percent of the total energy consumed by Fort Bliss annually. Three types of solar energy technologies were identified: solar PV, concentrated solar PV, and dish stirling.

## 1.8 Cooperating Agency

The U.S. Air Force (Holloman Air Force Base [AFB]) is a cooperating agency on this Final EIS as defined in 40 CFR §1501.6. Holloman AFB uses the Centennial Bombing Range, consisting of approximately 21 square kilometers (5,200 acres) on Otero Mesa, south of Highway 506 (occupying portions of Training Areas 17 and 21), for air-to-ground engagement training. In addition, military fighter aircraft stationed or on temporary duty at Holloman AFB use the upper extents of Fort Bliss' airspace to train in aerial combat.

## 1.9 Public Involvement

Public involvement is a critical and essential component of the NEPA process. The CEQ and Army NEPA regulations provide several opportunities for the public to participate in this process. These opportunities include a public scoping process that is initiated with publication in the *Federal Register* of a Notice of Intent (NOI) to prepare an EIS, a minimum 45-day public review period for the Draft EIS, and publication of the Final EIS, accompanied by a 30-day mandatory waiting period before a final decision can be made and a ROD issued.

Public involvement is required for every EIS, and as a matter of Army policy, it is strongly encouraged for all Army actions. NEPA regulations for public involvement (40 CFR §1506.6) require that agencies make a diligent effort to involve interested or affected parties, whenever analyzing environmental considerations. This requirement begins at the onset of an EIS process by the development of a plan to include all affected parties and implementing the plan and making appropriate adjustments as it proceeds (32 CFR §651.47). The public involvement plan for this EIS included multiple avenues of communication, which included the following:

- The NOI was published on 8 February 2012 in the *Federal Register* (Appendix A).
- Three scoping meetings were held for the public. Public notices of these meetings were published on 7 February 2012 in the *El Paso Times*, *El Diario de El Paso*, *Las Cruces Sun-News*, and the *Alamogordo Daily News*. The notice also appeared on 8 and 9 February 2012 in the *Alamogordo Daily News*. The scoping notice was also posted on the Fort Bliss public affairs website[3] and the Fort Bliss project website.[4] Fort Bliss mailed letters on 16 February 2012 to a number of federal, state, and local agencies to inform them of the public scoping meetings to be held on 28 and 29 February 2012 and 1 March 2012 and to solicit their input on the project and issues of concern.
- Fort Bliss held the scoping meetings on 28 and 29 February 2012 and 1 March 2012 to engage the public early in the Army's process of identifying alternatives and concerns. Participants were offered the opportunity to provide written and oral comments. Additionally, information stations were established around the meeting room offering participants information about the Net Zero program and the associated Proposed Action and alternatives.
- Ten comments were received from members of the public during the public scoping period. Nine of the comments were received via email, and one comment was received at the public meeting in Alamogordo, New Mexico. Each of the public comments was read and considered in developing the Draft and Final EIS, and potential concerns or recommendations were identified and addressed.

---

[3] Available at: www.bliss.army.mil/PAO/releases.html.

[4] Available at: www.ftblissnetzeroeis.net.

- The Notice of Availability (NOA) was published in the *Federal Register* on 17 May 2013 announcing the availability of the Draft EIS and of planned public meetings. Copies of the Draft EIS were made available for public review at seven libraries in the region and on the Fort Bliss website.
- The public meetings were advertised on 5, 7, and 9 June 2013 in the *El Paso Times*, *El Diario de El Paso*, *Las Cruces Sun-News*, and the *Alamogordo Daily News*. The meeting notice was also posted on the Fort Bliss public affairs website and the Fort Bliss project website.
- During the public comment period, Fort Bliss conducted three public meetings to solicit public comments concerning potential environmental effects associated with the Proposed Action. The public meetings were held in El Paso, Texas, on 10 and 11 June 2013 and in Alamogordo, New Mexico, on 13 June 2013. During each meeting, the Army gave a presentation describing the Proposed Action, the associated alternatives, and the EIS process. Displays were available throughout the meeting, and handouts summarizing the Proposed Action and alternatives and describing their environmental consequences were distributed to participants. Following the presentation, members of the public had the opportunity to provide oral comments on the Draft EIS.
- Based on the nature of some of the comments from the public during the comment period, Fort Bliss extended the public comment period by one month, so it ultimately concluded on 31 July 2013. As a result of this extension, the public comment period lasted 76 days, beginning on 17 May 2013. An amended NOA announcing the extension of the public comment period was published in the *Federal Register* on 5 July 2013.
- The notification announcing the extension of the comment period was advertised on 2 July 2013 in the *El Paso Times* and the *El Diario de El Paso* and on 3 July 2013 in the *Las Cruces Sun-News* and the *Alamogordo Daily News*; it was also posted on the Fort Bliss public affairs website and the Fort Bliss project website.
- Fort Bliss solicited additional public comments while announcing the extension of the public comment period by mailing postcards to a number of federal, state, and local agencies as along with previously identified members of the public and those individuals who attended the public meetings. The Draft EIS contractor mailed postcards on 3 July 2013.
- Fort Bliss received comments from the public on the Draft EIS at the public meetings and through mail and email. A total of 13 oral comments were received during the public meetings, all of which were recorded for the record by a court reporter. By the end of the 76-day comment period,

Fort Bliss had also received 17 written comment letters and comment forms and 47 emails, in addition to 6 comment letters from federal, state, and local agencies. All comments were considered in the drafting of this Final EIS. Copies of comments received on the Draft EIS and the Army's responses to those comments are included in Appendix B of this Final EIS.

## 1.10 Changes between the Draft and the Final EIS

In the development of the Final EIS, the Army took into consideration the comments received on the Draft EIS. Highlights of the more significant changes made since the publication of the Draft EIS are as follows:

- The Army has removed Alternative 4A, a proposed waste-to-energy (WTE) plant near the southern boundary of Fort Bliss north of Montana Avenue, from further analysis as a result of public and agency comments received during the Draft EIS comment period. Alternative 4B, a proposed site adjacent to Railroad Drive, was also removed from further analysis to provide the greatest latitude for determining potential sites for a future WTE plant anywhere within the boundaries of Fort Bliss. Should the Army consider pursuing a possible WTE plant in the future, appropriate, additional NEPA analysis would be done prior to any decision.
- Revision of Section 2.3.7, Alternative 7 description for clarity.
- A new appendix (Appendix B) has been added to present the comments on the Draft EIS and responses to those comments.

This page intentionally left blank.

# 2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

## 2.1 Proposed Action

The Army's Proposed Action is to implement Net Zero energy, water, and waste goals by 2020 at Fort Bliss, while meeting energy mandates for renewable energy production and GHG emissions reduction as described in Chapter 1. In doing so, the Army would increase Fort Bliss' energy and water security and ensure the future military mission for future generations.

The Proposed Action consists of multiple, related, and interconnected proposed projects that may be necessary to implement Net Zero goals, comply with federal and Army energy mandates, and meet the Army's energy and water security objectives. Figure 2-1 shows potential project areas that are included in this analysis. Not all projects discussed in this EIS would be implemented to the full extent discussed in this document. Technological advancements, legislative changes, and other factors may result in changes to the proposed projects discussed in the alternatives section; however, this document has been prepared to address potential projects that may move forward in the mid- to long-term (i.e., the next 3- to 8-year) time frame. The document also programmatically evaluates potential development for future renewable energy, water, and waste technologies.

### 2.1.1 Proposed Energy Actions

Fort Bliss' proposed energy actions were selected to meet the goals of the Army's Net Zero energy program, which seeks to have each installation produce as much renewable energy on the installation as it uses annually. The first step would be to reduce energy demand in the most cost-effective manner by changing behavior and maximizing energy efficiency and conservation at existing facilities. An installation must look for opportunities to divert energy to a secondary purpose with limited processes, such as using boiler stack exhaust, building exhaust, or other thermal energy streams for a secondary purpose. Next, an installation should explore converting unusable waste to energy and determine whether cogeneration (where two forms of energy, heat, and electricity are created from one source) is feasible. The final step and last resort after the last bit of energy capture has been fully exercised would be to develop options for generation of renewable energy.

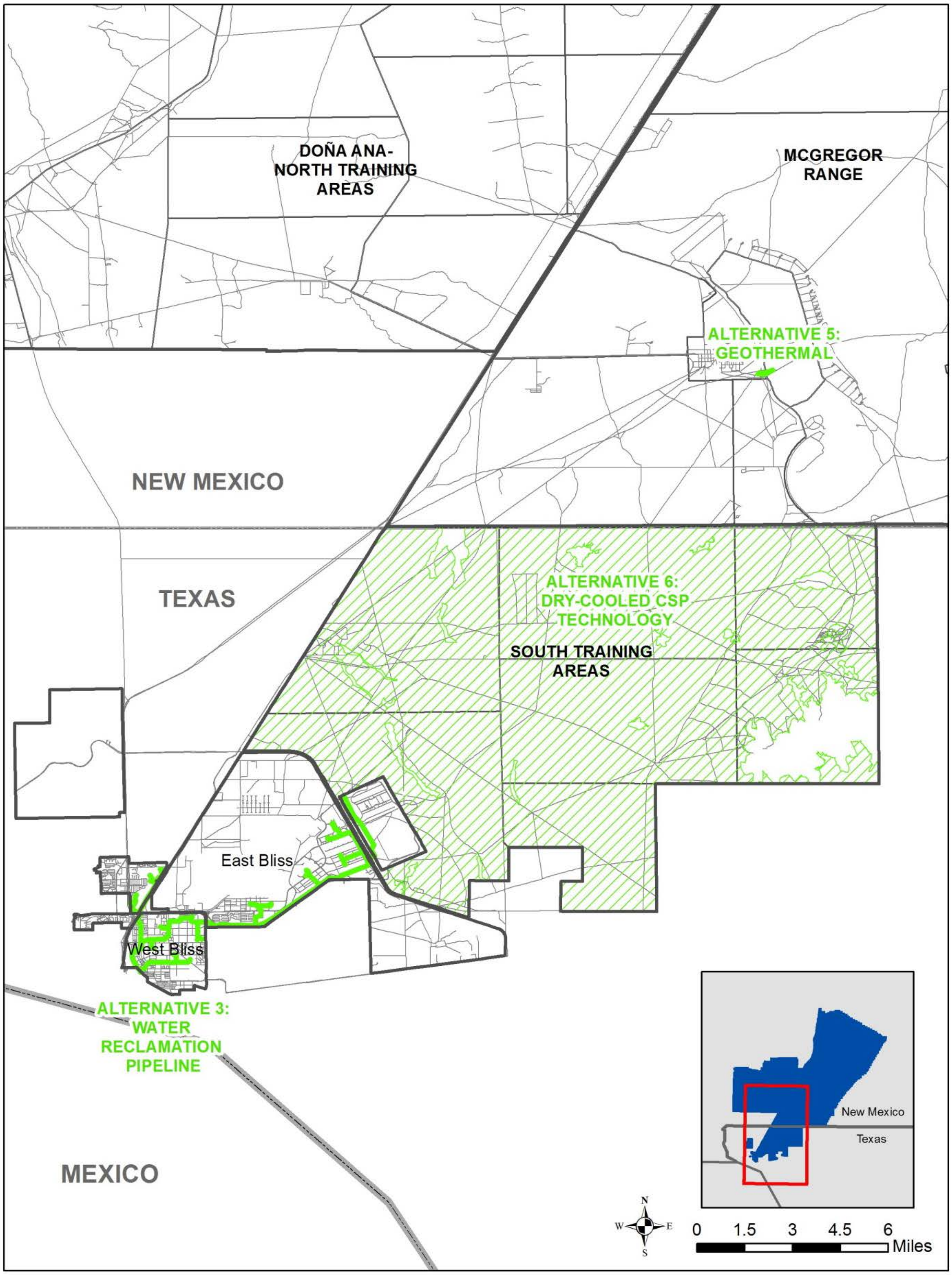



**Figure 2-1. Proposed Fort Bliss Net Zero Project Locations**

The Proposed Action includes the following potential energy actions for implementation at Fort Bliss:

- Reduction through behavior change, followed by maximizing energy efficiency and conservation, including:
  - Assessment of baseline energy efficiency of Installation infrastructure (e.g., energy audits) and vehicle fleets.
  - Reduced consumption for both tactical and non-tactical operations.
  - Energy awareness campaigns, training programs, and use of mock billing to change behavior.
  - Building metering and grid metering, which typically involve the installation of electric and natural gas digital meters equipped with remote metering capability or automatic meter reading at buildings and facilities. Grid metering of the distribution system could include installation of master meters or meters at substations to enhance energy and utilities management on all utility feeds servicing Fort Bliss. Energy-use metering is an essential component of the energy management program and would provide an energy manager the information that is necessary to effectively track and manage energy use. Metering allows for the identification of energy waste and can result in savings of both energy and dollars (ODUSD 2005b).
  - Establishment of microgrids, including islanded microgrid operations that enable all or part of an installation to be operated independently of the larger electrical grid. All power required for operations would be produced on the Installation.
  - Building renovations and technology upgrades to increase efficiency of power usage, for example, replacing conventional lighting with energy-efficient models (e.g., compact fluorescent lights and light-emitting diodes) and installing dimmers, motion detectors, and timers; replacing aging/inefficient heating, ventilation, and air conditioning (HVAC) systems with more energy-efficient HVAC equipment; replacing aging appliances and office equipment with Energy Star-rated equipment; replacing aging process equipment with more energy-efficient models; improving the building envelope (e.g., replacing older building windows with energy-efficient windows and increasing the amount or R-factor of insulation in walls and roofs).
  - Transportation and fleet upgrades and innovations (e.g., continued upgrade of the fleet to plug-in hybrid electric vehicles and all-electric vehicles and the acquisition and installation of associated electric vehicle infrastructure, such as on-board/off-board chargers and electric vehicle supply equipment).

  - Installation policy changes on transportation (e.g., increased telecommuting and Soldier incentives).

- Cogeneration, heat energy recovery, energy storage and re-use, including:
  - Methane recovery from existing or former landfills
  - Recapture of heat energy for water heating
  - Batteries to extend the generation of solar technologies

- Renewable/alternative energy construction, operation, and maintenance; at Fort Bliss, the following technologies may be pursued to implement the Proposed Action and are described in more detail in Section 2.3:
  - Construction and operation of a WTE plant
  - Development of a geothermal resource that could produce energy and heat.
  - Construction of concentrating solar technologies
  - Construction of wind turbines

### 2.1.2 Proposed Net Zero Water Actions

Fort Bliss' proposed water actions were selected to meet the goals of the Army's Net Zero water program, which seeks to limit the consumption of freshwater resources and return water back to the same watershed so as not to deplete the groundwater and surface water resources of the region in quantity or quality. The first step would be to implement water efficiencies through improving distribution system integrity. The Installation would look for opportunities to divert water to a secondary purpose with limited processes, such as using grey water generated from showers and sinks. Fort Bliss' Net Zero water target is a 50 percent reduction in water use and water use/intensity[5] by 2020, roughly doubling the current federal goals of 26 percent reduction for 2020.

The Proposed Action includes the following potential actions for implementation at Fort Bliss for Net Zero water:

[5] Water use/intensity refers to gallons of water use per gross square foot of building space.

- Reduction through behavior change, followed by maximizing water efficiency and conservation, including the following:
  - Conducting water balance assessments (a method to determine who the water users are and how much water they use) to gather information needed to determine a baseline of water use for the Installation and to strengthen water management decision making.
  - Reducing water consumption (both tactical and non-tactical) through Installation water conservation policies, employee education initiatives, incentives, and acquisition of more efficient systems and equipment. Initiatives would include changes in Installation policies to manage Soldier, civilian, and contractor behavior in support of Net Zero goals.
  - Installing meters along the water distribution system to monitor and account for system leaks on facilities with the largest water use, on facilities and spaces where tenant organizations are located in order to correctly quantify and bill tenant water use, and at Installation housing.
  - Conducting leak-detection surveys of the water distribution system and replacing or repairing any leaking distribution system segments.
  - Replacing existing systems (e.g. bathroom fixtures, air handling units, irrigation controls) with lower water-using systems (tactical and non-tactical) such as toilets and bulk purchase, composting toilets, and water-efficient wash-racks.
  - Including low impact development criteria in facility designs that mimic the sites' natural hydrology and that work to keep rainwater on site in order to reduce potential water needed on site.
  - Replacing traditional landscaping with xeriscaping or low-water-demand landscaping and modifying contracts for landscaping/grounds maintenance and watering with more stringent specifications for plant types, times for watering, and sources of water.
  - Applying Energy Independence and Security Act of 2007 (EISA) Section 438 Green Infrastructure/Low Impact Development techniques to site development or redevelopment to mimic the sites' pre-development hydrology and minimize post-development stormwater runoff.
- Implementation of water repurpose/recycle/recovery measures, including:
  - Reclaiming grey water from showers, dining facilities, and sinks and reuse in toilets or landscaping
  - Constructing a water reclamation pipeline on Fort Bliss to re-purpose water from the city of El Paso for landscaping or other uses

### 2.1.3 Proposed Waste Actions

Fort Bliss' proposed waste actions were selected to meet the goals of the Army's Net Zero waste program, which seeks to reduce, reuse, and recover waste streams, converting them to resource value with zero solid waste disposed of in landfills. First, Fort Bliss would consider the waste stream when purchasing items to avoid or eliminate generation of unnecessary waste (e.g., packaging waste). Second, Fort Bliss would look for opportunities to divert waste to a secondary purpose with limited processes. Third, Fort Bliss would maximize the reclamation of recyclable and compostable materials. Fourth, Fort Bliss would pursue opportunities to convert unusable waste to energy. The final step and last step, after the last bit of thermal energy has been salvaged and all other waste mitigation strategies have been fully exercised, would be to dispose of any remaining waste in a landfill.

The Proposed Action includes the following potential actions for implementation at Fort Bliss for Net Zero waste:

- Assess baseline conditions
- Expand or augment existing Installation policies to reduce consumption and demand where possible
- Reduce through modification of purchasing practices by:
    - Implementing policies and contracts requiring suppliers to take bulk solid waste (e.g., pallets and crates) and requiring suppliers to reduce packaging or reuse packaging.
    - Acquiring reduced waste-generating systems (tactical and non-tactical).
    - Including existing Federal Acquisition Regulations clauses for sustainable procurement, and favorably weighting those clauses when making purchases and issuing contracts. Sustainable procurement is generally defined as purchasing products, goods, and services that use materials that are less toxic or free of hazardous materials, and are recyclable or contain recycled content materials. Examples include recycled content copier/printer paper, non-toxic copier/printer inks, chlorine-free and/or non-toxic cleaning products, rechargeable batteries, re-writable CDs/DVDs, and recycled content carpets. Sustainable procurement also includes efforts to minimize or eliminate packaging waste and to switch to bulk dispensing versus using smaller or single-serving items.

- Implementing more proactive sustainable procurement actions that may include implementation of "take-back"[6] provisions in furniture and equipment purchases. Examples include modular furniture purchasing agreements that have provisions to return worn, outdated, and/or damaged components to the manufacturer/distributer or appliance purchasing agreements where the manufacturer/distributor takes possession of the old appliance upon delivery of the new or replacement appliance.
- Taking other actions that might include contracts or management actions to refurbish or extend the lifecycle of furniture, equipment, and other goods. Examples include barracks mattress refurbishing (versus purchase of new mattresses), extending the replacement cycle for equipment and appliances (including computers, fax machines, phones, and barracks kitchen appliances), and using replaceable carpet tiles versus wall-to-wall carpeting.

- Implement re-purposing actions to divert waste to a secondary purpose with limited processes. Examples include chipping waste wood (including damaged pallets) for use in landscaping and soil cover, grinding brick and concrete debris from building demolition for use as roadway aggregate, grinding waste drywall for use as a soil stabilizer (e.g., for trails within a training range), and recovering wood, steel, windows, fixtures or other building elements to retro-fit for use in other buildings. Other actions may include increased diversion of unneeded, usable items for free redistribution to on-Installation government organizations, through the servicing Defense Logistics Agency Disposal Services office, in on-Installation reuse shops, or through donation to non-profit veteran's organizations. Pursue business partnerships to increase the re-use of clothing, scrap wood, and mattresses and potentially implement a salvage re-use facility.

- Divert waste by recycling and composting to increase solid waste diversion rates through more aggressive recycling and/or composting, including:
  - Implementing Installation policies on waste recycling and re-use (e.g., Soldier incentives)
  - Promoting and implementing education and outreach programs to increase the use of the existing single-stream and untreated wood recycling programs
  - Continue implementing the Fort Bliss Qualified Recycling Plan

---

[6] "Take back" refers to a manufacturer's responsibly for taking back products after their end-of-use for reuse, repair, or recycling.

- Partnering with other generators of organic waste including the City of El Paso or agricultural partners to develop an off-post composting program and ensuring landscaping contracts for Fort Bliss use compost material
- Developing and implementing source reduction programs for film plastic, including garbage bags, and coordinating with Installation custodians to reduce double-bagging and disposal of bags that are not full
- Developing and implementing source reduction programs for non-recyclable paper (e.g., installing hand dryers and removing paper towel dispensers in Installation bathrooms)
- Developing and implementing a recycling program for used clothing
- Expanding the recycling program to include glass or establish an off-Installation partnership for glass recycling
- Pursuing waste infrastructure development or agreements with private industry

- Recover energy from waste that cannot be cost-effectively avoided, re-purposed, recycled, or composted through use as feedstock in a WTE plant.

## 2.2 Alternatives Screening Criteria

Fort Bliss conducted a rigorous screening process to determine which technologies and Installation sites are available to support implementation of the Net Zero initiative. In order to be considered a viable alternative and carried forward for analysis, the alternative must meet the following screening criteria:

- Mission Compatibility – The alternative must be compatible with present and future military missions and training occurring at Fort Bliss and on other nearby military installations. Site development and operations may not adversely affect training activities.
- Electrical Tie-in Potential (renewable energy) – The renewable energy alternatives must be close to transmission facilities (substations). The grid infrastructure must be capable of transporting, or being upgraded to transport, electricity generated by the alternative.
- Energy/Water Projects Located On-Installation or Directly Adjacent to Provide Enhanced Energy and Water Security – The alternative must have the capability to generate power or provide sustainable water to support the critical operational needs of Fort Bliss while increasing the Army's ability to secure these resources. The alternative must allow Fort Bliss to have greater control and access to its energy and water supplies while reducing the adverse impacts of external generation and distribution failures upon the installation and its mission.

- Geophysical Factors – The alternative must have topography, aspect, slope, and soils to support development of Net Zero technologies and infrastructure.
- Cultural and Environmental Factors – Proposed sites must not be in an Off Limits Area (Red Zones), have no known Native American Graves Protection and Repatriation Act (NAGPRA) issues, must not contain National Register of Historic Places (NRHP)-eligible properties where an adverse effect cannot be feasibly mitigated, and must not have known sites of importance to federally recognized tribes. Proposed sites must not have sensitive natural resources such as critical habitat or threatened and endangered species.
- Safety and Unexploded Ordnance – The alternative must be sited at locations that minimize exposure to unexploded ordnance (UXO). Sites selected must not conflict with military training activities or jeopardize the personal safety of those constructing or operating the facilities.
- Water Use Intensity – Selected technologies must minimize the use of fresh water in a manner consistent with Fort Bliss, Army, and DoD water conservation goals and applicable state water use requirements.

## 2.3 Alternatives

This section describes the seven alternatives carried forward for analysis in this EIS. These alternatives include the No Action Alternative and six action alternatives. The preferred alternative (Proposed Action) consists of the six action alternatives (Alternatives 2 through 7).

### 2.3.1 Alternative 1 – No Action

Under the No Action Alternative, Fort Bliss would not pursue additional Net Zero initiatives to accelerate reduction of energy, water, and waste consumption beyond those policies and procedures that are currently in place. The increasing costs of centralized utility-provided energy and the potential disruption of Installation energy and water supplies would continue to be threats to the Army and Installation operations. The failure to implement Net Zero initiatives would make it less likely that federal mandates, goals, and policies pertaining to renewable energy production, energy use, water conservation, and waste reduction would be met. This alternative would hinder Fort Bliss' energy, water, and waste programs to meet future demands.

### 2.3.2 Alternative 2 – Conservation Policies and Procedures

Under Alternative 2, Fort Bliss would continue to implement policies, procedures, best management practices (BMPs), and related actions (collectively termed Net Zero programs) for energy, water, and waste, as specified in Sections 2.1.1 through 2.1.3. Improving conservation practices and use of more efficient technologies for energy and water would be major components of Net Zero programs. Examples of other actions included in Alternative 2 are awareness campaigns, building and grid metering, microgrids, building renovations and technology upgrades, water metering, replacement of existing systems, low impact development criteria, xeriscaping, use of permeable surfaces, and modification of procurement practices. In addition, the generation of solid waste would be reduced, and waste that is produced would be recycled and re-purposed to the greatest extent feasible. Alternative 2 includes Net Zero Communities Program and small-scale, renewable energy projects as described below.

#### 2.3.2.1 Net Zero Communities Program

Housing for Soldiers and military families under a program called Net Zero Communities would employ designs or incorporate measures to maximize energy and water efficiencies with sustainability as the goal. The program would begin as a pilot project in cooperation with Fort Bliss' Residential Communities Initiative housing partner. Houses would be well sealed and insulated, and may be fitted with energy-efficient heat pumps for heating and cooling the interiors. Microgrid systems may be installed on individual or groups of houses or buildings to monitor and manage energy usage (Zekert and Gillem 2012). Results from the pilot project would help guide additional Net Zero Communities developments on East and West Bliss.

An important concept of Net Zero Communities is the "livability" of a development to improve the quality-of-life of the residents. Layouts of new housing developments on the Installation would be carefully planned to have amenities and shopping within walking distance so that the need to drive would be reduced. Horizontal and vertical mixed-use residential and commercial construction would be envisioned, including landscaping suitable to the local environment.

#### 2.3.2.2 Small-scale, Renewable Energy Projects

Net Zero programs would be geared toward smaller, more versatile, quick-to-implement projects on individual buildings, structures, vehicles, and utility systems. Examples include installation of solar PV panels on rooftops of new buildings and installing panels atop existing buildings. Carports to provide covered parking would also be built with solar PV panels mounted on top to provide electrical power to nearby buildings and help conserve ground area for other uses. Similar structures can also be used to provide sheltered outdoor storage of materials and property that are currently staged in open yards during receiving, transshipment, and disposal. Such structures would improve the quality of stormwater runoff and reduce sun damage to materials, while increasing renewable power generation.

Alternative 2 includes the installation of small-scale wind turbines designed and sized to power individual or clusters of buildings. The following generation capacities and dimensions are based on current technology; however, future advances could change the specifications for small-scale wind turbines. Small wind turbines would generate approximately 2.5 to 10 kilowatt (kW) of electrical power. Electricity generated would be used directly in each building or immediate area to reduce the amount needed from the main distribution grid. The turbines, having an overall blade diameter of approximately 7 to 25 feet, would be placed in suitable locations so as to not interfere with or obstruct ongoing activities in the immediate area. Turbine towers would be approximately 50 to 100 feet tall and could be mounted, for example, against the outer walls of buildings. In certain instances, multiple wind turbines could be mounted on a larger individual building. Newer wind turbine designs using a vertical axis would also be included for consideration.

### 2.3.3 Alternative 3 – Water Reclamation Pipeline

Fort Bliss would pursue the construction and use of a water reclamation pipeline (also referred to as the purple pipe) to provide Fort Bliss with reclaimed water for the Installation's secondary uses including landscaping, golf course irrigation, central cooling towers, and a central wash facility for cleaning tactical vehicles returning from training in the field. The purple pipe would connect to a conduit pipe from the city of El Paso's WWTP near the Pershing Gate, and water would be distributed as depicted in Figure 2-2.

Construction of the purple pipe would involve excavating a trench for the placement of an estimated 24 miles of pipe. The trench would have a top width of approximately 7 feet, a bottom width of approximately 5 feet (the trench would be sloped for ease of construction), and a depth of approximately 7 feet. Construction activities would necessitate temporary road closures and the temporary closure of Pershing Gate. Figure 2-3 shows a typical scene of purple pipe installation in the city of El Paso.

It is assumed that with implementation of Alternative 3, Fort Bliss would off take approximately 375 million gallons per year of reclaimed water from the city of El Paso. The reclaimed water would be classified as Type 1 as described in 30 Texas Administrative Code [TAC] §210.33(1). Water quality attributes of Type 1 water are summarized in Table 2-1. Type 1 water is near-potable and has been treated to remove pathogens such as bacteria and other contaminants so that it is suitable for uses where the public might come into contact with the water (Texas Natural Resources Conservation Commission [TNRCC] 1997). Reclaimed water tends to contain higher concentrations of salts and nutrients than potable water. Reclaimed water from the city of El Paso ranges between 680 and 1,200 parts per million (ppm) as total dissolved salts, depending on the facility and the source for the water to be reclaimed (U.S. Environmental Protection Agency [USEPA] 2004).

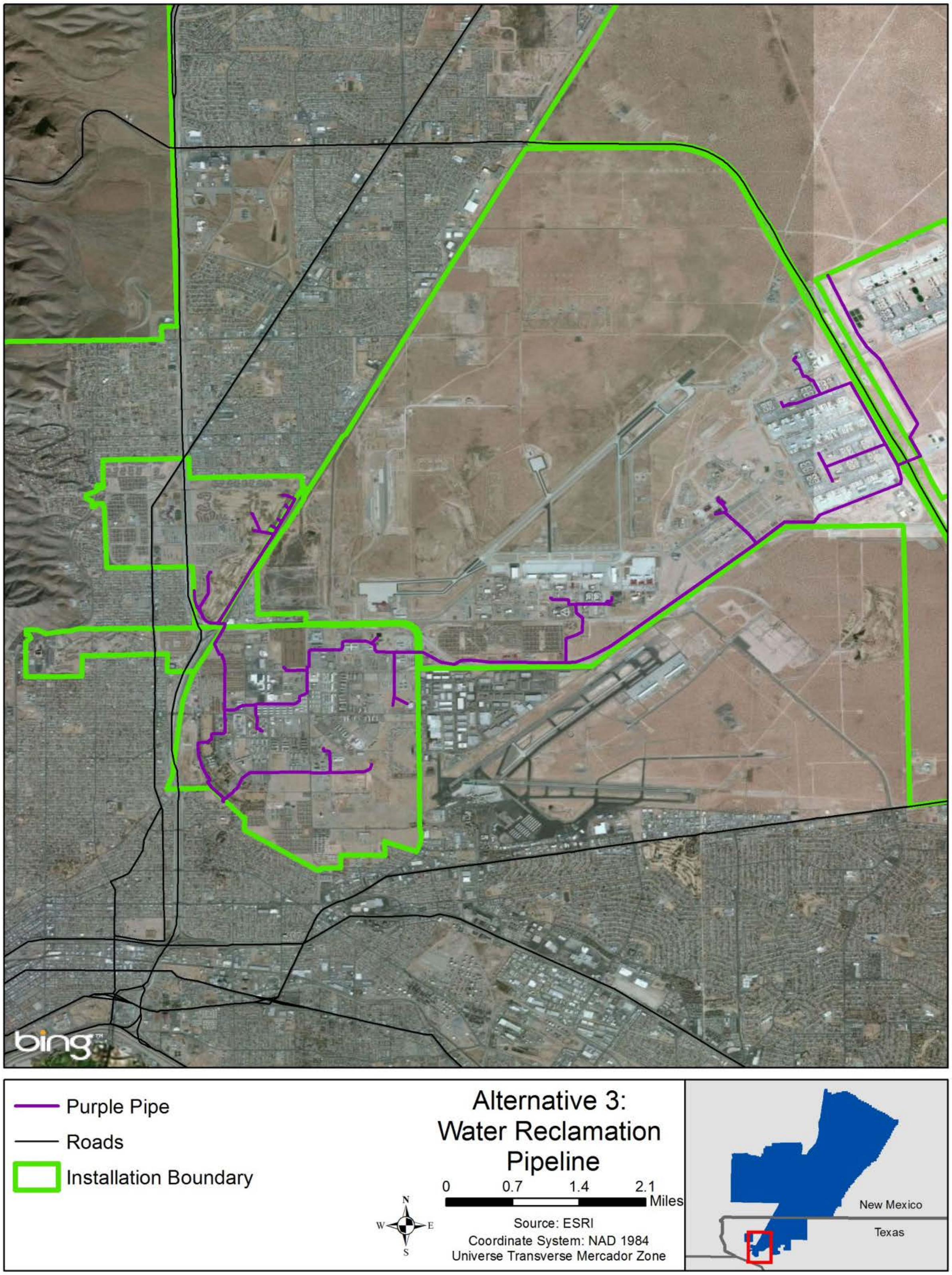



**Figure 2-2. Proposed Reclaimed Water Pipeline Route on Fort Bliss under Alternative 3**

**Figure 2-3. Installation of Purple Pipe in City of El Paso**

**Table 2-1. Type 1 Reclaimed Water Quality Attributes Compared with Drinking Water Standards**

| Water Quality Attribute | Measure | Comparison to Drinking Water Standards |
|---|---|---|
| Biochemical oxygen demand over 5-day period or carbonaceous biochemical oxygen demand over 5-day period | 5 mg/l | No standards set; 1 to 2 mg/l considered very clean water |
| Turbidity | 3 NTUs | 1 NTU |
| Fecal coliform or *E. coli* | 20 CFUs/100 ml [a] | 0 ppm [c] total coliform/*E. coli* |
| Fecal coliform or *E. coli* | 75 CFUs/100 ml [b] | 0 |
| *Enterococci* | 4 CFUs/100 ml [a] | 0 |
| *Enterococci* | 9 CFUs/100 ml [b] | 0 |

Source: 30 Texas Administrative Code §210.33(1)

Notes: mg/l = milligrams per liter; NTU = nephelometric turbidity unit; CFU = colony-forming unit; ml = milliliters; ppm = parts per million

[a] 30-day geometric mean

[b] Maximum single grab sample

[c] The maximum contaminant level goal for total coliform is 0. Any grab samples that tested positive for total coliform must be tested for Fecal coliform or *E. coli*. The maximum contaminant level for total coliform is no more than 5% of the samples may test positive.

### 2.3.4 Alternative 4 – Waste-to-Energy Plant

#### 2.3.4.1 Background and Scope of Analysis

Waste-to-Energy (WTE) refers to technologies that use MSW to either: 1) produce steam to power a generator to produce electricity; or 2) convert biomass waste into a combustible fuel through microbiological processes. The fuel is then used to power an electrical generator. A WTE plant would allow Fort Bliss to divert the portion of its solid waste that would otherwise require transport for landfill deposition. Electricity generated from the plant could be handled in two ways: 1) it could be fed directly into the regional transmission grid with the Installation receiving credit for this power from the electric utility; 2) or Fort Bliss would own the power generated and distribute it on lines located wholly within the Installation boundaries, .i.e., "behind the meter," thus providing its own electrical power.

The EIS analysis process has determined that a WTE plant at a particular location on Fort Bliss is not feasible in the near future. Alternative 4 is included in this Final EIS to provide basic information about WTE technologies and provide programmatic-level discussion that could serve as a starting point for further NEPA analysis that would be required if a decision were made to pursue building a proposed WTE plant on the Installation. The Army has removed Alternative 4A (presented in the Draft EIS), a proposed WTE plant near the southern boundary of Fort Bliss north of Montana Avenue, from further analysis as a result of public and agency comments received during the Draft EIS comment period. Alternative 4B, a proposed site adjacent to Railroad Drive, also was removed from further analysis to provide the greatest latitude for determining a site for a possible future WTE plant anywhere within the boundaries of Fort Bliss. Any future WTE project would undergo appropriate, additional NEPA analysis, including analysis of the potential location of the WTE plant and the proposed technology, prior to making any decision on whether to construct the project. The public would have an opportunity to review and to comment on this analysis.

No areas within Fort Bliss are presently identified as possible locations for a WTE plant or electrical line routes. Likewise, the size of a possible WTE plant (in terms of electrical generating capacity) and technology are not known at this point. It is estimated that approximately 40 tons of MSW per day are required to generate 1 megawatt (MW) of electricity using mass-burn technology (Dahle 2013). It is assumed that a plant would be designed in line with the amount of MSW available for fuel, the regulatory requirements, and needs of the Army. As previously stated, if Alternative 4 were selected in the ROD, further NEPA analysis based on the technology and location selected, would be required before a WTE plant could be constructed and operated.

### 2.3.4.2 Waste-to-Energy Technologies

Types of WTE technologies that could be constructed and operated on Fort Bliss pending future NEPA analysis include the following:

**Mass-burn incineration –** Mass-burn technology is the most proven and commonly used technology for WTE at this time. Figure 2-4 illustrates the basic operations and pollution control systems of a mass burn incineration plant. Neighborhood collection trucks deliver MSW to a presorting facility. At the presorting facility, recyclables and non-combustible materials are removed from the waste stream. The remaining waste is then delivered by transfer trucks to a receiving area of the plant for use as feedstock. The receiving area is kept at a slight negative pressure to minimize the release of odors to the surrounding areas.

From the receiving area, the MSW is fed into a chute that directs the MSW into a furnace where it is either combusted on a grate or in a fluidized bed to release energy in the form of heat. The gaseous and particulate products of the combustion reaction pass through several stages of emissions controls to meet USEPA air emissions standards. The heat released from the combustion of the MSW is transferred to water in the boiler where it is converted to steam to drive a turbine to produce electricity or is used for various heating applications. A mass burn incineration plant using dry-cooling technology consumes an estimated 41 gallons of water per ton of MSW processed (Davis 2013).

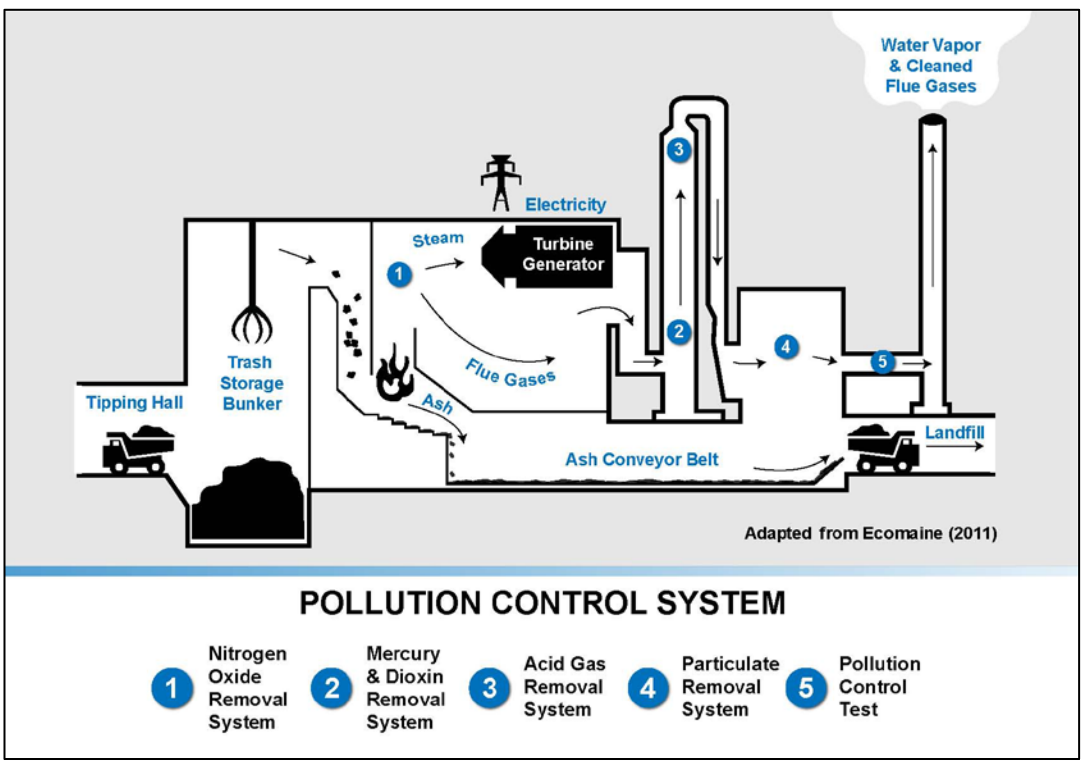



**Figure 2-4. Typical Mass-burn Waste-to-Energy Plant**

Approximately 20 percent of the MSW waste becomes ash. The ash is sampled and analyzed regularly to determine whether it is hazardous and disposed of accordingly in compliance with current federal and state regulations. A mass-burn WTE plant is also equipped with the latest in combustion and air pollutant reduction technologies, similar to coal fired generation plants, to control air pollution emissions and ensure conformity with the Clean Air Act (CAA).

**Gasification** – This WTE technology involves heating fuel in an oxygen-limited environment. Waste materials are delivered and stockpiled in a similar manner as mass-burn incineration. These facilities are typically smaller in scale as the rate of feedstock delivery is much smaller. The feedstock is fed into the gasification chamber using an auger-feed mechanism. Once in the chamber, the fuel is heated and a portion of the fuel is combusted, using the small amount of oxygen present. This exothermic reaction releases heat necessary to produce endothermic reactions that produce a synthetic gas, or syngas, of primarily hydrogen and carbon monoxide. The syngas can be used in several ways:

- Steam creation: syngas can be combusted to create heat for converting water to steam, which drives a steam turbine to generate electricity.
- Direct motive force: syngas can be cooled and cleaned for use as fuel for an internal combustion engine or gas turbine, either of which can be coupled to a generator for electricity production.
- Liquid fuel conversion: cooled and cleaned syngas can be converted to various liquid fuels using the Fischer-Tropsch process, a series of chemical reactions occurring from introduction of a catalyst to the syngas.
- Energy storage: syngas can be stored for later use or transferred to another location.

**Pyrolysis** – This form of incineration chemically decomposes organic materials by heat in the absence of oxygen. Pyrolysis typically occurs under pressure and at operating temperatures above 430 degrees Celsius (ºC) (800 degrees Fahrenheit [ºF]). In practice, it is not possible to achieve a completely oxygen-free atmosphere, and a small amount of oxidation occurs. Organic materials are transformed into gases, small quantities of liquid, and a solid residue containing carbon and ash. Any volatile or semi-volatile compounds present in the organic materials are driven off and, along with other off-gases, treated in a secondary thermal oxidation unit. Particulate removal equipment is also required. The feedstock is the same as for other technologies. The gases produced by pyrolysis can be cleaned and used for electricity generation by various methods similar to those described for gasification.

**Anaerobic digestion –** This WTE technology uses biologic methods to process waste materials. The feedstock collection and processes for anaerobic digestion are the same as those discussed for mass-burn incineration and gasification. The importance of sorting materials is higher for anaerobic digestion than other WTE technologies. Therefore, manual or automatic sorting of materials is typically the first step to remove inorganic materials and recycle those materials with value. The organic materials are placed into a digester, where microorganisms break down the material and release a biogas high in methane. The resulting biogas is captured and serves several purposes:

- Steam creation: the biogas can be combusted to provide heat for steam to drive a turbine, coupled to a generator for power production.
- Motive force: the biogas can be conditioned and serve as fuel for an internal combustion engine or gas turbine, linked to an electrical generator for power production.
- Energy storage: the biogas can be stored for later use or transferred to another location.

**Fermentation –** This non-thermal technology uses microorganisms to convert waste into alcohol (primarily ethanol and butanol) for use as fuel to power a turbine. Anaerobic fermentation (i.e., hydrolysis followed by fermentation to alcohols) is generally used in beverage, fuel, and chemical applications. Fermentation of starch- and sugar-based feedstocks (i.e., corn and sugar cane) into ethanol is fully commercial but not yet used for cellulosic biomass because of the expense and difficulty in breaking down (hydrolyzing) the materials into fermentable sugars. Cellulosic feedstocks, including the majority of the organic fraction of MSW, need hydrolysis pretreatment (acid, enzymatic, or hydrothermal hydrolysis) to break down cellulose and hemicellulose to simple sugars needed by the yeast and bacteria for the fermentation process. With the possible exception of acid recycling and recovery, acid processes are technologically mature, but enzymatic processes are projected to have a significant cost advantage once improved. Lignin in biomass is a byproduct of fermentation processes and is typically considered for use as boiler fuel or as a feedstock for thermochemical conversion to other fuels and products.

### 2.3.5 Alternative 5 – Geothermal Energy Facility

Fort Bliss would coordinate with the Department of the Interior regarding development of a geothermal resource in order to work with private energy development firms to construct and operate a geothermal facility for the production of energy and/or hot water. Geothermal power plants use hot fluids (steam or water) produced from hot water/steam reservoirs located below the earth's surface to produce electricity and hot water to heat buildings. Flash steam or binary power plants would be possible for use at Fort Bliss (based on the current understanding of the geothermal resource):

- Flash steam is currently the most common type of deployed geothermal power plant. It requires geothermal water with temperatures greater than 182°C (360°F). Hot water flows up through wells and flashes into steam as pressure decreases. The steam is then separated from the water and used to power a turbine/generator. Any leftover water and condensed steam (resulting from passing through the turbine) is injected back into the reservoir, making this a sustainable resource.

- Binary power plants operate on water at lower temperatures of approximately 85°C to 182°C (185°F to 360°F). Binary plants use the heat from the hot water to boil a working fluid, usually an organic compound or refrigerant with a low boiling point. The working fluid is vaporized in a heat exchanger, and as it expands, it turns a turbine. The water is then injected back into the ground.

The geothermal technology that would be used for electricity generation under Alternative 5 has not yet been determined and must await confirmation of resource viability. If viable, a geothermal energy facility would be developed covering approximately 1.1 acre inside one of two 20-acre parcels located near Davis Dome on McGregor Range (Figure 2-5). Currently, the facility's maximum energy generating capacity is estimated to be 20 MW and would require at least one injection and production well. The facility would be sized to match expected load due to regulatory requirements in New Mexico.

Studies on the geothermal resource are ongoing; however, preliminary information has shown temperatures of approximately 91°C (195°F). Concentrating solar thermal (CST) technology could potentially be integrated with the geothermal energy facility to increase the temperature of the geothermal resource in order to maximize energy generation.[7] Construction of transmission lines (less than 2 miles) would supply energy to McGregor Range Camp Complex. Transmission lines could be aboveground or underground. Aboveground lines would be constructed according to raptor protection guidelines. Other features of the alternative would include pipelines to the power plant from the wells, well drilling and wellhead pads, and parking spaces. It is assumed that existing roads would be adequate to support the facility. Figure 2-5 shows the project area for the geothermal energy facility at the Davis Dome site. The number of construction and operations employees required under Alternative 5 would depend on the facility's generation capacity. The following employment estimates assume a 20-MW facility would be developed. Construction of the facility is estimated to require 35 workers during a 36 month period, while operations and maintenance would require up to six employees (Hillesheim 2013).

---

[7] CST arrays harness thermal energy from the sun to heat water, whereas CSP arrays use the sun's thermal energy in the production of electricity, typically through the heating of synfuels that are used to power a turbine.

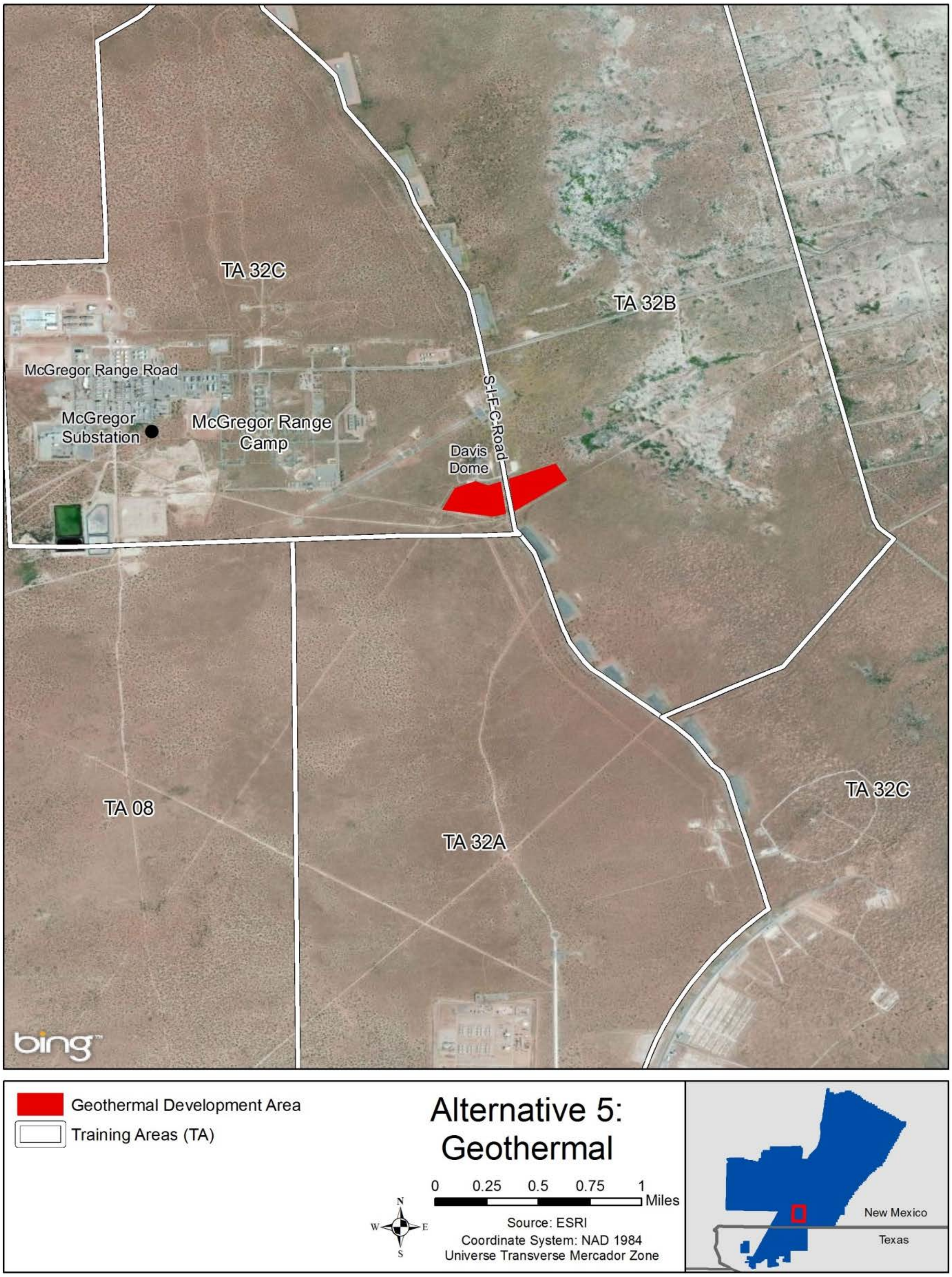



**Figure 2-5. Geothermal Development Project Area at Davis Dome on Fort Bliss under Alternative 5**

### 2.3.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Fort Bliss would develop concentrating solar power (CSP) parabolic trough technology in the STA on up to 300 acres of land within the STA and in accordance with the siting criteria previously discussed in Section 2.2 and Appendix C, Environmental Screening Criteria (Figure 2-6). CSP is designed to convert the sun's energy to heat and then apply that heat in various ways to produce electricity. This alternative would use a parabolic trough system that concentrates solar energy along a line-shaped receiver, typically a fluid-filled pipe positioned at the focus of parabolic-shaped reflectors.

For optimal performance, the reflective surfaces of CSP technologies must track the sun (keeping the sun's incident rays perpendicular to the reflecting surface), and reflectors and/or concentrators must exhibit good optical characteristics.

Parabolic trough CSP systems (Figure 2-7) typically use a heat-transfer fluid (usually synthetic oil) to transfer the heat generated at the solar collectors to a heat exchanger where steam is produced to drive a conventional steam turbine generator (STG). The power block of a solar thermal facility containing the STG and other related power-generating and power-management equipment is virtually identical in both form and function to the power block of fossil fuel and nuclear power plants that also use steam to produce electricity.

A thermoelectric technology alternative to steam uses Organic Rankine Cycle (ORC) turbines coupled to conventional generators. ORC turbines use heat (versus an external steam source) to boil an organic working fluid contained in the reservoir of a closed system, allowing the resulting hot expanding vapors of the working fluid to drive the turbine-generator set. The working fluid loses sufficient thermal energy to return to its liquid state, and, after further cooling, it is returned to its reservoir, allowing the process to repeat. ORC turbines have many industrial applications, recovering otherwise wasted heat and converting it to electrical power or mechanical energy. The advantages of ORC turbines include: the ability to produce power from relatively minor sources of heat, minimal internal corrosion issues due to the absence of water, thermal efficiencies as high as 85 percent, and extended mechanical life due to relatively slower rotational speeds than conventional STGs. More importantly for CSP applications in water-deprived locations, ORC turbines require substantially less water than conventional STGs.

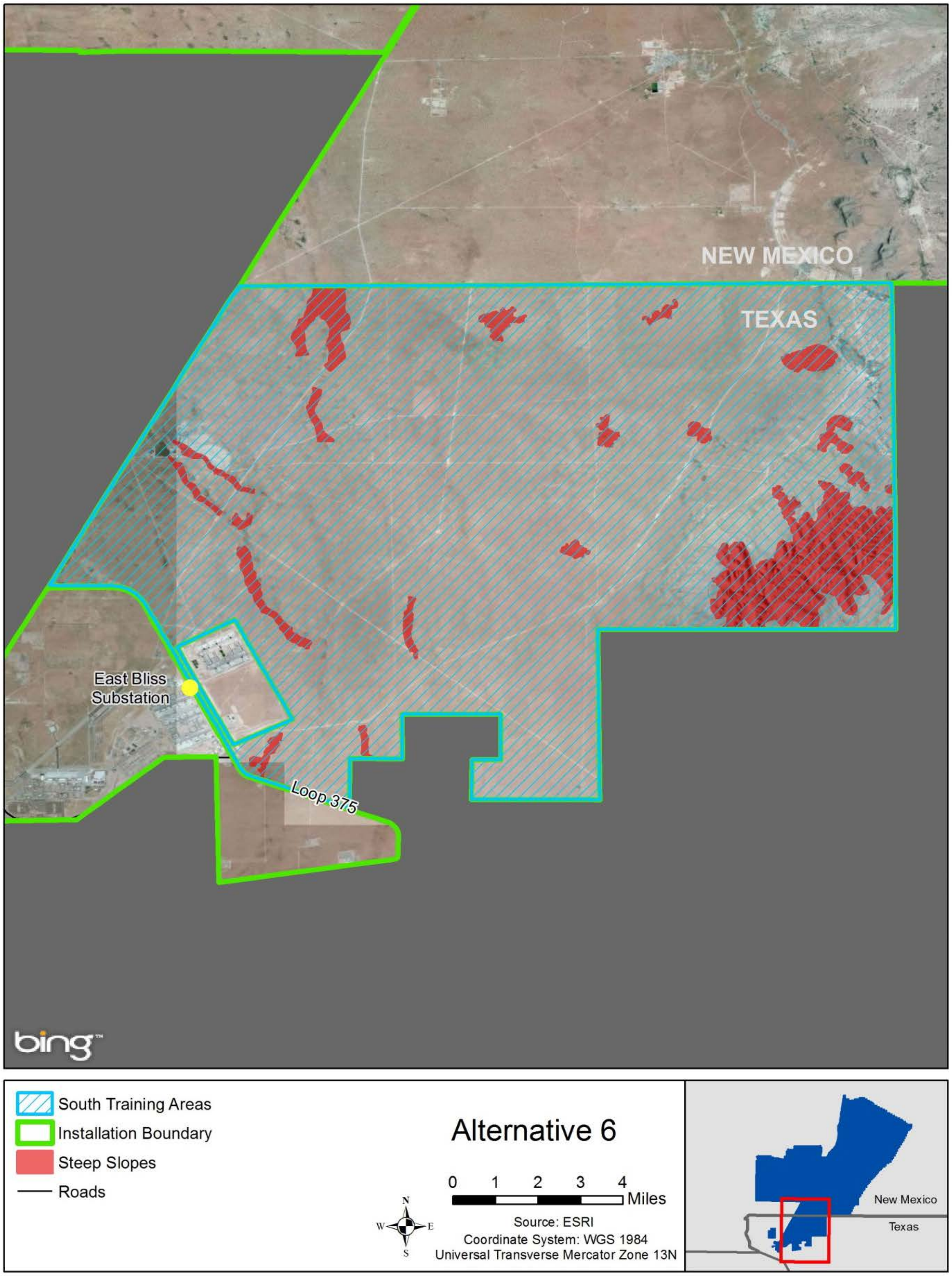



**Figure 2-6. Area Evaluated for Location of Potential Concentrating Solar Power Technology under Alternative 6**

**Figure 2-7. Concentrating Solar Power Parabolic Trough Technology**

Access roads would be required and dependent upon actual site location. Transmission lines (either above or below ground) would likely be tied in to the East Bliss Substation. Aboveground lines would be constructed according to raptor protection guidelines.

The construction time frame is estimated at 2 years and would require approximately 400 workers during construction and 28 full-time workers for operation (Turchi 2012).

### 2.3.7 Alternative 7 – Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as large-scale solar PV, large-scale wind, and biomass projects, may be developed on Fort Bliss in accordance with technological and site-location screening criteria (Section 2.2 and Appendix C, *Environmental Screening Criteria*).

Large-scale solar PV (greater than 1 MW) potentially could be developed within East Bliss along Railroad Drive (Figure 2-8). After closure, the Fort Bliss landfill could also provide an area for solar PV arrays consisting either of PV panels atop the landfill cap or through technologies that incorporate PV cells into the cap itself.

Large-scale wind turbine farms at specific sites in the training areas have been eliminated as an alternative in this EIS (Section 2.4.3). Large turbines (rated approximately 3 MW) potentially could, however, be placed singly at remote facilities, such as the range camps, assuming pertinent screening criteria are met. It is recognized that circumstances could change in the future such that large-scale wind turbine farms, sited at acceptable locations, would no longer pose interference hazards to military activities. In this event, the installation and operation of large-scale wind turbine farms could become viable projects to help Fort Bliss reach its renewable energy goals.

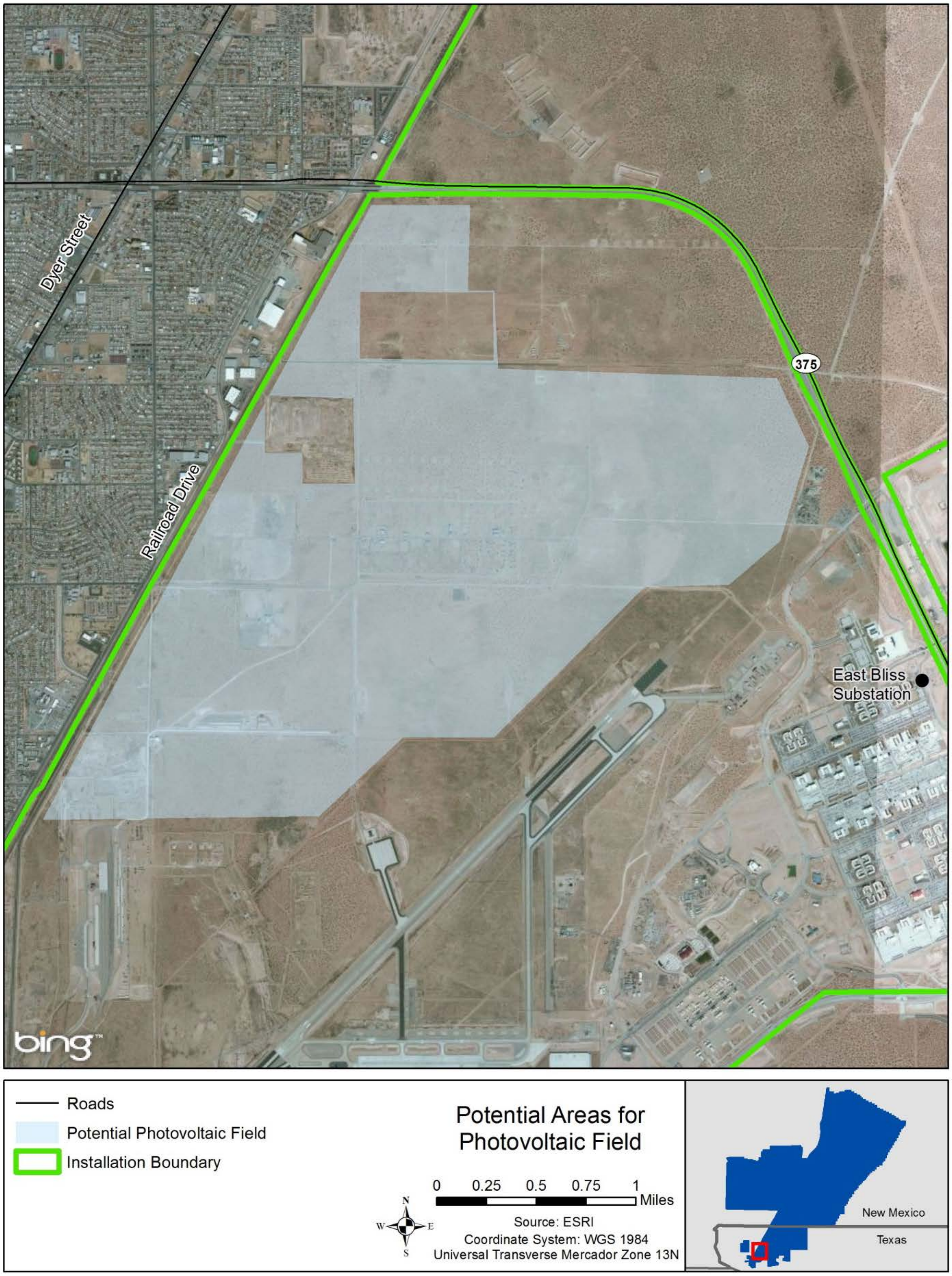



**Figure 2-8. Potential Area for Large-scale Solar Photovoltaic Arrays on East Bliss**

Power produced from large-scale solar and wind energy systems can fluctuate considerably over the course of a given day. To “smooth out” these fluctuations, supplemental natural gas generators may be required to provide a consistent amount of energy flow into the electrical grid. The generators (although not renewable energy systems themselves) would be located adjacent to electrical substations or co-located with the renewable energy system. The generators would run continuously at idle and operate to boost output only when required.

Biomass technology converts biological material (such as plant material), byproducts and waste from livestock farming and food processing, and preparation of domestic organic waste into energy via combustion or biochemical processes to produce useful heat or biofuel. The Fort Bliss landfill, located near Railroad Drive in East Bliss, has been identified as having the potential to provide biomass energy after its closure, probably within the next few years. Decomposition of waste in the closed landfill will produce methane gas that could be collected, stored, and used as a biofuel.

Implementation of Alternative 7 would allow the Army to adaptively implement future energy projects that would assist the Installation with meeting the Army’s Net Zero energy, water, and waste goals. All energy projects considered for implementation would require the appropriate level of supplemental NEPA analysis tiered to this EIS prior to a decision to implement the project.

## 2.4 Alternatives Considered but Eliminated from Further Consideration

The following alternatives were considered during alternatives development but were eliminated from further consideration for reasons described in each section.

### 2.4.1 Water Intensive Solar Technologies

The production of renewable energy through water intensive solar technologies, such as CSP thermal electric trough with evaporative water-cooling, power tower, or compact linear fresnel reflector technologies, were considered but dismissed from further evaluation. The extensive use and evaporative loss of water for power plant cooling and energy production does not meet the long-term sustainability goals of Fort Bliss, promote the attainment of Net Zero objectives, or facilitate Fort Bliss’ efforts to support regional water conservation. Such technologies are deemed too water intensive to support the goals of the Installation and the community in a region that does not have abundant water resources. The extensive use of water for cooling and energy production could place a substantial burden on area water resources. Therefore, these water intensive solar technologies are not being carried forward for consideration. If a technology becomes available in the future and it decreases water dependency to a level that does not adversely affect resource sustainability, these technologies may be considered, and Fort Bliss would complete the necessary NEPA analysis.

### 2.4.2 Alternative Waste-to-Energy Plant Sites

During the preliminary planning process, the area proposed for transfer to Fort Bliss from the Texas General Land Office located along the southern boundary of the Installation adjacent to the STA was considered for the WTE facility. This site was eliminated from further consideration because, at this time, construction of a WTE plant and associated facilities on the site would not be compatible with the land use requirements of the area. The Army has removed Alternative 4A (presented in the Draft EIS), a proposed WTE plant near the southern boundary of Fort Bliss north of Montana Avenue, from further analysis as a result of public and agency comments received during the Draft EIS comment period. Alternative 4B (presented in the Draft EIS), a proposed site adjacent to Railroad Drive, was also removed from further analysis to provide the greatest latitude for determining a suitable site for a future WTE plant within Fort Bliss.

### 2.4.3 Large-scale Wind Farms in the Training Areas

Fort Bliss considered development of a large-scale wind farm within Training Areas 24 and 25 or Training Area 16 to support McGregor Range Camp. A wind farm would have affected approximately 1,000 acres in Training Areas 24 and 25 or 1,000 acres in Training Area 16. The wind farm would have consisted of approximately twenty 3-MW wind turbines, generating approximately 60 MW of electricity. This alternative was eliminated from further consideration due to concerns from the U.S. Air Force that wind turbines would interfere with radar and create physical obstacles, imposing unacceptable adverse impacts to training missions. In addition, large-scale wind farms and their associated transmission lines could also interfere with Army low-level training flights on McGregor Range.

This page intentionally left blank

# 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

## 3.1 Introduction

This chapter describes the affected environment of Fort Bliss and the surrounding area to form a baseline for analysis of the environmental effects from the alternatives described in Chapter 2. An ROI is described for each resource area. The ROI varies among resources and defines the geographic extent of potential effects from the alternatives on the important elements of that resource. Each section in this chapter delineates its ROI and identifies the topics and resources addressed by that section. Immediately following the affected environment discussion for each resource is the presentation of environmental consequences for each alternative. This chapter describes the direct and indirect effects associated with each alternative. Cumulative effects and mitigation measures are summarized in Chapters 4 and 5, respectively.

The CEQ defines direct effects as those which are caused by the action and occur at the same time and place, whereas indirect effects are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable (40 CFR §1508.8). For example, impacts from construction of facilities at Fort Bliss would be a direct effect associated with the alternatives, while an increase in local spending by construction workers would be an indirect effect. Impacts are characterized in this EIS as:

- Beneficial – A positive net impact.
- No impact/negligible – An environmental impact that could occur but would be less than minor and might not be perceptible.
- Minor – While impacts would be perceptible, they would clearly not be significant.
- Less than significant – Impact that is not significant but is readily apparent. Additional care in following standard procedures or applying precautionary measures to minimize adverse impacts may be called for.
- Significant but mitigable – Significant impact anticipated, but the Army can put management actions or other mitigation measures in place to reduce impacts to less than significant.
- Significant – An adverse environmental impact, which, given the context and intensity, violates or exceeds regulatory or policy standards or otherwise exceeds the identified threshold. The significant impact, however, cannot be mitigated with practical means to a level below significance.

Significance thresholds for each resource are presented in Table 3-1. CEQ guidelines indicate that significance of an impact is determined by the intensity and the context of the impact. Intensity refers to the severity or extent of an impact, and context relates to the environmental circumstances at the location of the impact. Significance criteria were developed in consideration of CEQ's guidance for determining significance (40 CFR §1508.27).

Impacts also are characterized as short-term or long-term. Short-term effects typically are those that would be temporary and associated with the construction phase but would no longer be perceptible once construction is completed or shortly thereafter. Long-term effects are those that would be permanent or would persist for the operational life of the project.

### 3.1.1 Resource Areas Carried Forward for Analysis

The U.S. Army Environmental Command (USAEC) NEPA Analysis Guidance Manual (USAEC 2007) provides information on the identification of valued environmental components (VECs), which are those resources that are considered to be important by society and potentially at risk from human activities or natural hazards. After consideration of the anticipated impacts associated with the proposed alternatives and information gathered during the scoping process, the following VECs were selected to be carried forward for detailed analysis in this EIS:

- Air Quality
- Airspace
- Biological Resources (including wildlife, vegetation, and sensitive species)
- Cultural Resources
- Energy Demand and Generation
- Geology and Soils
- Hazardous Materials, Hazardous Waste, and Safety
- Land Use
- Noise
- Socioeconomics and Environmental Justice
- Water Resources
- Transportation and Traffic

**Table 3-1. Significance Thresholds for Each Valued Environmental Component**

| Valued Environmental Component | Significance Threshold |
|---|---|
| Air Quality | Impacts would be considered significant if emissions would:<br>• Increase ambient air pollution concentrations above the NAAQS<br>• Impair visibility within federally mandated PSD Class I areas<br>• Result in the potential for any stationary source to be considered a major source of emissions as defined in 40 CFR §52.21 (total emissions of any pollutant subject to regulation under the CAA that is greater than 250 tons per year for attainment areas) or<br>• For mobile source emissions, result in an increase in emissions to exceed 250 tons per year for any pollutant |
| Air Space | Impacts would be considered significant if they:<br>• Restrict movement of other air traffic in the area<br>• Create conflicts with air traffic control in the region<br>• Change operations within airspace already designated for other purposes<br>• Result in a need to designate controlled airspace where none previously existed<br>• Result in a reclassification of controlled airspace from a less restrictive to a more restrictive classification<br>• Result in a need to designate regulatory special use airspace |
| Biological Resources | Impacts would be considered significant if they were to result in:<br>• Substantial permanent conversion or net loss of habitat at landscape scale<br>• Long-term loss or impairment of a substantial portion of local habitat (species dependent) or substantial loss to a species population resultant from implementation of the Proposed Action |
| Cultural Resources | Impacts would be considered significant if they meet one or more of the following criteria:<br>• The activity would cause an adverse effect to an archaeological, historical, or other cultural site that is listed in or eligible for inclusion in the NRHP, and measures minimizing or mitigating the adverse effect of the resource are not implemented.<br>• The activity involves construction, repair, or maintenance affecting contributing elements to a historic building or district.<br>• The activity would permanently introduce visual, audible, or atmospheric elements that are out of character with the historic property or alter its setting when setting contributes to the property's qualifications for the NRHP.<br>• The activity would restrict access to a cultural resource of significance to federally recognize tribes and there has been no attempt to address issues through government-to-government consultation. |
| Energy Demand and Generation | Impacts would be considered significant if:<br>• The immediate and/or long-term energy demand of Fort Bliss would have the potential to exceed the actual or projected capacity of Fort Bliss or its energy suppliers to provide service, and Fort Bliss or its energy suppliers would not produce enough energy to meet the energy demands to support the Fort Bliss mission.<br>• Or if the Proposed Action would interfere with Fort Bliss' ability to absorb intermittent impacts and variance in peak energy generation. |
| Geology and Soils | Impacts would be considered significant if they:<br>• Substantially degrade soils, soil fertility, soil productivity, or geologic resources. |

| Valued Environmental Component | Significance Threshold |
|---|---|
| Hazardous Materials, Hazardous Waste, and Safety | Impacts would be considered significant if they result in:<br>• An unacceptable risk of exposure or impact to human health and safety regarding the amount of materials or waste to be handled, stored, used, or disposed of, or probable regulatory violation.<br>• Site contamination conditions that would preclude development of the site for the proposed use. |
| Land Use | Impacts would be considered significant if:<br>• The action would not be consistent with the surrounding land use.<br>• Or the action would not conform to zoning and community land use plans and policies. |
| Noise | Impacts would be considered significant if:<br>• The impact off-Installation would result in noise levels that exceed the City of El Paso's standards.<br>• The impact on-Installation would result in noise levels that exceed the USEPA's standards.<br>• Occupational noise levels exceed 85 dB for an 8-hour day. |
| Socioeconomics and Environmental Justice | Impacts would be considered significant if the estimated impact on socioeconomic VECs, such as employment, business volume, population, and income, would result in:<br>• An impact, as output by the EIFS model that exceeds the RTV for a particular VEC.<br>• Or if a large number of individuals, groups, businesses, or government entities would be affected and/or if impacts would be readily detectable and observed and/or occur over a wide geographic area and would have a substantial influence on social and/or economic conditions.<br><br>An environmental justice impact is considered to be significant if the impact from an action alternative disproportionately and adversely affects a minority or low income community.<br><br>An impact to a population of children is considered to be significant if the impact from an action alternative disproportionately and adversely affects this population of children. |
| Water Resources | Impacts would be considered significant if they:<br>• Alter the existing pattern of surface or groundwater flow or drainage in a manner that would adversely affect the uses of the water within or outside the project region<br>• Degrade surface or groundwater quality in a manner that would reduce the existing or potential beneficial uses of the water<br>• Would be out of compliance with existing or proposed water quality standards or other regulatory requirements related to protecting or managing water resources<br>• Would not comply with the CWA<br>• Would not comply with the Safe Drinking Water Act |
| Transportation and Traffic | Impacts would be considered significant if:<br>• LOS is reduced to unacceptable levels (levels E and F), or<br>• Intersections and gates would reach capacity and extensive delays would develop. |

Notes: CAA = Clean Air Act, CFR = Code of Federal Regulations, CWA = Clean Water Act, dB = decibel, EIFS = Economic Impact Forecast System, LOS = level of service, NAAQS = National Ambient Air Quality Standards, NRHP = National Register of Historic Places, PSD = Prevention of Significant Deterioration, ROD = Record of Decision, RTV = rational threshold value, USEPA =U.S. Environmental Protection Agency, VEC = valued environmental component

### 3.1.2 Valued Environmental Components Dismissed from Further Analysis

After consideration of the anticipated impacts associated with the proposed alternatives and information gathered during the scoping process, the following VECs were dismissed from further analysis for the reasons described:

- Wetlands — Very few of the arroyo-riparian drainages and none of the playa lakes on Fort Bliss are jurisdictional wetlands as defined by the U.S. Army Corps of Engineers (USACE). Jurisdictional wetlands are regulated under the Section 404 of the Clean Water Act (CWA) and Executive Order11990, *Protection of Wetlands*. No wetlands are located within any of the project areas for Alternatives 2 through 6. In addition, wetlands would be avoided for any potential future projects implemented under Alternative 7. As a result, wetlands are not analyzed further within this EIS.

## 3.2 Comparison of Environmental Consequences by Alternative with Mitigation Measures

Table 3-2 summarizes the environmental consequences (direct and indirect impacts) of each alternative on the affected resources evaluated in this EIS. This chapter includes a detailed discussion of these environmental consequences.

This page intentionally left blank.

**Table 3-2. Summary of Environmental Consequences for Alternatives**

| Resource | Alternative 1: No Action | Alternative 2: Conservation Policies and Procedures | Alternative 3: Water Reclamation Pipeline | Alternative 4: WTE Plant | Alternative 5: Geothermal Energy Facility | Alternative 6: Dry-cooled CSP Technology | Alternative 7: Implement Other Renewable Energy Technologies | Alternatives Combined |
|---|---|---|---|---|---|---|---|---|
| Air Quality | Beneficial impacts from existing policies and programs to reduce GHGs, including planned renewable energy projects. Some reductions in GHG emissions would be realized; however, Fort Bliss would likely not fully meet its GHG reduction mandates. | Beneficial impacts as a result of reduction in energy consumption and corresponding decrease in pollution-emitting equipment. | No impacts from operations. Less than significant impacts from temporary construction emissions. | Anticipated less than significant to significant but mitigable impacts from WTE plant construction and operational emissions. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Beneficial indirect impacts from replacement of fossil fuel energy production with renewable energy sources. Less than significant impacts from construction and operation emissions. | Beneficial indirect impacts from replacement of fossil fuel energy production with renewable energy sources. Less than significant impacts from construction and operation emissions. | Beneficial indirect impacts from replacement of fossil fuel energy production with renewable energy sources. Less than significant impacts from construction and operation emissions. | Beneficial impacts as a result of reduction in energy consumption and corresponding decrease in pollution-emitting equipment and from replacement of fossil fuel energy production with renewable energy sources. Less than significant to significant but mitigable impacts from WTE plant construction and operational emissions. Less than significant impacts from construction and operation of geothermal energy facility and dry-cooled CSP. |
| Airspace | No impacts | No impacts | No impacts | Negligible impacts as WTE facility would be located in compliance with all FAA height and distance requirements relating to the proximity of the boiler stack(s) to Biggs AAF and El Paso International Airport. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts from CST glare-potential. No impacts from construction and operation of the geothermal energy facility. | Less than significant impacts from CSP glare-potential. | Less than significant impacts if implemented following screening and environmental criteria. | Less than significant impacts resulting from solar array glare potential. |
| Biological Resources | No impacts | Less than significant impacts to vegetation, wildlife, and sensitive species resulting from construction-related ground disturbance and noise. Less than significant impact to migratory birds and bats from operation of small-scale wind turbines. | Significant but mitigable impacts to vegetation from irrigation with reclaimed water. Less than significant impacts to wildlife and sensitive species resulting from construction-related ground disturbance and noise. | Less than significant impacts to vegetation, wildlife, and sensitive species resulting from loss of vegetation/ habitat from facility and road construction and disturbance to wildlife and sensitive species from construction-related noise. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts to vegetation, wildlife, and sensitive species resulting from loss of vegetation/ habitat from facility and road construction and disturbance to wildlife and sensitive species from construction-related noise. | Less than significant impacts to vegetation, wildlife, and sensitive species resulting from loss of vegetation/ habitat from facility and road construction and disturbance to wildlife and sensitive species from construction-related noise. | Less than significant impacts to vegetation, wildlife, and sensitive species resulting from loss of vegetation/habitat from facility and road construction and disturbance to wildlife and sensitive species from construction-related noise. | Significant but mitigable impacts to vegetation from irrigation with reclaimed water. Less than significant impacts to vegetation, wildlife, and sensitive species resulting from loss of vegetation/ habitat from facility and road construction and disturbance to wildlife and sensitive species from construction-related noise. Less than significant impact to migratory birds and bats from operation of small-scale wind turbines. |
| Cultural Resources | No Impacts | Less than significant impacts to cultural resources resulting from potential modifications to historic architectural resources. Section 106 process would be completed prior to implementation of construction. | Significant but mitigable impacts to parade-ground vegetation from irrigation with reclaimed water. Less than significant impacts to cultural resources from the pipeline construction. Section 106 process would be completed prior to construction. | Less than significant impacts to archeological sites from possible disturbance from construction. Section 106 process would be completed prior to construction. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts to cultural resources, resulting from construction disturbance and dependent on an archaeological survey. Section 106 process would be completed prior to construction. | Less than significant impacts to cultural resources resulting from construction disturbance. Section 106 process would be completed prior to construction. | Less than significant impacts to cultural resources resulting from construction disturbance. Section 106 process would be completed prior to construction. | Significant but mitigable impacts to parade-ground vegetation from irrigation with reclaimed water. Less than significant impacts to cultural resources from construction. Section 106 process would be completed prior to construction. |
| Energy Demand and Generation | No beneficial impacts would be realized from reduced Fort Bliss energy demand through Net Zero implementation. | Beneficial impacts to energy demand from reduced energy demand resulting from implementation of conservation policies and procedures. | Negligible impacts from construction of a water reclamation pipeline | Beneficial impacts toward increased energy security as a result of renewable energy generation and its contribution to meet Net Zero energy goals. | Beneficial impacts to energy generation due to increased onsite renewable energy generation. This alternative alone would not generate enough renewable energy to meet Net Zero energy goals. | Beneficial impacts to energy generation due to increased on-site renewable energy generation. This alternative alone would not generate enough onsite renewable energy to meet Net Zero energy goals. | Development would be compatible with environmental screening criteria; however, impacts are not fully characterized at this time. Additional NEPA would be completed to fully characterize impacts. | Beneficial impacts to energy generation due to increased renewable energy generation. |

| Resource | Alternative 1: No Action | Alternative 2: Conservation Policies and Procedures | Alternative 3: Water Reclamation Pipeline | Alternative 4: WTE Plant | Alternative 5: Geothermal Energy Facility | Alternative 6: Dry-cooled CSP Technology | Alternative 7: Implement Other Renewable Energy Technologies | Alternatives Combined |
|---|---|---|---|---|---|---|---|---|
| Geology and Soils | No Impacts | Negligible impacts to soils from ground disturbance. | Less than significant impacts to soils, resulting from construction-related ground disturbance, soil removal, increased erosion potential, and reclaimed water irrigation. No impacts to geologic features. | Less than significant impacts to soils, resulting from construction-related ground disturbance and increased erosion potential and no impacts to geologic features. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts to soils, resulting from construction-related ground disturbance and increased erosion potential and less than significant impacts to geologic features from the construction of the wells. | Significant impacts to soils, resulting from construction-related ground disturbance and increased erosion potential. No impacts to geologic features. | Less than significant impacts to soils, resulting from construction-related ground disturbance and increased erosion potential and less than significant impacts to geologic features from construction. | Significant impacts to soils, resulting from combined construction-related ground disturbance and increased erosion potential. |
| Hazardous Waste, Hazardous Materials, and Safety | No Impacts | Beneficial impacts from the reduction in waste generation. | Less than significant impacts from the potential for minor petroleum leaks from construction equipment. | Less than significant impacts from the potential for leaks and spill of chemicals and petroleum products from the operation of all facilities. Less than significant impacts from handling and disposal of ash. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts from the potential for leaks of petroleum products related to the construction and operation of the facilities. | Less than significant impacts from the potential for leaks of petroleum products related to the construction and operation of the facilities. | Less than significant impacts from the potential for leaks of petroleum products related to the construction and operation of the facilities. | Less than significant impacts from the potential for leaks of petroleum products related to the construction and operation of the facilities. |
| Land Use | No Impacts | Negligible impacts from small changes to land use. | Minor impacts resulting from construction and the small alteration of existing land use. | Less than significant impacts due to alteration of existing land use from construction. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts due to alteration of existing land use from construction. | Significant impacts from the conversion of training land to developed land. Less than significant impacts due to alteration of existing land use from construction. | Less than significant impacts due to alteration of existing land use from construction. | Significant impacts from the conversion of training land to developed land. Less than significant impacts due to alteration of existing land use from construction. |
| Noise | No Impacts | Negligible Impacts | Less than significant impacts from noise during construction. | Less than significant impacts from noise during construction and operation of the WTE plant. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts from noise during construction. | Less than significant impacts from noise during construction. | Less than significant impacts from noise during construction. | Less than significant impacts from noise during construction and operation under each alternative. |
| Socioeconomics and Environmental Justice | No Impacts | Beneficial impacts to economic growth associated with the procurement of goods and services. Potential less than significant impacts to the local economy from increased utility rates | Beneficial impacts to economic growth associated with the procurement of goods and services. Negligible impacts to housing, government and emergency services, and utilities. No impacts to environmental justice and the protection of children. | Beneficial impacts to economic growth associated with the procurement of goods and services and facility operation and to housing. Less than significant impacts to government and emergency services, and utilities. If a potential location and technology are identified, appropriate additional NEPA analysis to include environmental justice would be performed. | Beneficial impacts to economic growth associated with the procurement of goods and services and to housing. Less than significant impacts to government and emergency services, and utilities. No impacts to environmental justice and the protection of children. | Beneficial impacts to economic growth associated with the procurement of goods and services and to housing. Less than significant impacts to government and emergency services, and utilities. No impacts to environmental justice and the protection of children. | Beneficial impacts to economic growth or housing could occur depending on the scale and type of future renewable energy sources. Less than significant impacts to government and emergency services and utilities are expected and no impacts to environmental justice or protection of children are expected. | Beneficial impacts to economic growth associated with the procurement of goods and services and to housing. Less than significant impacts to government and emergency services, and utilities. |
| Water Resources | No Impacts. No beneficial impacts to water resources and aquifer recharge would be realized from implementation of Net Zero water goals. | Beneficial impacts to surface water and groundwater supply sources from the implementation of conservation policies and procedures. | Beneficial impacts from the reuse of wastewater for secondary purposes. Less than significant impacts to surface and groundwater from construction. | Less than significant impacts to surface and groundwater from construction and water requirements for the operation of the WTE plant. Potential for significant impacts to water resources if water supply was primarily from potable water. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed. | Less than significant impacts to surface and groundwater from construction and potential for contamination of groundwater from facility operation. | Less than significant impacts to surface and groundwater from construction and water requirements associated with facility operation. | Less than significant impacts to surface and groundwater from construction and facility operation. | Less than significant impacts to surface and groundwater from construction and potential for contamination of groundwater from facility operation. Potential for significant impacts to water resources if water supply for Alternative 4 was primarily from potable water. |

| Resource | Alternative 1: No Action | Alternative 2: Conservation Policies and Procedures | Alternative 3: Water Reclamation Pipeline | Alternative 4: WTE Plant | Alternative 5: Geothermal Energy Facility | Alternative 6: Dry-cooled CSP Technology | Alternative 7: Implement Other Renewable Energy Technologies | Alternatives Combined |
|---|---|---|---|---|---|---|---|---|
| Transportation and Traffic | No Impacts | No Impacts | Less than significant impacts from construction traffic. | Anticipated less than significant to significant but mitigable impacts from construction and operations traffic. If a potential location and technology are identified, appropriate additional NEPA analysis would be performed to determine traffic impacts. | Less than significant impacts from construction traffic and no impacts from traffic associated with facility operation. | Less than significant impacts from construction traffic and traffic associated with facility operation. | Less than significant impacts from construction traffic and traffic associated with facility operation. | Less than significant to significant but mitigable impacts from construction and operations traffic under Alternative 4. Less than significant impacts from construction traffic and traffic associated with facility operation under Alternatives 3, 5, and 6. |

Notes: AAF = Army Airfield, CSP = concentrating solar power, CST = concentrating solar thermal, FAA = Federal Aviation Administration, GHG = greenhouse gas, NEPA = National Environmental Policy Act, WTE = waste-to-energy

This page intentionally left blank.

## 3.3 Air Quality

Air quality is defined by ambient air concentrations of specific pollutants that the USEPA has determined to be of concern for the health and welfare of the general public and the environment. The primary pollutants of concern, called criteria pollutants, include carbon monoxide (CO), sulfur dioxide ($SO_2$), nitrogen dioxide ($NO_2$), ozone ($O_3$), suspended particulate matter less than or equal to 10 microns in diameter ($PM_{10}$), fine particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). Under the CAA, the USEPA has established National Ambient Air Quality Standards (NAAQS) (40 CFR §50) for these pollutants. Areas that are and historically have been in compliance with the NAAQS are designated as attainment areas. Areas that violate a federal air quality standard are designated as non-attainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are required to adhere to maintenance plans to ensure continued attainment. The NAAQS represent the maximum levels of background pollution that are considered safe, including an adequate margin of safety, to protect public health and welfare. Short-term standards (1-, 3-, 8-, and 24-hour periods) are established for pollutants contributing to chronic health effects.

The Texas Commission on Environmental Quality (TCEQ) has adopted the NAAQS, which are presented in Table 3-3. In addition to the ambient air quality standards for criteria pollutants, national standards exist for hazardous air pollutants (HAPs), which are regulated under Section 112(b) of the 1990 CAA amendments. The National Emission Standards for Hazardous Air Pollutants regulate HAP emissions from stationary sources (40 CFR §§61 and 63).

HAPs emitted from mobile sources are called Mobile Source Air Toxics (MSATs). MSATs are compounds emitted from highway vehicles and non-road equipment that are known or suspected to cause cancer or other serious health and environmental effects. In 2001, the USEPA issued its first MSATs Rule, which identified 21 compounds as being HAPs that required regulation. A subset of six of these MSAT compounds was identified as having the greatest influence on health and included benzene; 1,3-butadiene; formaldehyde; acrolein; acetaldehyde; and diesel particulate matter. More recently, the USEPA issued a second MSATs Rule in February 2007, which generally supports the findings in the first rule and provides additional recommendations for compounds having the greatest impact on health. The rule also identified several engine emission certification standards that must be implemented.

Air quality in a given location is described by the concentration of various pollutants in the atmosphere. Many factors, including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions, influence a region's air quality.

**Table 3-3. National Ambient Air Quality Standards**

| Pollutant | Averaging Time | Primary Standards | Secondary Standards |
|---|---|---|---|
| Carbon monoxide | 8-hours | 9 ppm (10 mg/$m^3$) | None |
| | 1-hour | 35 ppm (40 mg/$m^3$) | |
| Lead | Rolling 3-month average | 0.15 µg/$m^3$ | Same as primary |
| Nitrogen dioxide | Annual (arithmetic average) | 53 ppb | Same as primary |
| | 1-hour | 100 ppb | None |
| $PM_{10}$ | 24-hour | 150 µg/$m^3$ | Same as primary |
| $PM_{2.5}$ | Annual (arithmetic average) | 12.0 µg/$m^3$ [a] | 15 µg/$m^3$ |
| | 24-hour | 35 µg/$m^3$ | Same as primary |
| Ozone | 8-hour | 0.075 ppm | Same as primary |
| | 3-hour | None | 0.5 ppm |
| | 1-hour | 75 ppb | None |

Source: USEPA (2012)

Notes: $PM_{10}$ = suspended particulate matter, $PM_{2.5}$ = fine particulate matter, ppb = parts per billion, ppm = parts per million, mg/$m^3$ = milligrams per cubic meter, µg/$m^3$ = micrograms per cubic meter

[a] Published 14 December 2012. The USEPA anticipates making initial attainment/nonattainment designations by December 2014 with those designations likely becoming effective in early 2015.

Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, $SO_2$, Pb, and some particulates, are emitted directly into the atmosphere from emission sources. Secondary pollutants, such as $O_3$, $NO_2$, and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. The WTE plant emissions would be the only Pb emission source associated with the Proposed Action.

Areas that are and have historically been in compliance with the NAAQS are designated as better than national standards or unclassifiable/attainment.

### 3.3.1 Affected Environment

Defining an ROI for air quality requires knowledge of: 1) the type of emissions; 2) location(s) of the sources of emissions (for stationary sources) and the horizontal and vertical extent of emissions from mobile sources, such as automobiles; 3) emission rates of the pollutant sources; 4) the proximity of existing emission sources to those sources associated with the Proposed Action; and 5) local and regional climate conditions. The ROI for emissions can vary from less than a mile to more than 30 miles, depending on the pollutant. For example, the affected area for emissions of inert pollutants (pollutants other than $O_3$, its precursors, or $NO_2$) is generally limited to a few miles downwind of a source, while $O_3$ and $NO_2$ generally extend much farther downwind.

The ROI for the air quality analysis includes portions of the El Paso-Las Cruces-Alamogordo Interstate Air Quality Control Region (AQCR) (40 CFR §81.82). The entire AQCR includes the Texas counties of Brewster, Culberson, El Paso, Hudspeth, Jeff Davis, and Presidio and the New Mexico counties of Doña Ana, Lincoln, Otero, and Sierra. Fort Bliss is located in the portion of the AQCR that includes El Paso County in Texas and Doña Ana and Otero counties in New Mexico. Fort Bliss, while located in parts of each of the three counties in the AQCR, is not located in any nonattainment area; therefore, the CAA General Conformity Rule (40 CFR §§51 and 93) does not apply and is not addressed in the impact analysis presented in this chapter. Fort Bliss, as well as the remainder of the three counties, will be the focus of the emissions impact analysis.

The USEPA has classified portions of the AQCR for criteria pollutants; it has classified El Paso County (40 CFR §81.344) for the criteria pollutants. The only areas designated as nonattainment include a narrow strip of the city of El Paso along the Rio Grande, adjacent to Ciudad Juarez, Mexico, that is a designated maintenance area for CO and the city of El Paso, which was designated as nonattainment for $PM_{10}$ in 1990. The USEPA also has classified Doña Ana and Otero counties in New Mexico (40 CFR §81.332) for criteria pollutants. A portion of Doña Ana County (Anthony, New Mexico) is designated as moderate nonattainment for $PM_{10}$.

The ROI is located in the northern Chihuahuan Desert and has a subtropical desert climate characterized by low rainfall and humidity, hot summers, moderate winters, wide temperature variations, and more than 200 days of sunshine annually. Much of the annual precipitation occurs in July, August, and September in the form of brief, heavy rainstorms that can frequently cause localized flooding. Periods of extreme dryness can last up to several months, and much of the state, including the ROI, has suffered from a severe drought that began in the fall of 2010.

The annual average temperature is 17°C (63.3°F) with a record low of minus 13°C (8°F) and a record high of 46°C (114°F). Daytime humidity is generally low, ranging from 10 to 14 percent. Because of the mountainous terrain and the Rio Grande Valley, there are large diurnal and regional fluctuations in humidity within the ROI.

During the winter, average wind speeds range from 8.2 to 9.0 miles per hour (mph) and are predominantly from the north. The highest average wind speeds (11.3 mph) occur during early spring. The combination of moderately strong sustained winds and the low average precipitation contribute considerably to the occurrence of dust and sand storms in the area. These storms can have a substantial impact on air quality, and as a result, both El Paso and Doña Ana counties have implemented Natural Events Action Plans to address potential exceedances of the $PM_{10}$ NAAQS due to high wind events. Prevailing wind patterns associated with the area high-wind events make it unlikely that Fort Bliss land holdings are a significant $PM_{10}$ contributor; however, Fort Bliss is party to both Natural Events Action Plan agreements. Monitoring stations in El Paso County recorded exceedances for $PM_{10}$ in 2009 to 2011. Stations in Doña Ana County also have recorded exceedances of $PM_{10}$ (2008). During the summer months, average wind speeds drop to their lowest levels of the year (less than 8.0 mph). The predominant wind direction during the summer months is from the south-southwest.

The closest Prevention of Significant Deterioration (PSD) Class I area is the Guadalupe Mountains National Park, which is 55 miles east of Fort Bliss.

### 3.3.2 Environmental Consequences

This section describes the impacts associated with implementation of any of the seven alternatives. The analysis evaluates projected future emissions, including construction and operations, to determine potential impacts. Significance thresholds for air quality impacts are presented in Table 3-1. Pollutants considered in this analysis include the criteria pollutants. Airborne emissions of Pb are only discussed for WTE plant emissions because that would be the only Pb emission source associated with the Proposed Action.

For mobile source criteria pollutant emissions, a value of 250 tons per year per pollutant was used as a comparative analysis threshold. The USEPA uses this value in its New Source Review standards as an indicator for impact analysis for listed, new major stationary sources in attainment areas. No similar regulatory threshold is available for mobile source emissions, which would be the primary sources of emissions for the construction phases and also a component of operational emissions for the Proposed Action. Lacking any mobile source emissions thresholds, the 250-ton-per-year major stationary source threshold was used to equitably assess and compare mobile source emissions.

For stationary sources, the operational emissions of the sources are evaluated against the criteria pollutant threshold of 250 tons per year and 10 tons per year for individual HAPs or 25 tons per year for any HAP aggregate.

#### 3.3.2.1 Alternative 1 – No Action

The Net Zero initiatives for energy, water, and waste would not be implemented at Fort Bliss; therefore, no new construction would occur, and no new operational emissions would result. Electricity would continue to be provided by EPEC. The power that EPEC supplies to Fort Bliss is primarily generated at two power plants fueled by natural gas (EPEC 2012a). If the Proposed Action were not implemented, no impacts to air quality would occur. No beneficial impacts to GHG reduction would be realized from the replacement of fossil fuel energy sources with renewable energy sources and the implementation of conservation measures. Under Alternative 1, Fort Bliss would not likely meet its energy consumption, energy production, and GHG-reduction mandates.

#### 3.3.2.2 Alternative 2 – Conservation Policies and Procedures

Under Alternative 2, Fort Bliss would continue to implement policies, procedures, and BMPs to maximize resource re-use, limit waste generation, increase resource re-purposing, and increase water and energy use efficiencies in new and existing facilities. No new stationary sources would result by implementing Alternative 2. The air quality impact of the conservation policies and procedures would be a net benefit to the region because there would be an associated decrease in energy consumption and likely reductions in the use of pollution-emitting equipment, as well as the replacement of old equipment with new, cleaner technologies.

#### 3.3.2.3 Alternative 3 – Water Reclamation Pipeline

Air emissions associated with the water reclamation pipeline would be confined to the construction phase of this alternative. Implementation of the pipeline would result in construction of 24 miles of trench. Air emission impacts from the construction of the pipeline and associated equipment are shown in Table 3-4. As shown, impacts to air quality from implementation of this alternative would be less than significant. No air emissions of any significance are expected to occur as a result of operation of the water reclamation pipeline.

**Table 3-4. Estimated Construction Emissions for Reclaimed Water Pipeline**

| | VOCs | CO | NOx | SOx | $PM_{10}$ | $PM_{2.5}$ | $CO_2e$ (metric tonnes per year) |
|---|---|---|---|---|---|---|---|
| | (tons per year) | | | | | | |
| 2016 | 0.51 | 2.71 | 6.68 | 0.13 | 30.55 | 3.37 | 743 |
| Significance threshold | 250 | 250 | 250 | 250 | 250 | 250 | 25,000 |

Notes: VOCs = volatile organic compounds, CO = carbon monoxide, $NO_x$ = nitrogen oxides, $SO_x$ = sulfur oxides, $PM_{10}$ = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, $CO_2e$ = carbon dioxide equivalents

#### 3.3.2.4 Alternative 4 – Waste-to-Energy Plant

Fort Bliss would pursue the construction and operation of a WTE plant to reduce landfill waste. Several types of WTE technologies are under consideration for this alternative. As described in Chapter 2, technologies considered include mass-burn incineration, gasification, pyrolysis, anaerobic digestion, and fermentation. Mass burn incineration has the highest emission rates of the available technologies; as such, it was used as the basis for the following impacts assessment.

### Construction Impacts

Construction-related air quality impacts would result from emissions from construction equipment used for land clearing, site preparation (i.e., excavation/fill, trenching, and grading), gravel and concrete work, paving, and building or tower construction associated with the WTE plant, access roads, and transmission lines. Typical construction equipment associated with this work would include bulldozers, backhoes, scraper/hauler/excavators, graders, compactors, concrete mixers, a concrete batch plant, cranes, rollers, paving machines, pile drivers, fork lifts, diesel generators, and dump trucks, concrete trucks, and delivery trucks. Emissions would also result from construction workers commuting to and from the construction site in personal vehicles. Emissions associated with construction equipment would include volatile organic compounds (VOCs), CO, nitrogen oxides ($NO_x$), sulfur oxides ($SO_x$), $PM_{10}$, and $PM_{2.5}$. The amount of emissions would depend on the size of WTE plant and length of transmission lines and access roads. These details of the WTE plant are not known at this time; however, it is anticipated that construction-related air quality impacts would range from less than significant to significant but mitigable. Any future WTE project would undergo appropriate, additional NEPA analysis, including analysis of the potential location of the WTE plant and the proposed technology. The construction emissions mitigation plan, as discussed in Chapter 5, would be adhered to during the construction of the WTE plant.

### Operations Impacts

Direct impacts of Alternative 4 would result from the daily operation of the WTE plant. WTE plant operations would result in emissions from the actual combustion of waste, support equipment, and personal vehicles that staff would use when commuting from the El Paso area to Fort Bliss. The majority of the pollutants associated with the WTE plant would be a result of the combustion of the MSW. Waste would be screened prior to combustion to ensure that hazardous waste is not included in the waste stream. Ancillary equipment anticipated to be associated with the WTE plant includes diesel fire pumps, an emergency generator, and storage silos for dry chemicals. In addition to WTE plant operations, sources of emissions associated with Alternative 4 include the garbage trucks that would be hauling MSW to the WTE plant and hauling ash from the WTE plant to its point of disposal.

A WTE plant would be subject to permitting requirements under the federal PSD program, including the New Source Review. The operator of the WTE plant would be required to apply for a permit from the TCEQ prior to construction. The New Source Review permit would be obtained prior to construction, and a Title V operating permit would be obtained prior to operation. It is expected that these permits would be held by the entity responsible for design and operation of the plant, whether that be a contractor or Fort Bliss. The WTE plant also would have to comply with New Source Performance Standards for MSW combustors. It is expected that the WTE plant would be controlled by the appropriate air pollution control devices (APCDs) to meet emissions requirements of the PSD program and the New Source Performance Standards. These APCDs are evaluated to obtain the best available control technology and Lowest Achievable Emissions Rate technology. BMPs would be in place to ensure proper combustion to meet air pollutant control requirements. During operation of the plant, it is possible that occasional malfunctions would occur in an APCD and emissions would be temporarily higher. Permit conditions would most likely be set with requirements for upset conditions (i.e., when emission limits are not met because of a malfunction) and detail the appropriate actions that would be required to maintain compliance.

Once the size and location of the WTE plant have been determined, future NEPA analysis would evaluate the WTE plant emission impacts on the closest Class I area, Guadalupe Mountains National Park, using the Federal Land Manager's Air Working Group (FLAG)-recommended "initial screening test" methodology (FLAG 2010). This test is based on screening criteria introduced by the USEPA as part of its Regional Haze Regulation. For stationary sources located greater than 50 kilometers (31 miles) from the subject Class I area, the quantity over distance test is applied to determine whether any further visibility analysis is necessary. Quantity over distance is the estimated annual emissions over distance value that constitutes the initial screening test. A value less than or equal to 10 is presumed to have no adverse impact and no further analysis is required. Based on these criteria, the USEPA has concluded that the following sources would not be considered to cause or contribute to visibility impairment:

- Stationary sources located more than 50 kilometers (31 miles) from any Class I area that emit less than 500 tons per year of NOx or $SO_2$ (or NOx and $SO_2$ combined)
- Stationary sources located more than 100 kilometers (62 miles) from any Class I area that emit less than 1,000 tons per year of NOx or $SO_2$ (or NOx and $SO_2$ combined)

In addition to the above thresholds, the FLAG guidance also evaluates $PM_{10}$ and sulfuric acid ($H_2SO_4$) mist because these pollutants also adversely affect visibility and contribute to other resource impacts. The federal land manager would consider a source located greater than 50 kilometers (31 miles) from Class I area to have negligible impacts with respect to Class I Air Quality Related Values if its total $SO_2$, NOx, $PM_{10}$, and $H_2SO_4$ annual emissions (in tons per year, based on 24-hour maximum allowable emissions) divided by the distance (in kilometers) from the Class I area are 10 or less.

Section 165 of the CAA requires the USEPA or the state/local permitting authority to notify the federal land manager of any new or modified major facility proposing to locate within 100 kilometers (62 miles) of a Class I area. The TCEQ would be required to forward the WTE PSD application to the federal land manager for review and analysis as soon as possible after receipt.

Direct impacts to air quality from a WTE plant and associated operations are anticipated to range from less than significant to significant but mitigable. It is assumed that appropriate APCDs would be incorporated into any WTE plant design to mitigate impacts and comply with permit requirements. Any future WTE project would undergo appropriate, additional NEPA analysis, including analysis of the potential location of the WTE plant and the proposed technology.

Implementation of Alternative 4 would add electrical power generating capability to Fort Bliss, thereby supporting Net Zero goals and energy mandates for renewable energy production and GHG emissions reductions. It is anticipated that the emissions generated under Alternative 4 for Fort Bliss' use would be lower than the emissions generated to produce the same amount of power through commercial means today, therefore, resulting in beneficial indirect impacts.

### 3.3.2.5 Alternative 5 – Geothermal Energy Facility

Development of a geothermal energy facility would have an estimated 20-MW production output and could include a CST array, located on 20 acres adjacent to the facility. Construction activities, such as well field development, site preparation, plant construction, and pipeline installation, are estimated to require 35 construction workers for 36 months (Hillesheim 2013).

Table 3-5 presents construction emissions for the geothermal energy facility. Construction emissions would occur from the operation of heavy duty diesel equipment and onsite construction workers' privately owned vehicles, and fugitive dust would occur from land-disturbing activities.

**Table 3-5. Estimated Construction Emissions for Geothermal Plant 2016–2017**

| | VOCs | CO | NOx | SOx | $PM_{10}$ | $PM_{2.5}$ | $CO_2e$ (metric tonnes per year) |
|---|---|---|---|---|---|---|---|
| | (tons per year) | | | | | | |
| 2016 | 0.55 | 3.08 | 10.40 | 0.18 | 5.09 | 0.87 | 979 |
| Significance threshold | 250 | 250 | 250 | 250 | 250 | 250 | 25,000 |

Notes: VOCs = volatile organic compounds, CO = carbon monoxide, $NO_x$ = nitrogen oxides, $SO_x$ = sulfur oxides, $PM_{10}$ = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, $CO_2e$ = carbon dioxide equivalent

Geothermal energy production has a lower environmental impact than current power production methods used (i.e., EPEC natural gas-powered power plants) because the energy source is underground and the surface energy conversion equipment is relatively compact, making the overall footprint of the system small. Because geothermal power plants provide dispatchable base-load capacity, there are no storage or backup-power requirements, further reducing air emission source issues (Massachusetts Institute of Technology 2006). At this time, Fort Bliss does not know how hot the geothermal resource is and, therefore, whether or not it is viable. A study is currently under way to determine the potential of the resource. Because specifics on the geothermal capacity and technology are not available, quantitative assessment of operational air emissions cannot be made, although impacts are anticipated to be less than significant based on the relatively minimal emissions typically associated with geothermal energy facilities in general. Emission control technology is readily available for any potential emissions and would be included in the design of the facility and air permitting process.

An estimated three to six operation and maintenance employees may be required. Operation emissions include an estimated five vehicles commuting to the facility each day. Table 3-6 presents operational emissions for the geothermal plant with CST array.

**Table 3-6. Alternative 5 – Geothermal Plant with Concentrating Solar Thermal Array Operational Emissions**

| | VOC | CO | NOx | SOx | $PM_{10}$ | $PM_{2.5}$ | $CO_2e$ (metric tonnes per year) |
|---|---|---|---|---|---|---|---|
| | (tons per year) | | | | | | |
| Staff commute | 0.03 | 0.88 | 0.13 | 0.00 | 0.01 | 0.00 | 25.44 |

Notes: VOCs = volatile organic compounds, CO = carbon monoxide, $NO_x$ = nitrogen oxides, $SO_x$ = sulfur oxides, $PM_{10}$ = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, $CO_2e$ = carbon dioxide equivalent

Overall, the emissions generated under Alternative 5 for Fort Bliss would be lower than the emissions generated to produce the same amount of power through commercial means today. Potential beneficial indirect impacts could result in a regional reduction in air pollution due to power generation from a renewable source.

### 3.3.2.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Alternative 6 includes the installation and operation of a stand-alone CSP array that would be located on up to 300 acres within the STA environs. Transmission lines would be constructed and tied in to the East Bliss Substation.

Construction emissions are presented in Table 3-7 and were calculated based on a 2-year construction period. Under this alternative, the transmission lines are estimated to be 7 miles long. As indicated in Table 3-7, air emission impacts from the construction of the CSP would be less than significant.

**Table 3-7. Estimated Construction Emissions for Concentrating Solar Power Array with Dry-cooled Technology**

| | VOCs | CO | NOx | SOx | $PM_{10}$ | $PM_{2.5}$ | $CO_2e$ (metric tonnes per year) |
|---|---|---|---|---|---|---|---|
| | (tons per year) | | | | | | |
| 2016 | 2.19 | 23.04 | 30.76 | 0.57 | 98.07 | 10.77 | 4,076 |
| 2017 | 1.94 | 21.77 | 28.23 | 0.53 | 64.85 | 7.39 | 3,661 |
| Significance threshold | 250 | 250 | 250 | 250 | 250 | 250 | 25,000 |

Notes: VOCs = volatile organic compounds, CO = carbon monoxide, $NO_x$ = nitrogen oxides, $SO_x$ = sulfur oxides, $PM_{10}$ = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, $CO_2e$ = carbon dioxide equivalent

Air pollutant emissions from the operation of the CSP array include emissions from the personal vehicles of approximately 28 staff members. Table 3-8 presents the estimated air emissions from commuting staff's vehicles. Based on the estimated activity levels, the emissions from the mobile sources associated with the CSP operation would be less than significant.

**Table 3-8. Alternative 6 – Concentrating Solar Power Worker Commute Emissions**

| | VOC | CO | NOx | SOx | $PM_{10}$ | $PM_{2.5}$ | $CO_2e$ (metric tonnes per year) |
|---|---|---|---|---|---|---|---|
| | (tons per year) | | | | | | |
| Staff commute | 0.09 | 2.74 | 0.39 | 0.00 | 0.02 | 0.01 | 79.13 |

Notes: VOCs = volatile organic compounds, CO = carbon monoxide, $NO_x$ = nitrogen oxides, $SO_x$ = sulfur oxides, $PM_{10}$ = suspended particulate matter, $PM_{2.5}$ = fine particulate matter, $CO_2e$ = carbon dioxide equivalent

In order to evaluate indirect impacts of implementing Alternative 6, the emissions generated from the CSP array were compared to the emissions that EPEC would generate to provide the same amount of electricity to Fort Bliss. The comparisons are shown in Table 3-9. As Table 3-9 indicates, the emissions from EPEC's plants would be higher for every pollutant. Other than the less than significant emissions during construction and negligible emissions from commuter vehicles, solar energy generation would have no emissions and would be lower than the emissions generated to produce the same amount of power through commercial means today. Potential beneficial indirect impacts could result in a regional reduction in air pollution due to power generation from a renewable source.

**Table 3-9. Potential Indirect Emissions Impacts Concentrating Solar Power Array under Alternative 6**

| Emissions | VOCs | CO | NOx | $SO_2$ | $PM_{10}$ | $PM_{2.5}$ | $CO_2e$ (metric tonnes per year) |
|---|---|---|---|---|---|---|---|
| | (tons per year) | | | | | | |
| 50 MW generated at EPEC natural gas-fueled power plants | 21 | 74 | 438 | 2 | 9 | 9 | 313,109 |
| Emissions from CSP plant power generation[a] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Comparative emissions result | –21 | –74 | -438 | -2 | –9 | –9 | –313,109 |

Notes: MW = megawatt, CSP = concentrating solar power, EPEC = El Paso Electric Company, VOCs = volatile organic compounds, CO = carbon monoxide, $NO_x$ = nitrogen oxides, $PM_{10}$ = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, $CO_2e$ = carbon dioxide equivalent

[a] CSP power generation is assumed to produce negligible emissions rounded to 0.

### 3.3.2.7 Alternative 7 – Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as biomass, large-scale wind, and solar PV facilities, may be developed on Fort Bliss as long as the technology and location meet the alternatives screening criteria presented in Section 2.2 and the environmental screening criteria presented in Appendix C, *Environmental Screening Criteria*. Air quality impacts for additional geothermal or solar resources that would be implemented at Fort Bliss would be similar as those described for Alternatives 5 and 6. Other minor disturbance activities might involve constructing unpaved access roads, installing transmission lines, and grading, although the small-scale nature of these projects are expected to generate negligible emissions. Therefore, it can be concluded that the emissions from the construction or operation of any additional geothermal or solar resources would be less than significant. Air emissions would be evaluated for each project as they are identified and evaluated under this programmatic alternative.

Implementation of wind energy projects at Fort Bliss would result in construction emissions from the operation of heavy duty diesel equipment, onsite construction worker's privately owned vehicles, and fugitive dust from land-disturbing activities associated with the construction of turbines and transmission lines. The emissions from mobile sources associated with the wind turbine and transmission line construction would likely be of a similar magnitude to that described for Alternatives 5 and 6 and would be less than significant. Operational air emissions from wind energy would be limited to emissions from employee vehicles traveling to and from the wind turbines; these emissions would be negligible, so the air emissions from the operation would be negligible. Other than the emissions during construction and commuter vehicle emissions, wind energy generation would have no emissions and, therefore, would be lower than the emissions generated to produce the same amount of power through commercial means today. Potential beneficial indirect impacts from wind energy projects could result in a regional reduction in air pollution due to power generation from a renewable source.

Power produced from some renewable energy systems can fluctuate over the course of a day and would require the use of combined-cycle gas turbines for generating a consistent amount of energy flowing into the electrical grid. The turbines range in output from approximately 15 kW to 20 MW and would primarily be fueled by natural gas, although other fuels could be used in an emergency. Likely placement of the turbines would be near electrical substations or co-located with the solar panel arrays. The turbines would operate continuously at idle and boost output when required. Although not a renewable energy technology, gas turbines would be needed, in some instances, to effectively implement solar or other renewable technologies. Table 3-10 presents the calculated annual, uncontrolled emissions for a single 2.5-MW natural gas turbine because the actual rated output and number of gas turbines that would be used is not known. The emission factors for natural gas turbines do not change by power rating because emissions are more dependent on the actual load. A standard load of 80 percent is used for stationary gas turbines (USEPA 2000). The values for the representative single gas turbine can be aggregated additively for combinations of gas turbines or to assess a turbine with a greater energy output.

**Table 3-10. Annual Emissions for One 2.5-MW Gas Turbine (Uncontrolled Emissions)**

| VOCs | CO | NOx | $SO_2$ | PM | CO2e (metric tonnes per year) |
|---|---|---|---|---|---|
| (tons per year) | | | | | |
| 3 | 118 | 459 | 5 | 9 | 146,841 |

Notes: MW = megawatt, VOCs = volatile organic compounds, CO = carbon monoxide, $NO_x$ = nitrogen oxides, $SO_2$ = sulfur dioxide, PM = particulate matter, $CO_2e$ = carbon dioxide equivalents

### 3.3.2.8 Alternatives Combined

If all of the alternatives were implemented at Fort Bliss, it is anticipated that less than significant to significant but mitigable impacts would result from the construction and operation of a WTE plant under Alternative 4. Less than significant impacts would result from the construction and operation of Alternatives 3, 5, and 6. Alternatives 3 through 6 would provide some indirect beneficial impacts due to production of energy from a renewable source. Alternative 2 would result in beneficial impacts due to reduced energy consumption as a result of conservation measures.

## 3.4 Airspace

Airspace use and management address how and where aircraft operate in airspace in or near Fort Bliss and its ranges. This section examines the rules, regulations, and procedures for military aircraft to operate safely among all aircraft in the National Airspace System as managed by the Federal Aviation

Administration (FAA). Airspace under the National Airspace System contains all facets of navigable airspace, including terrestrial- and satellite-based navigation facilities, equipment, and services; airports or landing areas; aeronautical charts, information, services, rules, regulations, and procedures; technical information; manpower; and materials. Navigable airspace is airspace above the minimum altitudes of flight prescribed by regulations under United States Code (USC) Title 49, Subtitle VII, Part A, and includes airspace needed to ensure safety in the takeoff and landing of aircraft, as defined in 14 CFR §77.

### 3.4.1 Affected Environment

The DoD and the Army manage airspace delegated to them by the FAA in accordance with the processes and procedures outlined in DoD Directive 5030.19, *DoD Responsibilities on Federal Aviation and National Airspace System Matters* (DoD 1997) and are implemented by Army Regulation 95-2, *Airspace, Airfields/Heliports, Flight Activities, Air Traffic Control, and Navigation Aids* (U.S. Army 2008a). The DoD and the Army collaborate with the FAA to ascertain the minimum requirement for airspace, evaluating any environmental consequences of proposed airspace designations in compliance with both the FAA and the DoD's NEPA implementing regulations.

There are two categories of airspace or airspace areas: regulatory and non-regulatory. Within these two categories, there are four types of airspace: controlled, special use airspace (SUA), other, and uncontrolled airspace. Controlled airspace is airspace of defined dimensions within which air traffic control service is provided to instrument flight rule flights and to visual flight rule flights in accordance with the airspace classification (FAA 2008). Controlled airspace is categorized into five separate classes: Classes A through E. These classes identify airspace that is controlled, airspace supporting airport operations, and designated airways affording en route transit from place to place. The classes also dictate pilot qualification requirements, rules of flight that must be followed, and the type of equipment necessary to operate within that airspace. Uncontrolled airspace is designated Class G airspace.

The airspace around El Paso and Fort Bliss is designated by the FAA as controlled airspace for activities associated with the El Paso International Airport and the Biggs AAF (Figure 3-1). These airports are adjacently located in the northeast portion of El Paso. Biggs AAF consists of a 13,572-foot-long, Class B, concrete runway oriented on a northeast/southwest axis with associated taxiways and ramp space to support full military, Department of Justice, and other government aircraft operations. El Paso International Airport has three runways and has significant levels of passengers from a number of U.S. cities. While not examined in this report, the Abraham Gonzalez International Airport is located in Ciudad Juarez, Mexico, approximately 12 miles to the south.

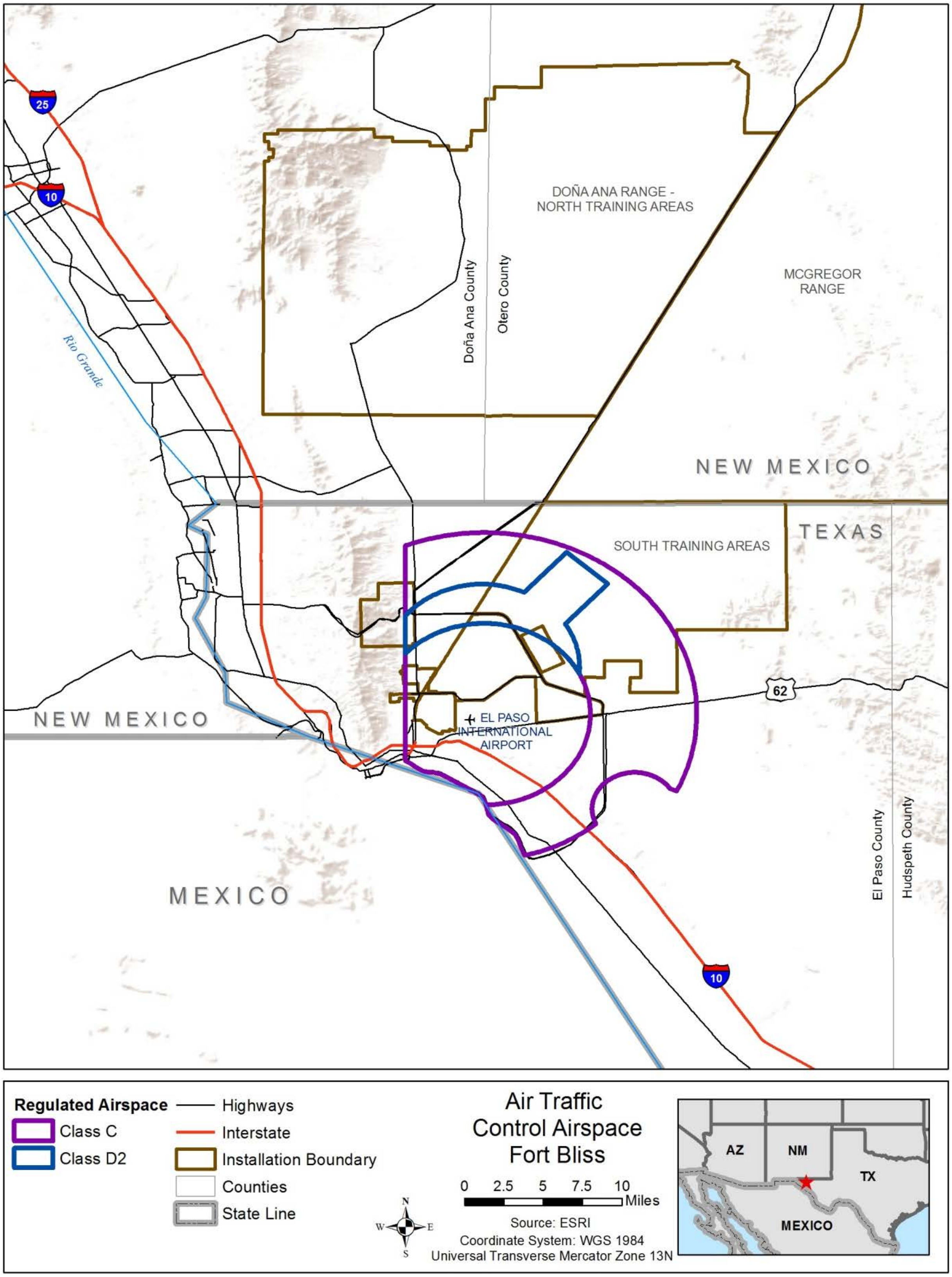



**Figure 3-1. Air Traffic Control Airspace at Fort Bliss**

Airspace around both El Paso International Airport and Biggs AAF is controlled and therefore is designed to provide aircraft separation for approach, landing, and takeoff from the airports. The five classifications of controlled airspace relate to the level of service provided and the amount of regulation imposed. Most airspace above 1,200 feet above ground level (AGL) is controlled and in the presence of busier airports, controlled airspace extends all the way to the surface. In the area of El Paso International Airport and Biggs AAF, Classes C, D, and E airspace exist. Class C airspace extends from the surface upward to 8,000 feet above mean sea level (amsl) outward to a 5-nautical-mile radius, from 5 to 10 nautical miles, a Class C shelf extends with a floor of approximately 1,200 AGL and a ceiling of approximately 4,000 feet amsl (U.S. Army 2012b). Based on the presence of the international boundary with Mexico, the radius is not a complete circle and ends at the boundary. For support of Biggs AAF, a Class D surface area extension begins at the 5-nautical-mile loop of the Class C airspace to the northeast in a keyhole shape in order to provide greater communication and weather requirements for operations under the visual flight rule than would otherwise exist. A Class E airspace shelf extends beyond the edges of Class D and E airspace and covers airspace at 700 feet AGL and extends upward to 1,200 feet AGL, where it joins the overlying Class E airspace (U.S. Army 2010b).

Outside of the controlled airspace over El Paso, SUA dominates the Fort Bliss McGregor Range and the Doña Ana Range-NTA (Figure 3-2). The SUA associated with Fort Bliss in the McGregor Range and the Doña Ana Range-NTA is part of a larger series of SUA that covers much of the southeast quadrant of New Mexico. Different SUA categories in this area include Restricted (R-) Areas, Military Operations Area, and Military Training Routes. Within McGregor Range, the SUA is R-5103 A/B/C, and within the Doña Ana Range-NTA, the SUA is R-5107 A/K.

The R-5103 A restricts airspace from the surface to 17,999 feet amsl and R-5103 B/C restricts airspace from the surface to an unlimited ceiling elevation. R-5107 A restricts use from the surface to an unlimited ceiling elevation as does R-5107 K; however, this restricted use is only in effect from 7:00 a.m. to 8:00 p.m. Monday through Friday and at other times when requested. The principal use and purposes of these SUAs are to:

- Protect non-participating aircraft from range activities occurring on the ground
- Promote realistic training, allowing scenarios to unfold without training distracters, such as suspensions that are required when civilian aircraft penetrate the Restricted Areas
- Segregate non-participating aircraft from high-speed military fighter aircraft engaged in simulated aerial combat
- Segregate non-participating aircraft from unmanned aircraft system flight operations

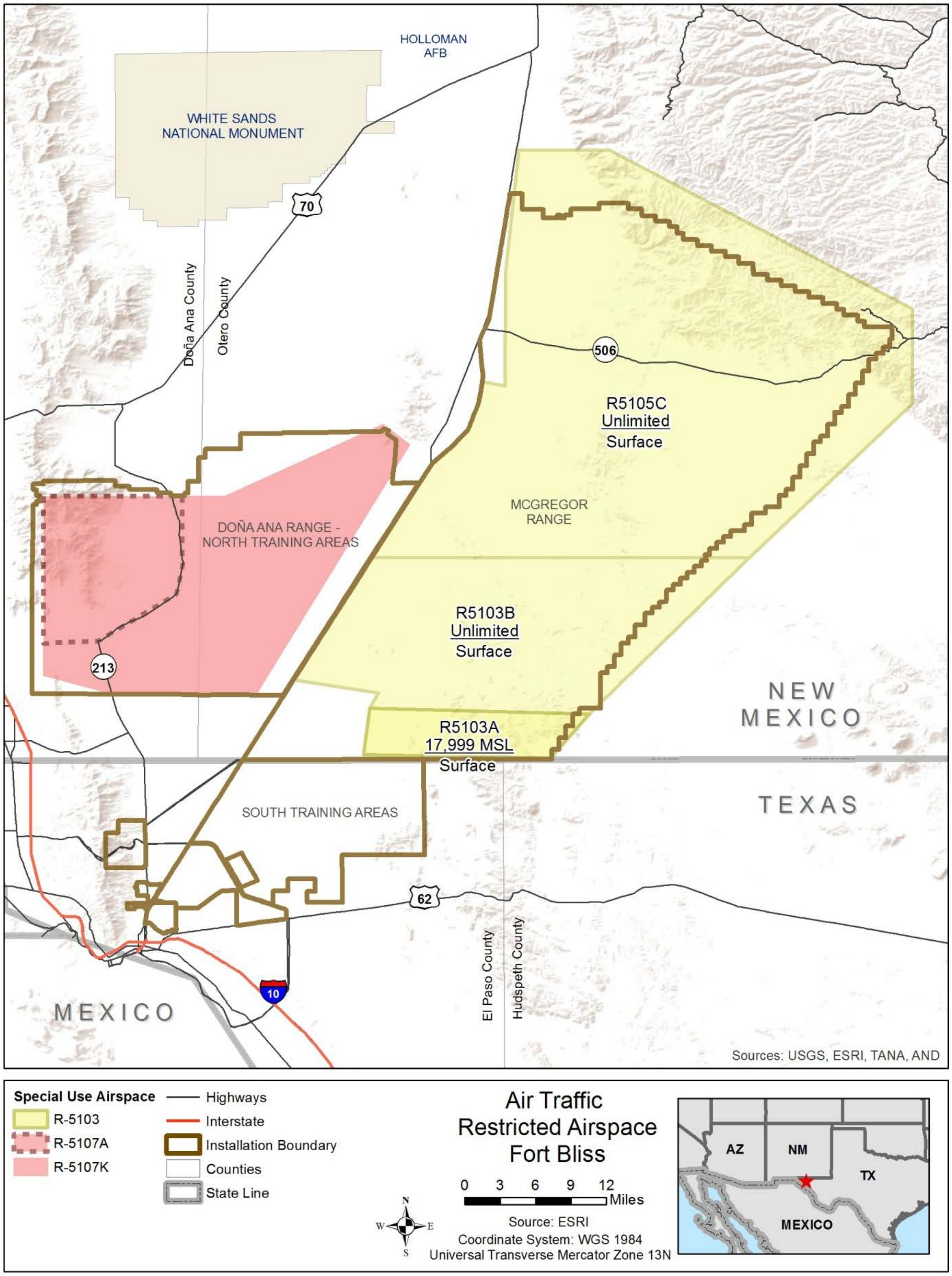



**Figure 3-2. Restricted Airspace at Fort Bliss**

Military fighter aircraft stationed or temporary duty aircraft at Holloman AFB and elsewhere use the upper extents of Fort Bliss' airspace to train in aerial combat (U.S. Army 2010b).

Between the El Paso International Airport Class and Biggs AAF Classes C, D, and E airspace and the Fort Bliss Restricted Areas, there is a segment of airspace that is designated as Class G, or uncontrolled, airspace below 1,200 feet amsl with non-designated Class E airspace above that. Class E airspace extends from the surface to the overlying or adjacent controlled airspace. Within the Class G airspace and the non-designated Class E airspace, any aircraft can fly at any altitude from the surface up to 18,000 feet amsl without contact with the air traffic controller at El Paso International Airport or Biggs AAF. This Class E and G airspace also connects with a Class E and G corridor extending from El Paso to Alamogordo, New Mexico, generally following the U.S. Route 54 corridor (U.S. Army 2012b).

Within this Class E and G airspace area, most of which is over Fort Bliss property, the number of aircraft operating is estimated at approximately 50 aircraft per week, mostly at altitudes of between 6,500 and 8,500 feet amsl (U.S. Army 2012b). The undesignated Class E and Class G airspace is beyond the normal takeoff and landing approach slopes controlled by the air traffic controller at El Paso International Airport, and commercial aircraft in that area are operating at altitudes above 5,500 feet amsl. Military aircraft (primarily helicopters) flying out of Biggs AAF would generally operate in the Class E and G airspace at altitudes between the surface and 1,200 feet AGL as they land or take off for training on the FBTC (U.S. Army 2012b).

### 3.4.2 Environmental Consequences

The type, size, shape, and configuration of individual airspace elements in a region are based upon, and are intended to, satisfy competing aviation requirements. Potential impacts could occur if air traffic in the region and/or the air traffic controller systems were encumbered by changed flight activities contributed by the Proposed Action or alternatives. Airspace impacts significance thresholds are presented in Table 3-1.

#### 3.4.2.1 Alternative 1 – No Action

Under the No Action Alternative, Fort Bliss would not pursue additional Net Zero initiatives beyond those policies and procedures that are currently in place; therefore, no impacts to airspace would occur. No impacts to Biggs AAF or El Paso International Airport would occur and activities at these airports would remain unchanged. Airspace classifications throughout Fort Bliss and the surrounding region would remain unchanged because under the No Action Alternative, Fort Bliss would not implement any activities that would require alterations to existing classifications. The implementation of the No Action Alternative would not affect military SUA.

#### 3.4.2.2 Alternative 2 – Conservation Policies and Procedures

Under Alternative 2, Fort Bliss would continue to implement policies, procedures, and BMPs to maximize resource re-use, limit waste generation, increase resource re-purposing, and increase water and energy use efficiencies in new and existing facilities. Where small wind turbines are installed, Fort Bliss would adhere to all FAA distance and height requirements and would notify the FAA of all construction activities as applicable per 14 CFR §77.9. Under Alternative 2, Fort Bliss would adhere to all FAA airspace regulations, so actions would have no potential to impact airspace use or designation; therefore, there would be no impacts to airspace.

#### 3.4.2.3 Alternative 3 – Water Reclamation Pipeline

Under Alternative 3, Fort Bliss would pursue the construction and use of a water reclamation pipeline to provide Fort Bliss with reclaimed water for the Installation's secondary uses. Although construction activities and policies associated with Alternative 3 would occur on East and West Bliss, the majority would be either underground or at a minimal height resulting in no impacts to airspace. As a result, airspace classifications throughout Fort Bliss and the surrounding region would remain unchanged under Alternative 3. Activities associated with Alternative 3 would not be located in the military SUA and would have no impacts to these areas.

#### 3.4.2.4 Alternative 4 – Waste-to-Energy Plant

A WTE plant would require at least one boiler with a stack typically 180 to 250 feet tall. The number of boilers and stacks would depend on the ultimate size of the WTE plant. Siting of the plant within Fort Bliss would be based on consultation with the FAA and compliance with all FAA height and distance restrictions regarding the WTE boiler stack(s) and proximity to Biggs AAF and El Paso International Airport. It is also anticipated that siting of the WTE plant would be consistent with the environmental screening criteria included in Appendix C. As a result, it is anticipated that impacts to civilian and military airspace would be negligible. However, the construction and operation of any future WTE plant would require further NEPA analysis based on the technology and location selected.

#### 3.4.2.5 Alternative 5 – Geothermal Energy Facility

Alternative 5 would not be located near El Paso International Airport or Biggs AAF or within the controlled airspace associated with those facilities; therefore, implementation of this alternative would not affect those airports or the controlled airspace. The project area is located in the vicinity of a landing strip associated with helicopter and unmanned aerial vehicle operations. It is anticipated, however, that no impacts would occur to this landing strip under Alternative 5 because of the distance between the proposed site and the landing strip, and the use of BMPs and technologies such as anti-glare protection for pilots. Alternative 5 would be located within military SUA, but no impacts are anticipated because the facility would not affect flight activity in the area. During construction and operation of the CST, BMPs and technologies to reduce possible glare for flight activities occurring in this area would be used, so the military SUA would experience a less than significant impact.

#### 3.4.2.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Under Alternative 6, Fort Bliss would develop up to 300 acres in the STA for CSP technology along with the required transmission lines. While the CSP would be located in the vicinity of El Paso International Airport and Biggs AAF, it is expected that BMPs and technologies would be used to minimize potential glare from the solar mirrors and the distance to the airport and airfield would be sufficient to have less than significant impacts. Although portions of the STA are located within controlled airspace, Alternative 6 is not anticipated to have any effect on current flight activity; therefore, there would be no impact to airspace classifications within the existing controlled airspace.

#### 3.4.2.7 Alternative 7 – Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as biomass, large-scale wind, and solar PV facilities, may be developed on Fort Bliss as long as the technology and location meet the alternatives screening criteria presented in Section 2.2 and the environmental screening criteria presented in Appendix C, *Environmental Screening Criteria*. Locating other renewable energy technologies in compliance with the screening criteria would minimize any potential impacts to Biggs AAF, El Paso International Airport, controlled airspace and airspace classifications, and military SUA. Any future solar facilities are anticipated to have impacts similar to those described for Alternative 6, and it is expected that pilots would use BMPs and applicable technologies to reduce the potential for glare. Therefore, potential impacts to airspace from Alternative 7 are anticipated to be less than significant.

#### 3.4.2.8 Alternatives Combined

The alternatives would either have no or less than significant impacts to airspace, and none of the alternatives would require adjustments to existing airspace classifications. Therefore, the selection of a combination of alternatives would likely result in less than significant impacts to airspace. Fort Bliss would coordinate with the FAA or Holloman AFB on the locations of future projects.

## 3.5 Biological Resources

Biological resources include living, native, or naturalized plant and animal species and the habitats within which they occur. Plant associations are generally referred to as vegetation and animal species are referred to as wildlife. Habitat can be defined as an area’s resources and conditions that produce occupancy of a plant or animal (Hall et al. 1997). Although the existence and preservation of biological resources are intrinsically valuable, these resources also provide aesthetic, recreational, and socioeconomic values to society. For purposes of this analysis, these resources are divided into three major categories: vegetation, wildlife, and sensitive species.

The ROI for biological resources includes Fort Bliss and its immediate vicinity. The analysis focuses primarily within the specific project areas identified for Alternatives 3 through 6 (see Chapter 2). Specific project areas have been identified for Alternatives 3 and 5, while Alternative 6 is planned for somewhere in the STA (Figure 2-1). Due to the programmatic nature of Alternatives 4 and 7, however, the affected environment could be anywhere on the Installation that meets identified screening criteria and is compatible with future development. Biological information for all of Fort Bliss can be found in the Fort Bliss Army Growth and Force Structure Realignment EIS (U.S. Army 2010b), the Fort Bliss Mission and Master Plan, Final Supplemental Programmatic EIS (U.S. Army 2007b), or the Fort Bliss Integrated Natural Resources Management Plan (INRMP) (U.S. Army 2001).[8] As a result, general information for the entire Installation is discussed.

### 3.5.1 Affected Environment

#### 3.5.1.1 Vegetation

Vegetation types include all existing terrestrial plant communities as well as their individual component species. Fort Bliss is located in the northern Chihuahuan Desert with noticeable vegetation variants locally. Fort Bliss is dominated by desert basin and mountains with a small proportion of the mountains occupied by conifer woodlands or forests. The land cover types on Fort Bliss were re-mapped in 2008 and include 16 land cover mapping units and 14 vegetation categories. Major vegetation categories include shrublands (basin desert shrubland [coppice dunes], basin sandshrub, basin desert lowland shrubland, creosote piedmont shrublands, foothill desert shrublands, and foothills desert scrub), grasslands (sandy plains desert grassland, basin lowland grassland, mesa grassland, and foothill desert grassland), woodlands (montane riparian, montane shrublands, montane woodland, and montane forest), and other (military facilities, no data). Under Alternative 3, Fort Bliss would pursue the construction and use of a water reclamation pipeline located on East and West Bliss within areas that are primarily paved, landscaped, or disturbed. Vegetation types and the number of acres for the remaining project alternative locations are shown in Table 3-11. More detailed descriptions of each of these vegetation types can be

[8] See Fort Bliss' website at: https://www.bliss.army.mil/DPW/Environmental/EISDocuments2.html

found in the Fort Bliss Army Growth and Force Structure Realignment EIS (U.S. Army 2010b) or in the INRMP (U.S. Army 2001). Figures 3-3 and 3-4 depict the vegetation types found within the project areas of Alternatives 5 and 6, respectively.

Three vegetation communities on Fort Bliss are considered locally important natural resources due to their rareness, sensitivity, uniqueness, and/or high-quality and undisturbed nature. Black grama grasslands are rare and endangered ecosystems that were once widespread within the Chihuahuan Desert. Sand sagebrush vegetation can be found in three unique and relatively undisturbed high-quality areas on Fort Bliss: northern Otero mesa, Culp canyon, and central Tularosa Basin on the east side of the Jarilla Mountains. The unique and isolated shinnery oak (*Quercus havardii*) islands are located within the sand dunes at the entrance of Culp Canyon and in the Aeloian Basin.

**Table 3-11. Number of Acres of Each Vegetation Type within the Project Areas**

| Vegetation Type | Alternative 4[a] | Alternative 5 | Alternative 6[b] | Alternative 7[a] |
|---|---|---|---|---|
| **Shrublands** | | | | |
| Basin Desert Shrubland (coppice dunes) | Unknown/TBD | 0 | 71,004.8 | Unknown/TBD |
| Basin Sandshrub | Unknown/TBD | 40.0 | 2,653.9 | Unknown/TBD |
| Basin desert lowland shrubland | Unknown/TBD | 0 | 1,728.8 | Unknown/TBD |
| Creosote piedmont shrublands | Unknown/TBD | 0 | 2,298.0 | Unknown/TBD |
| Foothill desert shrublands | Unknown/TBD | 0 | 4,329.4 | Unknown/TBD |
| Foothills desert scrub | Unknown/TBD | 0 | 137.7 | Unknown/TBD |
| **Grasslands** | | | | |
| Sandy plains desert grassland | Unknown/TBD | 0 | 1,563.3 | Unknown/TBD |
| Foothills desert grassland | Unknown/TBD | 0 | 165.1 | Unknown/TBD |
| Basin lowland grassland | Unknown/TBD | 0 | 121.9 | Unknown/TBD |
| **Other** | | | | |
| Non-native vegetation | Unknown/TBD | 0 | 1,442.8 | Unknown/TBD |
| **Total Acres** | Unknown/TBD | **40.0** | **85,445.7** | Unknown/TBD |

Source: U.S. Army (2009b)

[a] The number of acres disturbed under Alternatives 4 and 7 is unknown. Under Alternatives 4 and 7, the affected environment could be anywhere on the Installation that meets identified screening criteria and is compatible with the Fort Bliss mission.

[b] A maximum of 300 acres would be disturbed under Alternative 6.

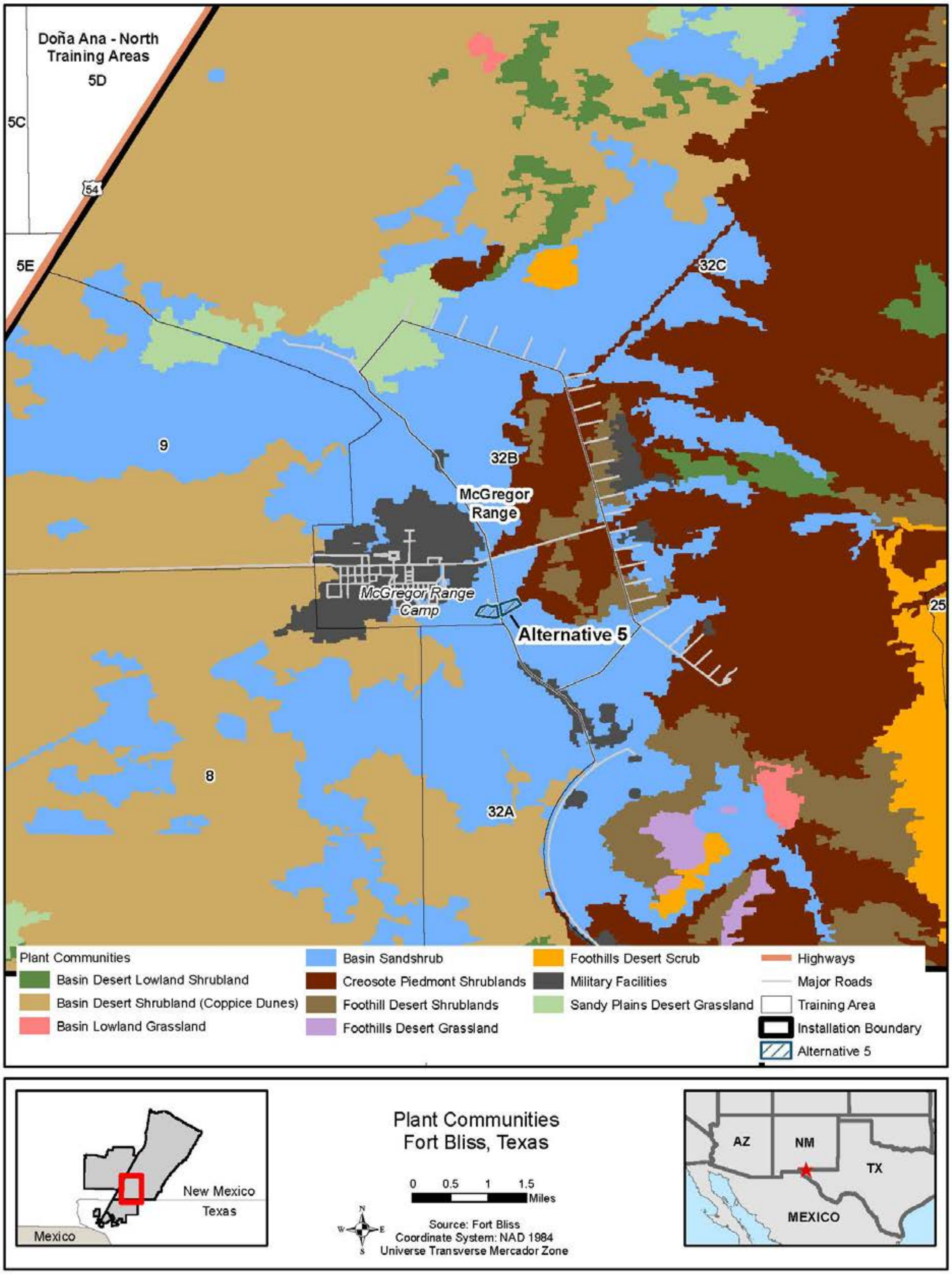



**Figure 3-3. Plant Communities in the Vicinity of Alternative 5**

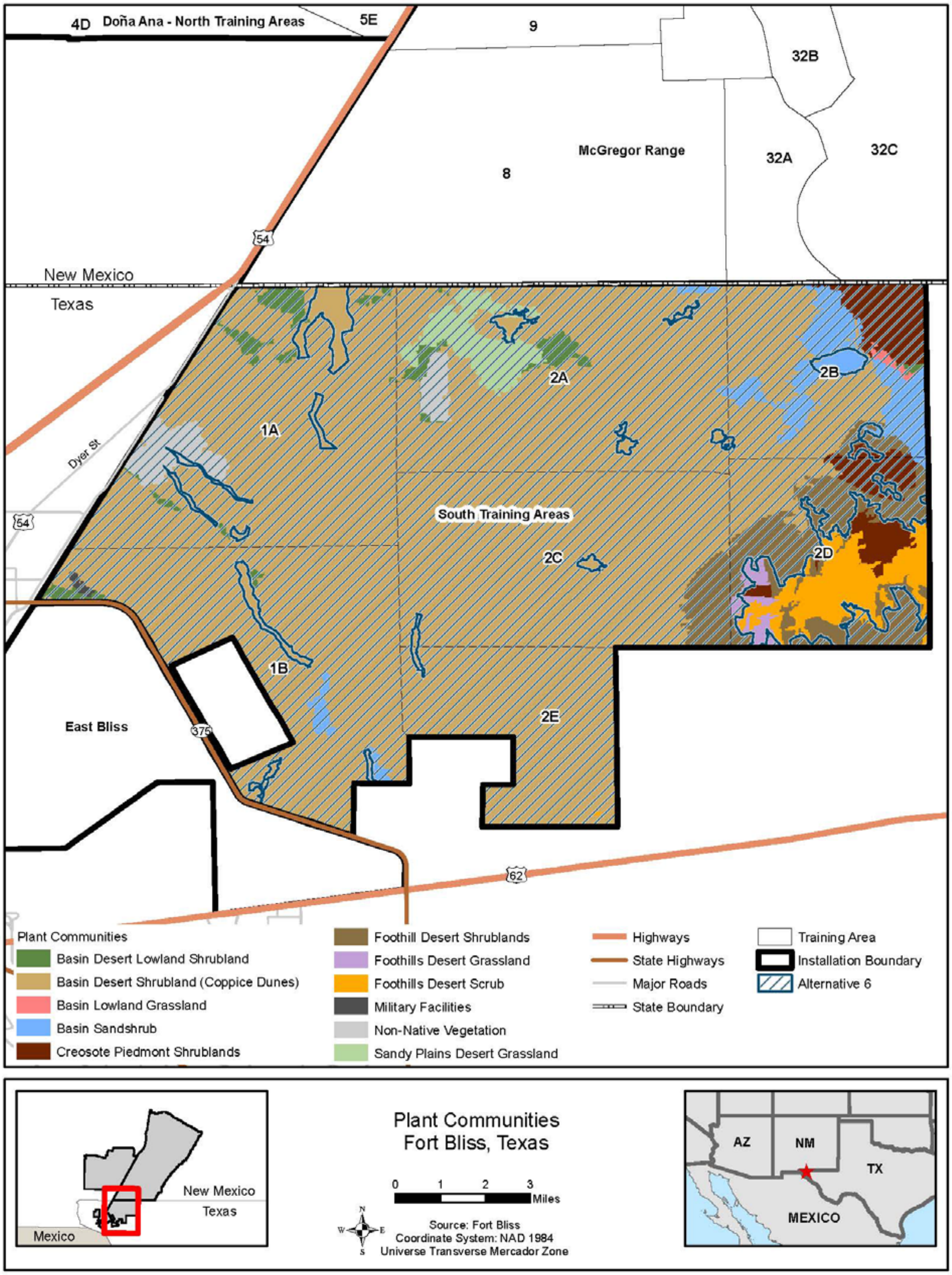



**Figure 3-4. Plant Communities in the Vicinity of Alternative 6**

### 3.5.1.2 Wildlife

Approximately 335 species of birds, 58 species of mammals, 39 species of reptiles, and 8 species of amphibians are known to occur on Fort Bliss. A detailed list of species found on Fort Bliss is included in the INRMP (U.S. Army 2001). Species listed below do not represent an all-inclusive list of species found on the Installation. Common game species found on Fort Bliss include mule deer (*Odocoileus hemionus*), oryx (*Oryx gazella*), mourning doves (*Zenaida macroura*), white-winged doves (*Zenaida asiatica*), scaled quail (*Callipepla squamata*), and Gambel's quail (*Callipepla gambelii*). Other nongame mammal species include the Arizona black-tailed prairie dog (*Cyomys ludovicianus arizonensis*) found on McGregor Range, and various rodent species found in arroyo-riparian habitats and adjacent upland habitats, including the silky pocket mouse (*Perognathus flavus*) and Merriam's kangaroo rat (*Dipodomys merriami*). Other mammals commonly found in desert shrubland habitats on Fort Bliss include the desert cottontail (*Sylvilagus audubonii*) and black-tailed jackrabbit (*Lepus californicus*). Larger mammals found in desert shrubland habitats include the coyote (*Canis latrans*), badger (*Taxidea taxus*), bobcat (*Lynx rufus*), and kit fox (*Vulpes macrotis*). Several bat species have been observed on Fort Bliss, including western pipistrelles (*Pipistrellus hesperus*), Myotis (*Myotis* spp.), and free-tailed bats (*Tadarida* sp.) (U.S. Army 2001).

Common reptile species found on Fort Bliss include the western diamondback rattlesnake (*Crotalus atrox*) and bull snake (*Pituophis catenifer*) (U.S. Army 2001). The most common amphibians include the Great Plains toad (*Bufo cognatus*) and the Mexican spadefoot (*Spea multiplicata*) (U.S. Army 2007c).

Most of the bird species that have been recorded on Fort Bliss are protected under the Migratory Bird Treaty Act. Riparian habitat is one of the most important habitats for migratory birds (Kozman and Mathews 1997). The most common species found in arroyos included the ash-throated flycatcher (*Myiarchus cinerascens*), brown-headed cowbird (*Molothrus ater*), rufous-crowned sparrow (*Aimophila ruficeps*), and verdin (*Auriparus flaviceps*) (U.S. Army 2001, Kozma 1995). Common bird species found in desert shrub habitats on Fort Bliss include the black-throated sparrow (*Amphispiza bilineata),* western kingbird (*Tyrannus verticalis),* Scott's oriole (*Icterus parisorum),* and ash-throated flycatcher (*Myiarchus cinerascens).* Common raptors on the Installation include Swainson's hawk (*Buteo swainsonii*) and turkey vulture (*Cathartes aura*), which are frequently observed in the desert shrublands. Common bird species found on the Installation include the house sparrow (*Passer domesticus*), great-tailed grackle (*Quiscalus mexicanus*), house finch (*Carpodacus mexicanus*), and rock dove (*Columba livia*) (U.S. Army 2001).

Although a complete inventory of all invertebrates on Fort Bliss has not been conducted, a number of species has been identified as being of special interest due to a variety of reasons (i.e., being endemic [a species that is only found in a given region or location and nowhere else in the world], prized by collectors, or an important food source), including various species of grasshoppers, beetles, flies, and butterflies. Recent studies suggest up to eight endemic snail species can be found in the Organ Mountains (U.S. Army 2001).

#### 3.5.1.3 Sensitive Species

Sensitive species are defined as plant and animal species listed as endangered, threatened, and proposed for listing by the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act. The federal Endangered Species Act protects federally listed endangered and threatened plant and animal species. Federally identified candidate species (species proposed for listing) are not protected under law; however, these species could become federally listed over the near term and therefore are considered herein to avoid future conflicts if they were to be listed during the preparation of this EIS. Additionally, the New Mexico Department of Game and Fish and the Texas Parks and Wildlife Department protect state-listed plant and animal species through state environmental conservation administrative codes.

Table 3-12 lists the species that have been observed or have the potential to occur (due to presence of potential habitat) within the project areas. Currently, 57 sensitive species have been observed or have the potential to occur on Fort Bliss; 6 of these species have the potential to occur within the project areas. A more detailed list and description of other sensitive species found on Fort Bliss can be found in the Fort Bliss Army Growth and Force Structure Realignment EIS (U.S. Army 2010b) or the INRMP (U.S. Army 2001).

**Table 3-12. Protected Species Known or Having the Potential to occur on Fort Bliss Within or Near the Project Areas**

| Species | Status | | | Location on Fort Bliss |
|---|---|---|---|---|
| | Federal | New Mexico | Texas | |
| **Plants** | | | | |
| Sandhill goosefoot (*Chenopodium cycloides*) | SC | -- | -- | Occasional in sandy, disturbed places, Doña Ana Range-North Training Areas. Potential to occur within Alternative 6 project areas. |
| **Invertebrates** | | | | |
| Anthony blister beetle (*Lytta mirifica*) | SC | SGCN | -- | Not known to occur on Fort Bliss, but habitat occurs in sand dunes. Potential to occur within Alternatives 5 and 6 project areas. |
| Los Olmos tiger beetle (*Cicindela nevadica)* | SC | | -- | Not known to occur on Fort Bliss, could occur in areas of limestone soil. Do not occur in sandy habitats dominated by coppice dunes. |
| **Reptiles** | | | | |
| Texas horned lizard (*Phrynosoma cornutum)* | SC | -- | T | Widespread throughout Fort Bliss. Found within open areas with sparse plant cover, commonly in loose sand or loamy soils. Potential to occur within project areas under all alternatives. |
| **Birds** | | | | |
| Western burrowing owl[a] (*Athene cunicularia)* | SC | -- | -- | Occurs throughout Fort Bliss, except the mountain areas; occurs primarily on sandy soils in all desert shrubland and grassland vegetative communities on Fort Bliss. Potential to occur within project areas under all alternatives. |
| Loggerhead shrike (*Lanius ludovicianus)* | SC | S | -- | Wintering and breeding bird on Otero Mesa and throughout Tularosa Basin. Potential to occur within project areas under all alternatives. |
| Scaled quail[a] (*Callipepla squamata*) | | | | Occurs within desert shrubland communities. Potential to occur within project areas under all alternatives. |
| Crissal thrasher[a] (*Toxostoma crissale*) | | | | Occurs within desert shrubland communities. Potential to occur within project areas under all alternatives. |
| Black-tailed gnatcatcher[a] (*Polioptila melanura*) | | | | Occurs within desert shrubland communities. Potential to occur within project areas under all alternatives. |

Source: U.S. Army (2001), Partners in Flight (2012)

Notes: -- = without status, SC/S = species of concern is not a formal category defined under the Endangered Species Act, SGCN = species of greatest conservation need, T = threatened species

[a] Priority bird species defined by Partners in Flight.

### 3.5.2 Environmental Consequences

Analysis of impacts focuses on whether and how components of the Proposed Action could affect vegetation, wildlife, or sensitive species. Impact analysis uses Geographic Information System (GIS) and other relevant biological resource references, including more specific information on the type and amount of vegetation/habitat types, wildlife species, and sensitive species that could be impacted at proposed project sites. Significance thresholds for biological resources are included in Table 3-1.

#### 3.5.2.1 Alternative 1 – No Action

Under Alternative 1, Fort Bliss would not pursue additional Net Zero initiatives. Vegetation as described in the Affected Environment section would remain unchanged. No activities would be conducted with the potential to affect wildlife and sensitive species or their habitats. Therefore, no impacts to vegetation, wildlife, or sensitive species would occur.

#### 3.5.2.2 Alternative 2 – Conservation Policies and Procedures

Under Alternative 2, Fort Bliss would continue to implement policies, procedures, and BMPs to maximize resource re-use, limit waste generation, increase resource re-purposing, and increase water and energy use efficiencies in new and existing facilities. Alternative 2 may also include development of small-scale, renewable energy projects. Construction could increase the likelihood of introduction and/or expansion of exotic or invasive plant species. Prevention and control measures presented in the INRMP would be implemented to reduce the possibility of exotic plant species invasions and further spreading of existing populations. In addition, these areas would be monitored following construction to determine whether project activities are causing an increase of exotic or undesirable plant species. If monitoring shows invasive plant species are increasing, a strategy for control would be implemented.

While no exact locations for potential projects described under Alternative 2 have been established, construction activities would likely occur on previously developed lands or disturbed, actively managed areas (i.e., mowed or landscaped) and would result in short-term increases in noise associated with construction equipment. Construction-related noise may temporarily displace wildlife and migratory bird populations from suitable habitat in the immediate vicinity of the project area. Because of the developed nature of East and West Bliss, no substantial amounts of native habitat are located within the proposed construction area. Additionally, wildlife species on East and West Bliss, as wells as those in the vicinity of the range camps, are adapted to the existing urban/industrial environment. It is possible, however, that construction-related activities, such as excavation, could result in mortality of some less mobile wildlife species. Open trenches and ditches associated with construction have the potential to trap wildlife. Mitigation measures outlined in Section 5.1.3 would minimize impacts to wildlife. Impacts to wildlife and migratory bird species from operation and maintenance activities associated with activities described under Alternative 2 would be minor because they would be similar to existing operation and maintenance activities. Impacts to wildlife, including migratory birds, from the construction activities would be less than significant.

The operation of small-scale wind turbines could potentially affect migratory birds and bats. Wind turbines can cause direct mortality of birds and bats through collision, mainly presumed to be with turbine blades. In addition, some research suggests that bat fatalities can result from rapid decompression resulting from sudden changes in pressure near the rapidly moving blade tip and outer portions of the blade (Strickland et al. 2011). It has also been suggested that turbines may disrupt a bat's echolocation capability. Echoes from moving blades can have features that make them attractive to bats or may make it difficult for the bat to accurately detect and locate the blades (Long et al. 2010). Most studies of avian fatalities report less than or equal to three fatalities per MW per year (Strickland et al. 2011). Impacts to birds and bats would be reduced by following the USFWS' 2012 Land-Based Wind Energy Guidelines during installation and operation of wind energy facilities (USFWS 2012).

No sensitive plant species or potential habitats are known to occur on East and West Bliss because of the soil types present. Impacts to sensitive species would be similar to that for wildlife. Impacts to sensitive species are expected to be minor from construction or operation and maintenance activities under Alternative 2. The Texas horned lizard (listed as threatened in Texas), the burrowing owl (a federal species of concern), the loggerhead shrike (listed as sensitive in New Mexico), and the scaled quail, Crissal thrasher, and black-tailed gnatcatcher (Partner in Flight priority bird species) are common and occur in most of the vegetative communities on Fort Bliss and have the potential to occur within areas that would be disturbed on East and West Bliss. Habitat loss due to construction, however, would be less than significant because the area disturbed would account for only a small proportion of habitat on Fort Bliss, and the majority of the areas that would be disturbed by construction are currently areas that are paved, landscaped, or previously disturbed. Construction-related noise may temporarily displace wildlife from suitable habitat in the immediate vicinity of the project area.

### 3.5.2.3 Alternative 3 – Water Reclamation Pipeline

Under Alternative 3, construction of the pipeline would disturb approximately 20 acres on East and West Bliss. The majority of the areas that construction would disturb are currently paved, landscaped, or previously disturbed. Alternative 3 would not affect locally important vegetation communities or sensitive species habitats. Following construction of the pipeline, areas would be revegetated or repaved, but the temporary removal of vegetation would cause a short-term loss of nesting habitat for birds located within the area. BMPs would be employed during construction activities to minimize soil movement, stabilize runoff, and control sedimentation. Water from this pipeline would be Type 1/Class A reclaimed water (as described in 30 TAC §210.33[1]) and would be used for irrigation on East and West Bliss. See Section 3.12 for more details regarding the water quality of reclaimed water. The elevated salinity of the reclaimed water from the city of El Paso could potentially have an impact on the vegetation that is being irrigated. The salinity tolerance of plants varies, and the extent of salt accumulation in the soil depends on the concentration of salts in the irrigation water and the rate at which the salts are removed by leaching. Potential impacts to vegetation could include reduced plant growth or mortality (USEPA 2004). Fort Bliss would incorporate potential management techniques for reducing impacts to vegetation from increased salinity, such as increasing drainage potential through soil aeration, choosing salt tolerant species for existing and new landscapes, applying water in excess of plants' water needs to maintain salt balance in root zone, blending saline water with less-saline water, adding soil amendments to correct sodium and alkalinity problems, and avoiding spraying reclaimed water directly on the foliage of plants that are salt-sensitive. Consequently, impacts to vegetation under Alternative 3 could be significant but mitigable.

Construction of the pipeline could increase the likelihood of introduction and/or expansion of exotic or invasive species. Prevention and control measures presented in the INRMP would be implemented to reduce the possibility of exotic species invasions and further spreading of existing populations. In addition, these areas would be monitored following construction to determine whether project activities cause an increase of exotics or undesirable plant species. If monitoring shows invasive plant species are increasing, a strategy for control would be implemented.

Construction activities would occur on previously developed lands or disturbed, actively managed areas (i.e., mowed or landscaped) and would result in short-term increases in noise associated with construction equipment. Construction-related noise may temporarily displace wildlife and migratory bird populations from suitable habitat in the immediate vicinity of the project area. Because of the developed nature of East and West Bliss, no substantial amounts of native habitat are located within the proposed construction area. Additionally, wildlife species on East and West Bliss are adapted to the existing urban/industrial environment. It is possible, however, that construction-related activities, such as excavation, could result in mortality of some less mobile wildlife species. Open trenches and ditches associated with construction have the potential to trap wildlife. Mitigation measures outlined in Section 5.1.3, such as trenching during cooler months when possible and providing escape ramps for trenches left unfilled overnight, would minimize impacts to wildlife. Impacts to wildlife and migratory bird species from operation and maintenance activities associated with the new pipeline would be minor because they would be similar to existing operation and maintenance activities. Long-term impacts to wildlife populations, including migratory birds, would not occur. In addition, less than significant impacts to wildlife, including migratory birds, would occur from the construction activities.

No sensitive plant species or potential habitats are known to occur within the project area due to the soil types present. No federally listed or proposed threatened or endangered species are known to reside within the proposed project area. No critical habitat is located on East and West Bliss. Impacts to sensitive species would be similar to that for wildlife. Impacts to sensitive species are expected to be minimal from the construction or operation and maintenance of the new pipeline under Alternative 3. The Texas horned lizard (listed as threatened in Texas), the burrowing owl (a federal species of concern), the loggerhead shrike (listed as sensitive in New Mexico), and the scaled quail, Crissal thrasher, and black-tailed gnatcatcher (Partner in Flight priority bird species) are common and occur in most of the vegetative communities on Fort Bliss and have the potential to occur within the project areas on East and West Bliss. Habitat loss due to construction, however, would be less than significant because the area disturbed would account for only a small proportion of habitat on Fort Bliss, and the majority of the areas that would be disturbed by construction are currently areas that are paved, landscaped, or previously disturbed. Construction-related noise may temporarily displace wildlife from suitable habitat in the immediate vicinity of the project area.

#### 3.5.2.4 Alternative 4 – Waste-to-Energy Plant

Under Alternative 4, construction of the WTE plant would result in the permanent loss of vegetation. In addition, new access roads to the facilities would be constructed, resulting in additional vegetation removal. New transmission lines (either underground or above ground) would be constructed and would also affect vegetation. Impacts to wildlife would include removal of habitat for construction of the WTE plant and associated infrastructure. Exact acreages and types of vegetation and wildlife habitat that would be affected are unknown at this time because the location and size of the WTE plant have not been identified. Construction-related noise may temporarily displace wildlife from suitable habitat in the immediate vicinity of the construction area. Open trenches and ditches associated with construction have the potential to trap wildlife. Mitigation measures outlined in Section 5.1.3, such as trenching during cooler months when possible and providing escape ramps for trenches left unfilled overnight, would minimize impacts to wildlife. Impacts from operation and maintenance of the WTE plant, including noise and increased traffic and human presence, could displace wildlife from suitable habitat in the immediate vicinity of the WTE plant. It is possible that construction-related activities, such as clearing and grading, could result in mortality of some less mobile wildlife species. If aboveground transmission lines were constructed for this facility, they would potentially affect a few individual birds by increasing collision and electrocution potential with the power lines. Impacts to birds, however, would be reduced by following existing utility corridors to the extent possible and following the *2006 Suggested Practices for Avian Protection on Power Lines* (Avian Power Line Interaction Committee [APLIC] 2006). Potential impacts to sensitive species are unknown at this time; however, no critical habitat is located on Fort Bliss. It is anticipated that the site selection process for the WTE plant would adhere to the environmental screening criteria included in Appendix C and, therefore, would result in less than significant impacts. Supplemental NEPA analysis would be carried out to evaluate impacts to vegetation, wildlife, and sensitive species from the construction and operation of a WTE plant.

BMPs would be employed during construction activities to minimize soil movement, stabilize runoff, and control sedimentation. Construction of the WTE plant and associated transmission lines could increase the likelihood of introduction and/or expansion of exotic or invasive plant species. For activities occurring on the Installation, preventive and control measures presented in the INRMP would be implemented to reduce the possibility of exotic plant species invasions and further spreading of existing populations. In addition, these areas would be monitored following construction to determine whether project activities are causing an increase of exotic or undesirable plant species. If monitoring shows invasive plant species are increasing, a strategy for control would be implemented.

#### 3.5.2.5 Alternative 5 – Geothermal Energy Facility

Under Alternative 5, primary impacts to vegetation, wildlife habitat, and sensitive species would include the removal of approximately 20 acres of basin sandshrub habitat for construction of the facility. This loss of habitat, however, would be less than significant because it represents less than 0.01 percent of the total number of acres of basin sandshrub habitat on Fort Bliss (which totals 76,160 acres). The Texas horned lizard, burrowing owl, loggerhead shrike, scaled quail, Crissal thrasher, and black-tailed gnatcatcher are common and occur in most of the vegetative communities on Fort Bliss and have the potential to occur at this site. In addition, the Anthony blister beetle has the potential to occur within the project area. Approximately 2 miles of new transmission lines (either underground or above ground) would be constructed following existing easements and utility corridors to the extent possible. Vegetation along these existing easements and utility corridors would be disturbed during construction of these lines. Vegetation is expected to re-establish following construction; however, it could re-establish at a lesser density. Alternative 5 would not affect locally important vegetation communities.

BMPs would be employed during construction activities to minimize soil movement, stabilize runoff, and control sedimentation. Construction of the geothermal energy facility could increase the likelihood of introduction and/or expansion of exotic or invasive plant species. Prevention and control measures presented in the INRMP would be implemented to reduce the possibility of exotic plant species invasions and further spreading of existing populations. In addition, these areas would be monitored following construction to determine whether project activities are causing an increase of exotic or undesirable plant species. If monitoring shows invasive plant species are increasing, a strategy for control would be implemented.

Construction-related noise may temporarily displace wildlife or sensitive species from suitable habitat in the immediate vicinity of the project area. It is possible that construction-related activities, such as clearing and grading, could result in mortality of some less mobile wildlife species. Open trenches and ditches associated with construction have the potential to trap wildlife. Mitigation measures outlined in Section 5.1.3, such as trenching during cooler months when possible and providing escape ramps for trenches left unfilled overnight, would minimize impacts to wildlife. Impacts from operation and maintenance activities associated with the geothermal energy facility, including noise and increased traffic and human presence, could displace wildlife from suitable habitat in the immediate vicinity of the project area. Construction of aboveground transmission lines associated with this facility would potentially affect a few individual birds by increasing collision and electrocution potential with the power lines. Impacts to birds would be reduced by following existing utility corridors and following the 2006 Suggested Practices for Avian Projection on Power Lines (APLIC 2006). Overall, bird populations on this part of Fort Bliss would not be significantly affected.

No sensitive plant species, or potential habitat, are known to occur within the project area due to the soil types present. No federally listed or proposed threatened or endangered species are known to reside within the proposed project area. No critical habitat is located on Fort Bliss, including within the project area under Alternative 5.

#### 3.5.2.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Under Alternative 6, construction of a CSP facility would result in the removal of approximately 300 acres of vegetation and wildlife habitat. Because the exact footprint for the CSP facility is unknown at this time, any of the vegetation types within the STA could be removed under this alternative. The most common vegetation/habitat type within the STA is basin desert shrubland (coppice dunes). Other common vegetation communities include foothill desert shrublands, creosote piedmont shrublands, basin sand scrub, and foothills desert scrub (Figure 3-4). Table 3-13 shows the total number of acres of each vegetation type within the STA, the total number of acres of that vegetation type within Fort Bliss, as well as the percent of the total number of acres of each vegetation type on Fort Bliss that would be removed assuming all 300 acres were removed within one vegetation type. In areas where less than 300 acres of that vegetation type is present within the project area, it is assumed that all the vegetation type within the project area would be removed.

**Table 3-13. Vegetation Types Potentially Impacted Under Alternative 6**

| Vegetation Type | Acres on Fort Bliss | Acres within South Training Areas | Maximum % of Fort Bliss Acres that would be Removed[a] |
|---|---|---|---|
| Basin desert shrubland (coppice dunes) | 348,847 | 71,004.8 | 0.09 |
| Basin sandshrub | 76,160 | 2,653.9 | 0.39 |
| Basin desert lowland shrubland | 45,178 | 1,728.8 | 0.66 |
| Creosote piedmont shrublands | 141,638 | 2,298.0 | 0.21 |
| Foothill desert shrublands | 64,416 | 4,329.4 | 0.47 |
| Foothills desert scrub | 95,361 | 137.7 | 0.31 |
| Sandy plains desert grassland | 8,908 | 1,563.3 | 3.37 |
| Foothills desert grassland | 133,740 | 165.1 | 0.12 |
| Basin lowland grassland | 27,344 | 121.9 | 0.45 |
| Non-native vegetation | 1,605 | 1,442.8 | 18.7 |

Source: U.S. Army (2009b)

[a] Assumes that all 300 acres would be taken from one vegetation type. Acreage for power lines is not included within these calculations because locations are still unknown.

Migratory birds and wildlife associated with these vegetation types have the potential to lose up to 300 acres of habitat, but vegetation/habitat loss from construction is anticipated to be less than significant because the percent of each vegetation type that would be removed within the project area represents 3.37 percent or less of the percent of those vegetation types on Fort Bliss (excluding the removal of non-native vegetation). In addition, approximately 7 miles of new transmission lines (either underground or above ground) would be constructed following existing easements and utility corridors to the extent possible. Vegetation along these existing easements and utility corridors would be disturbed during construction of these lines. The exact location of these lines is currently unknown; however, it is likely that the vegetation has been previously disturbed from construction and routine maintenance of existing lines. Implementation of Alternative 6 would not affect locally important vegetation communities.

BMPs would be employed during construction activities to minimize soil movement, stabilize runoff, and control sedimentation. Construction of the CSP facility could increase the likelihood of introduction and/or expansion of exotic or invasive species. Prevention and control measures presented in the INRMP would be implemented to reduce the possibility of exotic plant species invasions and further spreading of existing populations. In addition, these areas would be monitored following construction to determine whether project activities are causing an increase of exotics or undesirable plant species. If monitoring shows invasive plant species are increasing, a strategy for control would be implemented.

Construction activities under this alternative would occur adjacent to or close to existing developed industrial/urban areas and would result in temporary increases in noise associated with construction equipment. Construction-related noise may temporarily displace wildlife from suitable habitat in the immediate vicinity of the project area. Open trenches and ditches associated with construction have the potential to trap wildlife. Mitigation measures outlined in Section 5.1.3, such as trenching during cooler months when possible and providing escape ramps for trenches left unfilled overnight, would minimize impacts to wildlife. Impacts from operation and maintenance of the CSP facility, including noise and increased traffic and human presence, could displace wildlife from suitable habitat in the immediate vicinity of the project area; however, because the proposed location is close to existing developed areas, wildlife within the area is most likely accustomed to the existing urban/industrial environment.

Construction of aboveground transmission lines associated with this facility would potentially affect a few individual birds by increasing collision and electrocution potential with the power lines. Impacts to birds would be reduced by following existing utility corridors and following the 2006 Suggested Practices for Avian Protection on Power Lines (APLIC 2006). Overall, bird populations on this part of Fort Bliss would not be significantly affected.

Less than significant impacts to sensitive species are expected from the construction or operation and maintenance of the CSP facility and associated facilities under Alternative 6. The Texas horned lizard, burrowing owl, loggerhead shrike, scaled quail, Crissal thrasher, and black-tailed gnatcatcher are common and occur in most of the vegetative communities on Fort Bliss and have the potential to occur at this site. In addition, the sandhill goosefoot and Anthony blister beetle have the potential to occur on this site. Because coppice dunes are not considered important habitat for sensitive species or migratory birds, habitat loss due to construction would be less than significant due to the widespread distribution of mesquite coppice sand dunes on Fort Bliss and in the regional and due to the small percentage (0.09 percent) that would be impacted. Construction-related noise may temporarily displace wildlife from suitable habitat in the immediate vicinity of the project area. It is possible that construction-related activities, such as clearing and grading, could result in mortality of some less mobile wildlife species. No federally listed or proposed threatened or endangered species are known to reside within the proposed project area. No critical habitat is located on Fort Bliss including within the Alternative 6 project area.

#### 3.5.2.7 Alternative 7 – Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as biomass, large-scale wind, and solar PV facilities, may be developed on Fort Bliss as long as the technology and location meet the alternatives screening criteria presented in Section 2.2 and the environmental screening criteria presented in Appendix C, *Environmental Screening Criteria*. Development of wind energy projects would include similar ground-disturbing activities and impacts as described for Alternatives 4 through 6. In addition, the operation of wind energy facilities could potentially affect migratory birds and bats. Wind turbines can cause direct mortality of birds and bats through collision, mainly presumed to be with turbine blades. In addition, some research suggests that bat fatalities can result from rapid decompression resulting from sudden changes in pressure near the rapidly moving blade tip and outer portions of the blade (Strickland et al. 2011). It has also been suggested that turbines may disrupt a bat's echolocation capability. Echoes from moving blades can have features that make them attractive to bats or may make it difficult for the bat to accurately detect and locate the blades (Long et al. 2010). Most studies of avian fatalities report less than or equal to three fatalities per MW per year (Strickland et al. 2011). Impacts to birds and bats would be reduced by following the USFWS' 2012 Land-Based Wind Energy Guidelines during installation and operation of wind energy facilities (USFWS 2012).

Supplemental NEPA analysis would be conducted to evaluate impacts to vegetation, wildlife, and sensitive species from other renewable energy technologies, which would comply with the identified screening criteria.

#### 3.5.2.8 Alternatives Combined

Significant but mitigable impacts to vegetation would occur from Alternative 3. Construction of the facilities described for Alternatives 5 and 6 would remove approximately 320 acres of vegetation/habitat resulting in less than significant impacts. Additional vegetation would be removed for the construction of Alternative 4 and installation of power lines associated with Alternatives 4 through 6.

Loss of vegetation and habitat due to construction is anticipated to be minimal because the maximum percent of each vegetation type that would be removed would represent a small percent of each vegetation type on Fort Bliss (excluding removal of non-native vegetation).

Construction-related noise may temporarily displace wildlife or sensitive species from suitable habitat in the immediate vicinity of the project areas. Impacts from facility operation and maintenance, including noise and increased traffic and human presence, could displace wildlife from suitable habitat in the immediate vicinity of the project areas.

## 3.6 Cultural Resources

Cultural resources include archaeological sites, buildings, structures, objects, historic landscapes and districts, sacred sites, properties of traditional religious and cultural importance, and traditional cultural properties (TCPs). A historic property, as defined in the National Historic Preservation Act of 1966 (NHPA), as amended, is a cultural resource that is included or eligible for inclusion in the NRHP. Under

Section 106 of the NHPA and its implementing regulations in 36 CFR §800, *Protection of Historic and Cultural Properties*, federal agencies must take into account the effects of their undertakings on historic properties. These regulations also require that federal agencies consult with the State Historic Preservation Officer (SHPO) on their undertakings, and that they afford the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on their undertakings. Section 110 of the NHPA further requires federal agencies to assume responsibility for the identification and preservation of historic properties on land owned or controlled by the agency.

Army Regulation 200-1 outlines policies, procedures, and responsibilities for Army compliance with historic preservation laws and regulations through the development and implementation of an Integrated Cultural Resources Management Plan (ICRMP) (U.S. Army 2008b). Pursuant to Army Regulation 200-1, the Garrison Commander is ultimately responsible for compliance with historic preservation laws. The ICRMP incorporates the Programmatic Agreement (PA) among the Fort Bliss Garrison Command, the ACHP, and the Texas and New Mexico SHPOs. The PA was signed in 2006. The PA directs Fort Bliss in fulfilling its cultural resource management responsibilities under Sections 106 and 110 of the NHPA. The ICRMP and PA[9] includes procedures to streamline and standardize regulatory compliance.

Compliance with historic preservation laws and Army regulations and consultations with SHPOs, the ACHP, and federally recognized Native American tribes are coordinated on behalf of the Garrison Commander by an appointed Cultural Resource Manager (CRM). Consultations with federally recognized Native American tribes are conducted on a government-to-government basis. DoD's American Indian and Alaska Native Policy (1999) provides guidance for interaction and consultation with federally recognized American Indian governments.

The ROI for cultural resources varies for each alternative and includes the areas that would be potentially impacted by the construction of the proposed facilities.

### 3.6.1 Affected Environment

#### 3.6.1.1 Prehistoric and Historic Background

This section presents the historical setting of the area now encompassed by Fort Bliss. The 2000 Mission and Master Plan Programmatic EIS (U.S. Army 2000) and the ICRMP both contain detailed information about the prehistory and history of Fort Bliss. Because the baseline information presented in these

---

[9] A copy of the Fort Bliss PA can be found at: https://www.bliss.army.mil/dpw/Environmental/documents/ICRMP_Volume%20I%20_PUBLIC.pdf.

documents is current, only brief summaries of the documents are provided here and incorporated by reference.

The area now encompassed by Fort Bliss lies within the Jornada Mogollon cultural region (U.S. Army 2008b, 2000). The earliest conclusively documented evidence of human occupation of the region dates to the Paleoindian period from approximately 10,000 to 6000 B.C. Paleoindian groups in the area are generally viewed as small bands of highly mobile hunter-gatherers who followed herds of big game including Pleistocene megafauna (U.S. Army 2008b, 2000). The beginning of the Archaic period (circa 6,000 B.C.) roughly corresponds with warmer and drier climatic trends resulting in a transition from grasslands to the current desert shrub of the Chihuahuan Desert and the extinction of large game animals. Archaeological evidence suggests that Archaic groups were seasonally mobile, broad spectrum hunters and gatherers. Cultural developments during the Archaic period include a greater use of plant resources, increased sedentism (i.e., living in one place permanently), the construction of domestic structures, and population growth. Increased population likely led to restricted territorial home ranges and the eventual adoption of agriculture during the Late Archaic period (U.S. Army 2008b, 2000). Following the long Archaic period, the Formative period, or Jornada Mogollon, is generally divided into three phases: the Mesilla phase (A.D. 200–1000), the Doña Ana phase (A.D. 1000–1300), and the El Paso phase (A.D. 1300–1450). The Formative period is characterized by a rapid succession of changes in architecture, settlement patterns, technology, and subsistence. Among the most notable developments are the use of ceramics and increasing agricultural dependence and specialization (U.S. Army 2008b, 2000). The Mesilla phase inhabitants lived in small hut-like pit houses, practiced agriculture, and made undecorated ceramics called El Paso brownware. The Doña Ana phase was a relatively brief transitional period marked by bichrome and polychrome ceramics, increasingly formal pit structures, an increase in population, and more concentrated use of arable lands. The El Paso phase represents the last and most intensive habitation of the Fort Bliss area. The phase is characterized by pueblo architecture, peak population levels, increased dependence on agriculture, increased trade with neighboring areas, and the introduction of small triangular projectile points (U.S. Army 2008b, 2000).

The first documented contact between Europeans and Native Americans in the El Paso area occurred in A.D. 1581 during the Spanish expedition led by Fray Agustin Rodriguez and Captain Francisco Sanchez Chamuscado (U.S. Army 2008b). At least two Native American groups, the Manso and the Suma, occupied the area at the time of first contact with the Spanish (U.S. Army 2000). Both groups practiced a mix of farming, hunting, and gathering. Between 1680 and 1682, Spanish fleeing the Pueblo Revolt brought the Tigua Indians to the El Paso area from northern New Mexico. The Manso joined the Tigua at Spanish missions at El Paso, but smallpox epidemics and intermarriage with the Tigua effectively destroyed the Manso culture. The Suma culture gradually disappeared after being weakened by drought and Spanish and Apache raids. The Tigua continued to practice agriculture along the Rio Grande and hunt and gather resources in the Hueco Mountains to the north. In 1751, a Spanish royal land grant set aside lands for the Tigua Indians in the El Paso area (U.S. Army 2000). The Mescalero Apache were the other Native American tribe present in the area in the 1600s. Unlike the sedentary Manso, Suma, and Tigua, the Mescalero Apache were semi-nomadic hunters and gatherers ranging primarily over western Texas and southeastern New Mexico (U.S. Army 2008b, 2000). The relationship between the Mescalero Apache and Spanish settlers was hostile until 1810, when the Spanish signed a treaty with them. The Mescalero's traditional lands came under U.S. jurisdiction after the Mexican-American War and the Gadsden Purchase in 1853. An influx of settlers and miners brought the Mescalero Apache in frequent contact with American settlers, and hostilities between the groups were common. It was not until 1922 that lands comprising the Mescalero reservation in the Sacramento Mountains of New Mexico were formally transferred to the tribe (U.S. Army 2000).

Beginning in the early 1700s, the Comanche also occupied the area now encompassed by Fort Bliss, and by the mid-1800s, they had displaced the Mescalero Apache. The Kiowa made occasional forays into the El Paso area during the time the Comanche were dominant (U.S. Army 2000).

Formally established in 1893, Fort Bliss began as a minor military installation in 1849. During the Mexican Revolution of 1910, the fort became a major cavalry installation, and by 1916, more than 40,000 Soldiers were stationed in the area. Fort Bliss served a significant role during World War I as an enlistment, training, and mobilization center. During World War I, several thousand acres were acquired around the original 1,000-acre Installation, and the fort continued to provide training and border security after the war. During World War II, Fort Bliss served as a troop reception center and continued its expansion into New Mexico. During the Cold War (1946–1991), Fort Bliss provided research facilities for the strategic missile program and served as the Army Air Defense Center. The Installation has since become a major training facility (U.S. Army 2000). Currently, Fort Bliss is the home of the 1st Armored Division and a major training center for Soldiers prior to deployment.

### 3.6.1.2 Cultural Resources Inventories and Investigations

Cultural Resource studies have been conducted on Fort Bliss since the 1920s (Abbott et al. 1996). As of 2009, more than 18,000 archaeological and architectural properties have been identified on Fort Bliss (Miller et al. 2009). These resources are associated with all prehistoric and historic periods recognized in the area now encompassed by the Installation and represent the material manifestations of approximately 12,000 years of human occupation. The vast majority of these properties were recorded during several hundred cultural resource surveys conducted as part of Section 106 and 110 compliance processes. The cultural resource staff at Fort Bliss maintains a database of all archaeological and architectural properties thus far identified on the Installation. In consideration of Native American concerns as required by the NHPA and Executive Order 13007, *Indian Sacred Sites*, Fort Bliss has initiated inventories of TCPs and sacred sites on the Installation. The Mescalero Apache, the Ysleta del Sur Pueblo (Tigua), the Comanche Tribe, the Fort Sill Apache, the Kiowa Tribe of Oklahoma, and the Navajo Nation maintain interests in lands managed by the Installation, and Fort Bliss would continue to consult with these Native American groups (U.S. Army 2010b).

### 3.6.2 Environmental Consequences

NRHP-eligibility criteria provide the threshold for cultural resource significance under Section 106 of the NHPA. To be eligible for inclusion in the NRHP, a cultural resource must have integrity, the physical characteristics that existed during the resource's historic or prehistoric occupation or use, and must meet one or more of the following criteria in 36 CFR §60.4, *Parks, Forests, and Public Property – National Register of Historic Places Criteria for Evaluation*:

- A – A property associated with events that have made a significant contribution to the broad patterns of our history
- B – A property associated with the life of a person significant in our past
- C – A property that embodies the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possess high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction
- D – A property that has yielded, or may be likely to yield, information important in prehistory or history

Cultural resources that do not meet at least one NRHP-eligibility criterion are not historic properties per the NHPA and need not be considered further under Section 106.

It is important to note that some properties of traditional religious and cultural importance may not meet the criteria for significance under 36 CFR §60.4, but they may still be significant to Native American groups. Under federal law, impacts to sacred sites and cultural resources may be considered adverse if the resources have been identified as important to Native American groups as outlined in NHPA, Executive Order 13007, issued in 1996, and other laws and regulations. The American Indian Religious Freedom Act affirms the right of Native Americans to express and exercise their traditional religions and to access religious sites on federal lands. Under Executive Order 13007, executive agencies responsible for the management of federal lands shall: 1) accommodate access to and the ceremonial use of sacred sites, 2) avoid adversely affecting the integrity of sacred sites, and 3) maintain the confidentiality of sacred sites.

Fort Bliss has developed a two-tiered program for determining the NRHP eligibility of prehistoric sites in the *Significance and Research Standards for Prehistoric Archaeological Sites at Fort Bliss* (Miller et al. 2009). The first tier of the NRHP-eligibility evaluation procedure requires archaeologists to assess site integrity and chronological data potential. Prehistoric sites that lack spatial (horizontal and/or stratigraphic) integrity and chronometric information do not have potential to empirically address research questions and, as such, are not eligible for inclusion in the NRHP. If a prehistoric site has demonstrable integrity and chronological potential, its potential NRHP eligibility is further assessed under the second evaluation tier. The second tier requires archaeologists to consider the research potential of a prehistoric site relative to its historic context — an organizational format incorporating major research issues within geographical areas and chronological periods. According to the Fort Bliss *Significance and Research Standards*, prehistoric sites are considered eligible for NRHP inclusion only if they contain sufficient information to address the analysis needs and data requirements for a historic context.

Table 3-1 presents the significance thresholds for cultural resources impacts in the context of this EIS. Direct effects generally involve physical damage or destruction to all or part of a resource through ground-disturbing activities or deterioration or destruction of a resource brought about through neglect. Indirect effects generally result from alterations to the characteristics of the surrounding environment or setting that contribute to a resource's significance, and increased use of or access to an area containing historic properties. Locations within the project areas discussed in this impact analysis have been surveyed to varying degrees, and, therefore, each action alternative could require further studies/surveys if selected to fully determine the potential for significant impacts. This impacts analysis assumes that any alternative, if selected for implementation, would adhere to the PA, where applicable, and Section 106 consultation would be completed prior to construction. As a result, any adverse effects on cultural resources would be avoided, minimized, or mitigated. For properties and resources of interest to the federally recognized tribes, Fort Bliss will conduct government-to-government consultation to resolve any potential issues and impacts.

#### 3.6.2.1 Alternative 1 – No Action

Under Alternative 1, Fort Bliss would not implement Net Zero initiatives; therefore, there would be no impacts to cultural resources. Fort Bliss would continue to manage cultural resources in accordance with federal laws and Army regulations.

### 3.6.2.2 Alternative 2 – Conservation Policies and Procedures

The implementation of energy, water, and waste efficient systems in existing facilities under Alternative 2 may impact cultural resources. Impacts may be significant if modifications are made to architectural resources included in or eligible for inclusion in the NRHP, and the modifications adversely affect the features that contribute to the NRHP eligibility of the property. As such, the ROI for this alternative potentially includes all historic architectural resources. In accordance with the PA, a determination of effect would be made prior to construction activities. If proposed modifications are determined to have an adverse effect on historic properties, potential mitigation measures may be offered for consideration by the Installation's historical architect. The Fort Bliss CRM would initiate and continue consultations with the Texas SHPO through the Section 106 process. It is assumed that proposed modifications would be implemented in accordance with the PA and ICRMP; therefore, anticipated impacts to cultural resources would be less than significant.

### 3.6.2.3 Alternative 3 – Water Reclamation Pipeline

Construction and operation of the water reclamation pipeline have the potential to impact cultural resources. The majority of the proposed pipeline route has been investigated during 18 cultural resource studies, and all but one of the archaeological surveys are valid under the current PA. Cultural resource investigations of the portions of the proposed pipeline route not previously surveyed may not be required. Under the terms of the PA, undertakings that occur in disturbed areas in the Main Cantonment Area (referred to herein as East and West Bliss) that are determined by the CRM to retain no integrity are exempt from SHPO or ACHP review (U.S. Army 2008b). As currently configured, the proposed pipeline route passes through 13 previously identified archaeological sites. Twelve of the sites have been determined to be not eligible for inclusion in the NRHP. The remaining site, determined eligible for inclusion in the NRHP, was mitigated through data recovery (Condon et al. 2007). Any previously unidentified archaeological sites encountered during construction would be subject to the inadvertent discovery clause of the PA. The PA provides procedures in the event of accidental discovery of cultural resources. In the unlikely event that Native American human remains are discovered during construction, construction activities would cease and the Fort Bliss NAGPRA policy would be followed.

The Fort Bliss Main Post Historic District would contain 2.1 miles of the approximately 24 miles of proposed pipeline (Figure 3-5). This historic district, comprising 346 contributing elements, was listed in the NRHP in 1998 under multiple historic contexts. The parade ground, as a focal point of the Installation, is an important landscape element of the historic district. Although it is unknown how much of the parade ground's vegetation remains from the period of significance, "it can be inferred that the

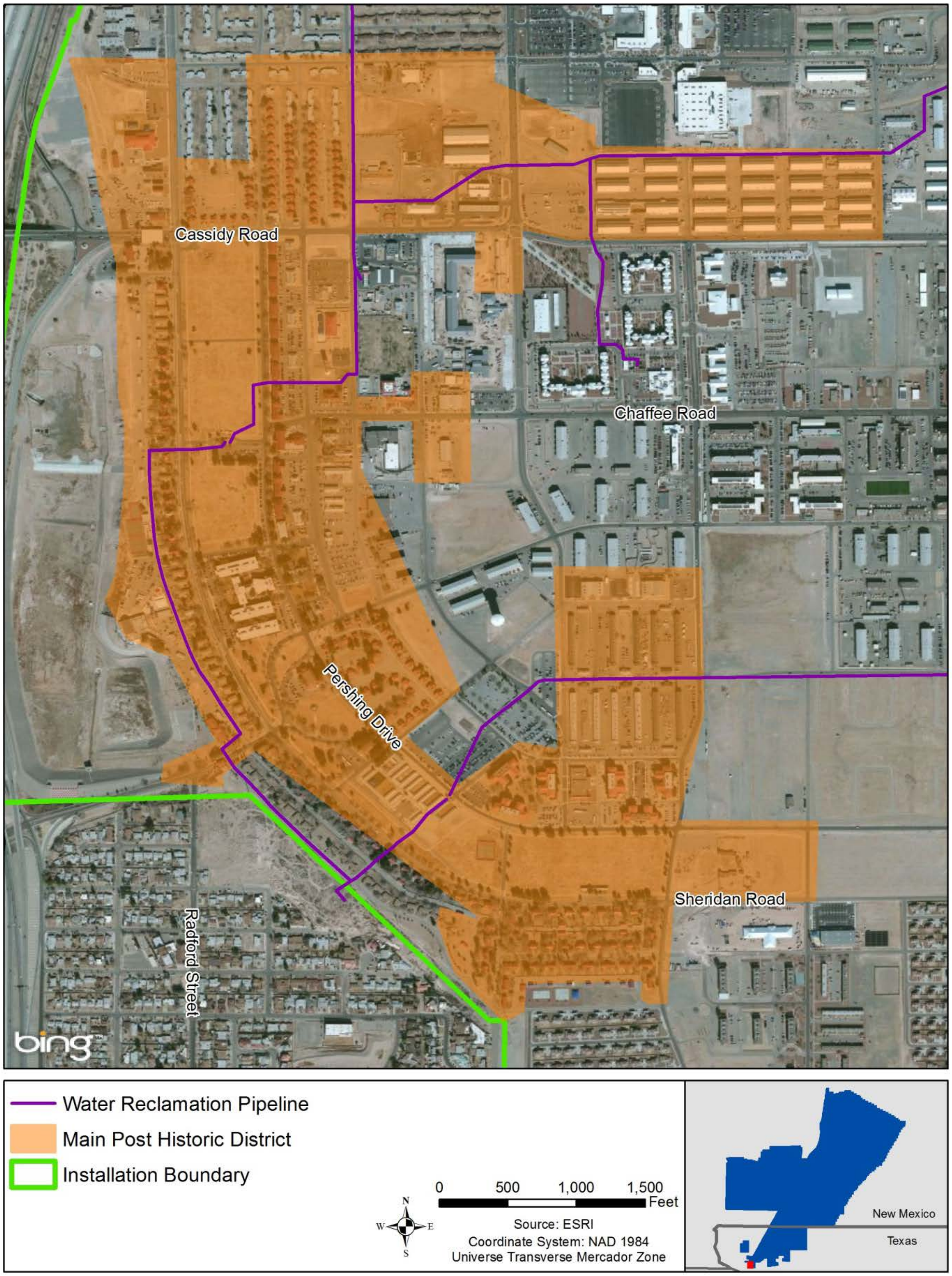



**Figure 3-5. Proposed Reclaimed Water Pipeline Route and Fort Bliss Main Post Historic District**

current state of the overall pattern of vegetation along the periphery of the parade ground conveys a sense of its historic character" (National Park Service 2000). As described in Section 3.5.2.4, the elevated salinity of the reclaimed water from the city of El Paso could potentially have an adverse impact on the vegetation that is being irrigated. Impacts to vegetation that are contributing elements to the historic district would be a significant but mitigable adverse effect. Potential management techniques for reducing impacts to vegetation from increased salinity could mitigate the potential impacts to the historic district. Once a buried pipeline route is finalized and the potential impacts to vegetation in the historic district are assessed, Fort Bliss would consult with the signatories of the PA to determine whether the project would adversely affect the historic district.

#### 3.6.2.4 Alternative 4 – Waste-to-Energy Plant

Construction and operation of the WTE plant and associated transmission lines and access roads under Alternative 4 have the potential to impact cultural resources. Once a potential ROI is delineated, a determination of whether valid cultural resource studies of the project area can be made, and potential direct and indirect impacts can be assessed. Any future WTE project would undergo appropriate, additional NEPA analysis, including analysis of the potential location of the WTE plant and the proposed technology. Adherence to the environmental screening criteria presented in Appendix C would minimize impacts from this alternative. If NRHP-eligible historic properties were identified within the ROIs, strategies for avoidance or mitigation would be developed prior to construction. In accordance with the procedures outlined in the PA, the Fort Bliss CRM would continue consultations with the appropriate state SHPO, interested tribal governments, or other interested parties through the Section 106 process. Any previously unidentified archaeological sites encountered during construction would be subject to the inadvertent discovery clause of the PA. In the unlikely event that Native American human remains are discovered during construction, construction activities would cease, and the Fort Bliss NAGPRA policy would be followed. It is anticipated that impacts would be less than significant because a plan would be in place to avoid, minimize, or mitigate adverse impacts to historic properties; the PA and ICRMP would be adhered to; and the appropriate state SHPO would be consulted.

#### 3.6.2.5 Alternative 5 – Geothermal Energy Facility

Six prehistoric archaeological sites were identified within the proposed project area during an archaeological inventory of Maneuver Areas 3–8 (Carmichael 1986). The potential NRHP eligibility of the sites has not been evaluated. Anticipated transmission lines associated with this undertaking may require survey or resurvey work depending upon their routes, which are yet to be determined. If NRHP-eligible historic properties are identified within the ROI, strategies to avoid, minimize, or mitigate adverse impacts would be developed prior to construction. In accordance with the procedures outlined in the PA, the Fort Bliss CRM would continue consultations with the New Mexico SHPO and interested tribal governments through the Section 106 process.

### 3.6.2.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Potential impacts to cultural resources from CSP technology development in the STA would be similar to those discussed for Alternative 4. If the NRHP-eligible sites in the STA cannot be avoided, mitigation measures would be developed prior to construction. In accordance with the PA, the Fort Bliss CRM would continue consultations with the Texas SHPO through the Section 106 process. Associated transmission lines and access roads outside the currently delineated footprint may require cultural resource inventories and evaluations. There is potential for adverse indirect effects resulting from increased access to historic properties, or restricted access to cultural resources of interest to the tribes. It is anticipated that impacts would be less than significant because a plan would be in place to avoid, minimize, or mitigate adverse impacts to historic properties; the PA and ICRMP would be adhered to; and the SHPO would be consulted.

### 3.6.2.7 Alternative 7 – Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as biomass, large-scale wind, and solar PV facilities, may be developed on Fort Bliss as long as the technology and location meet the alternatives screening criteria presented in Section 2.2 and the environmental screening criteria presented in Appendix C, *Environmental Screening Criteria*. These actions could affect cultural resources. Once potential ROIs are delineated, a determination of whether valid cultural resource studies of the project area or areas can be made, and potential direct and indirect impacts can be assessed. Wind energy development would take into consideration potential visual impacts depending on the placement and height of turbines. Adherence to the environmental screening criteria mentioned previously would minimize impacts from future projects. If NRHP-eligible historic properties are identified within the ROIs, strategies for avoidance or mitigation would be developed prior to construction. In accordance with the procedures outlined in the PA, the Fort Bliss CRM would continue consultations with the appropriate state SHPO, interested tribal governments, or other interested parties through the Section 106 process. Any previously unidentified archaeological sites encountered during construction would be subject to the inadvertent discovery clause of the PA. In the unlikely event that Native American human remains are discovered during construction, construction activities would cease and the Fort Bliss NAGPRA policy would be followed. It is anticipated that impacts would be less than significant because a plan would be in place to avoid, minimize, or mitigate adverse impacts to historic properties; the PA and ICRMP would be adhered to, and the appropriate state SHPO would be consulted.

#### 3.6.2.8 Alternatives Combined

If all alternatives were selected for further consideration, impacts would be similar to those discussed under Alternatives 2 through 7. Extensive archaeological inventories and evaluations of identified sites would be necessary, numerous possible adverse effects would need to be considered, and consultations with the Texas and New Mexico SHPOs, tribal governments, and other possible interested parties would need to be conducted. If NRHP-eligible historic properties are identified within the ROI, strategies for avoidance or mitigation would be developed prior to construction. In accordance with the procedures outlined in the PA, the Fort Bliss CRM would continue consultations with the appropriate state SHPO and interested tribal governments through the Section 106 process. Any previously unidentified archaeological sites encountered during construction would be subject to the inadvertent discovery clause of the PA. In the unlikely event that Native American human remains are discovered during construction, construction activities would cease, and the Fort Bliss NAGPRA policy would be followed.

## 3.7 Energy Demand and Generation

A reliable energy supply is critical to virtually all activities on Army installations. The Army recognizes the threats to its installations and operations posed by increasing costs of centrally distributed, over-burdened, utility-provided energy grids, as well as the vulnerabilities posed by potential disruption of military installation energy supplies. Therefore, the Army has included energy as part of its Net Zero strategy.

The Army Net Zero approach comprises five interrelated steps: reduction, re-purpose, recycling and composting, energy recovery, and disposal. Each step is a link toward achieving Net Zero status, as discussed in Section 1.3.1. Reduction includes maximizing energy efficiency in existing facilities. Re-purpose involves diverting energy to a secondary purpose with limited processes. For energy, recycling involves cogeneration where two forms of energy (heat and electricity) are created from one source. Energy recovery can occur from converting unusable waste to energy, renewable energy, or geothermal water sources.

### 3.7.1 Affected Environment

#### 3.7.1.1 Electricity

EPEC supplies electrical power to Fort Bliss through a 115-kilovolt (kV) transmission line that serves Fort Bliss, the city of El Paso, and military reservations to the north. The line is part of a loop that can supply Fort Bliss from two directions. The line has a loading capacity of about 150 MW (U.S. Army 2007b). The EPEC substation on Fort Bliss consists of two 15/20/25 MW power transformers operated in parallel for a total capacity of 50 MW.

Fort Bliss energy use in FY 2011 was 1,518,576 million British thermal units (MMBtu), of which 58 percent was electricity, 41 percent natural gas, and 1 percent propane (Table 1-2; NREL 2012). Electrical use is projected to increase to 1,981,397 MMBtu in 2020 (Table 1-3; NREL 2012). The projected increase is based on an assumed 3 percent escalation rate in energy use each year (NREL 2012).Average power consumption for the area, based on standard rates in Army Technical Manual TM-5-811, is on the order of 0.3 kW per person, or 10 MW (U.S. Army 2007b).

EPEC has a total generating capacity of 840 MW, and it can purchase an additional 110 MW from the Four Corners Plant in New Mexico. Current peak electricity usage within the EPEC service area is estimated to be approximately 75 percent of available power (U.S. Army 2007b). East and West Bliss consume approximately 1 percent of power available from EPEC (1.4 percent of peak electricity use). It is estimated that Fort Bliss, as a whole, consumes approximately 3 percent of EPEC's energy production (Favela 2012). Under current Texas law, EPEC charges Fort Bliss a discounted rate for utility usage. El Paso residents are charged a minimal monthly fee, which is specifically listed on each bill, to reflect this discount.

#### 3.7.1.2 Natural Gas and Propane

El Paso Natural Gas Company supplies natural gas, the primary heating fuel on East and West Bliss, through lines owned and maintained by Texas Gas Services. A number of distribution points, with an estimated total capacity of 2.5 million cubic feet per hour (CFH), are dispersed on a looped network throughout the Installation.

Design per capita gas consumption on the Installation is estimated at 28.2 CFH (U.S. Army 2007b), a level that would only be used on the coldest days. With a population on the Installation of approximately 30,000, this translates to a consumption rate on the coldest days of 0.85 million CFH. Assuming an energy requirement of 80 British thermal units (Btu) per square foot of floor space per hour, approximately 11 million square feet of floor space, and 1,000 Btu per cubic foot of natural gas, the Installation would require approximately 0.88 million CFH on the coldest days. In 2011, Fort Bliss used 625,141 MMBtu of natural gas (NREL 2012). The Texas Gas Company provides 25.9 billion cubic feet of natural gas per year to 28 cities in Texas, including El Paso, with an annual average consumption of 47 thousand cubic feet per customer (U.S. Army 2007b).

Propane is used at the Dona Ana and Orogrande Range camps for heat and hot water. Propane and natural gas are used at McGregor Range Camp. During FY 2011, more than 164,000 gallons of propane (15,681 MMBtu) were used at Fort Bliss. Propane made up approximately 1 percent of the energy sources at Fort Bliss in FY 2011 and is forecast to increase by approximately 50,000 gallons by FY 2020 (NREL 2012).

### 3.7.2 Environmental Consequences

To analyze impacts to energy demand and generation, the EIS examined if the proposed efficiency improvements, energy reductions, and renewable energy generation methods would meet the current and projected energy use of Fort Bliss. Significance thresholds for impacts to energy demand are included in Table 3-1.

#### 3.7.2.1 Alternative 1 – No Action

Under Alternative 1, Fort Bliss would not implement energy-related conservation policies, procedures, or projects beyond that currently programed or being implemented under other NEPA analysis. Fort Bliss would continue to purchase electricity, natural gas, and propane from the current vendors to meet its current and future energy demands. As described in Section 1.4.1, energy use has grown along with the square footage of buildings at Fort Bliss. Energy demand is forecast to increase through FY 2020 at an assumed rate of 3 percent annually (NREL 2012). A continuation of current policies and practices for energy usage at Fort Bliss would not lead to replacement of fossil fuel-based energy with renewable energy sources. Under this alternative, adverse impacts would occur because future energy demand at Fort Bliss would have to be met using existing or currently approved fossil fuel or renewable energy sources. Alternative 1 would not contribute to Fort Bliss meeting its renewable energy generation and consumption requirements under existing laws and executive orders or achieve Net Zero goals. No beneficial impacts would be realized under this alternative.

#### 3.7.2.2 Alternative 2 – Conservation Policies and Procedures

Alternative 2 would continue to implement several strategies to improve conservation policies and procedures at Fort Bliss. Alternative 2 would result in the installation of new energy meters to obtain baseline data and allow Fort Bliss to determine what buildings may be operating inefficiently and target specific strategies for improving energy usage. This baseline would examine energy efficiency of Installation infrastructure as well as vehicle fleets. Using these baseline data, overall efficiency could be improved, lowering the overall energy demand at Fort Bliss. Specific strategies could include the installation of smart grids, energy-saving electronic equipment, and motion-sensor lighting and the implementation of policies meant to change behavior in Soldiers, civilians, and contractors in support of Net Zero goals at the Installation. Such changes in Installation policies could include increasing telecommuting and shared space arrangements and allowing for growth in the workforce without the need for expanded space or increased energy demand.

In addition to infrastructure efficiency improvements, under Alternative 2, Fort Bliss also would examine transportation and fleet upgrades and innovations, including the use of electric vehicles and battery storage upgrades. Electric vehicles would increase the energy demand on Fort Bliss; however, the exact demand would vary by the number of electric vehicles purchased. Electric vehicles would also reduce GHG emissions and reliance on fossil fuels in the area.

Under Alternative 2, Fort Bliss would renovate existing structures to be more energy efficient and include energy efficient design into all future construction. Alternative 2 would also include development of Net Zero communities and small-scale, renewable energy projects. Alternative 2 would reduce the per person energy demand, resulting in beneficial impacts. While Alternative 2 would have a beneficial impact on energy demand, the alternative alone would not enable Fort Bliss to meet its renewable energy generation requirements under existing laws and executive orders or achieve Net Zero goals because it includes minimal on-site renewable energy generation. The Installation would still rely on outside utilities to provide electricity, natural gas, and propane, but at reduced quantities.

#### 3.7.2.3 Alternative 3 – Water Reclamation Pipeline

Construction of a water reclamation pipeline under Alternative 3 would not result in any permanent increases in energy demand on Fort Bliss and, therefore, would have negligible impacts. Implementation of Alternative 3 alone would not enable Fort Bliss to meet its renewable energy generation requirements under existing laws and executive orders, or achieve Net Zero goals because it does not include any renewable energy generation. The Installation would still rely on outside utilities to provide electricity and natural gas.

#### 3.7.2.4 Alternative 4 – Waste-to-Energy Plant

Implementation of Alternative 4 would provide Fort Bliss with a source of renewable energy generation through the construction and operation of a WTE plant. Currently, the energy capacity of the WTE plant is not known. The WTE plant would contribute to meeting some portion of the projected electrical use. Alternative 4 would have a beneficial impact regarding energy generation due to the increased renewable energy generation. It is anticipated that Alternative 4 would contribute to Fort Bliss meeting its renewable energy generation requirements under existing laws and executive orders, as well as its Net Zero energy goals. Any future WTE project would undergo appropriate, additional NEPA analysis, including analysis of the potential location of the WTE plant and the proposed technology.

#### 3.7.2.5 Alternative 5 – Geothermal Energy Facility

Implementation of Alternative 5 would provide Fort Bliss with the capacity to produce an estimated 20 MW of energy on the Installation. The geothermal energy facility by itself would not produce sufficient energy for Fort Bliss to meet the projected energy use of Fort Bliss, which would still rely on outside utilities to provide electricity, natural gas, and propane. Assuming the geothermal energy facility generated 20 MW and was operational 85 percent of the time, it would produce 148,920,000 kilowatt-hours (kWh) of electricity, [10] which would equal 44.3 percent of the 2020 projected electricity use at Fort Bliss. Therefore, although Alternative 5 would have a beneficial impact on energy generation, it would not generate a sufficient quantity of energy to solely meet Fort Bliss' Net Zero energy goals. Implementation of Alternative 5 would contribute, however, to Fort Bliss meeting its renewable energy generation requirements under existing laws and executive orders.

#### 3.7.2.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Implementation of Alternative 6 would provide Fort Bliss with the capacity to produce 50 MW of energy on the Installation. The dry-cooled CSP technology by itself would not meet the full existing or future energy demands of the Installation. Assuming the CSP array generated 50 MW and was operational 85 percent of the time, it would produce 372,300,000 kWh of electricity (1,270,288 MMBtu), which would exceed the 2020 projected electricity use at Fort Bliss. The excess electricity use could be used to meet energy demands from natural gas if sufficient existing natural gas systems were replaced with electric systems. The Installation would still rely on outside utilities to provide natural gas and propane. Therefore, although Alternative 6 would have a beneficial impact on energy generation, it would not generate a sufficient quantity of energy to solely meet Fort Bliss' Net Zero energy goals. Implementation of Alternative 6 would contribute, however, to Fort Bliss meeting its renewable energy generation requirements under existing laws and executive orders.

#### 3.7.2.7 Alternative 7 – Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as biomass, large-scale wind, and solar PV facilities, may be developed on Fort Bliss as long as the technology and location meet the alternatives screening criteria presented in Section 2.2 and the environmental screening criteria presented in Appendix C, *Environmental Screening Criteria*. The energy generation capacity of these additional projects is not known at this time. Additional renewable energy development may help supplement other energy production on Fort Bliss, but it may not meet the projected energy demands by itself. If projects identified were similar to those described for Alternatives 5 and 6, beneficial impacts would result from reducing the demand on the EPEC system and adding on-site renewable energy sources. These same beneficial impacts would be anticipated from wind energy development; however, it cannot be determined at this time if projects under this alternative alone would have the potential to meet Fort Bliss' Net Zero energy

[10] One kilowatt-hour of electricity is equivalent to the electricity consumed by a 100-watt light bulb left on for 10 hours.

goals. Implementation of Alternative 7 would contribute to Fort Bliss meeting its renewable energy generation requirements under existing laws and executive orders. As noted in Chapter 2, renewable energy technologies can fluctuate over the course of a day and could require the use of a combined-cycle natural gas turbine to ensure the energy source could reliably meet demand. Depending on the specifics of future projects, the Installation may still rely on outside utilities to provide electricity and/or natural gas.

#### 3.7.2.8 Alternatives Combined

If Fort Bliss were to implement all action alternatives, the Installation would have the capacity to produce 70 MW of energy; however, the capacity of the WTE plant under Alternative 4 and other renewable energy technologies under Alternative 7 are not known at this time. As described for the geothermal facility under Alternative 5 and the CSP array under Alternative 6, if each facility operated 85 percent of the time they would produce a combined 521,220,000 kWh (1,778,403 MMBtu) of electricity. This would meet the projected 2020 electricity demand for Fort Bliss. Depending on the conversion of other energy sources (i.e. natural gas, thermal, propane) the combined alternatives could meet 89 percent of the total 2020 energy demand at Fort Bliss. Combined with the energy conservation policies implemented under Alternative 2, implementation of all action alternatives would result in a beneficial impact to energy demand and generation and would contribute to Fort Bliss meeting its Net Zero energy goal, as well as renewable energy generation requirements of existing laws and executive orders.

## 3.8 Geology and Soils

Bedrock exposures in the Fort Bliss ROI consist primarily of the mountains that bound the Installation: Franklin, Organ, Sacramento, and Hueco. Soils that have formed on the flanks of the mountains and in the vast expanses of the basin areas are predominately Entisols and Aridisols.

### 3.8.1 Affected Environment

The ROI for geology and soil impacts is defined as essentially any area on Fort Bliss on which project-related activities could occur, including the footprint of facilities and associated renewable energy technologies, corridor roads, transmission lines, and construction staging areas.

Fort Bliss lies within the Basin and Range physiographic province (Collins and Rainy 1994), a region covering much of the western U.S., consisting of prominent north-south-trending mountain ranges separated by expansive, sediment-filled basins. The Installation is also in the northern part of the Chihuahuan Desert (Schmidt 1979), an interior continental desert that receives most of its rainfall during the hot summer months. Elevation on the basin floor is approximately 3,800 feet above sea level, rising to more than 8,000 feet on the western margins (Organ Mountains).

Most of the Installation is situated in a large intermontane basin consisting of the Tularosa and Hueco basins of southern New Mexico and west Texas. The basins lie between the Franklin and Organ mountains to the west, and the Sacramento and Hueco mountains to the east. Rocks in the Franklin Mountains include Precambrian granite and meta-sedimentary units that are more than one billion years old, overlain by younger Paleozoic marine sedimentary strata. The Organ Mountains are composed mainly of Tertiary igneous rocks approximately 33 million years old (Seager 1981). The Sacramento and Hueco mountains are made up largely of Paleozoic marine sedimentary rocks. Surface deposits in the Tularosa and Hueco basins are predominantly Holocene (younger than 10,000 years before present) aeolian (wind-deposited) sand dunes and sand sheets. Underlying the Holocene sediments are older basin-fill gravels, sands, and finer sediments.

The majority of soils at Fort Bliss and vicinity are broadly classified as Entisols, Aridisols, and Mollisols. The sand dunes and sheets are mainly Entisols, exhibiting little soil horizon development and having formed only within the last few hundred years. Typically underlying the sand are older, more developed soils (mainly Aridisols), which often include a prominent calcrete (“caliche”) horizon up to several meters thick. The calcrete is a massive white calcium carbonate unit that generally has a soil texture of sandy clay loam. Loamy and clayey soils are typical of low-lying playas and other depressions within the basins and are subject to occasional flooding after major rainfall events. Otero Mesa and a few other upland areas on Fort Bliss contain Mollisols that are soils darkened by relatively high organic matter content, typical of grasslands, and are areas with high biodiversity. Certain areas also have soil surfaces that are covered by a biological crust, consisting of communities of highly specialized organisms such as algae, bacteria, lichens, mosses, liverworts, and fungi. These crusts serve to retain soil moisture, and reduce wind and water erosion.

Fan-piedmont soils on the margins of the basins are mainly Entisols and Aridisols but are predominantly alluvial (water-deposited) in origin. The texture for these alluvial soils is most commonly sandy loam, but the soils also contain variable amounts of rock fragments eroded from the adjacent mountains. Soils comprising these fan-piedmont areas of Fort Bliss are generally susceptible to gully and sheet erosion from running water.

In general, the dry climate and sparse vegetation on the Installation make soils vulnerable to wind and water erosion. The majority of soils are susceptible to dust generation and dune formation. Wind speeds in El Paso are relatively moderate averaging 9.0 mph, with March and April having the highest average wind speeds of 11.3 mph, leading to the majority of sandstorms. Most soils on both the NTA and STA are highly susceptible to wind erosion, while McGregor Range contains soils that are highly susceptible to both water and wind erosion (U.S. Army 2001).

More detailed information on Fort Bliss soils can be found in the Fort Bliss Soil Survey (USDA 2004), which includes physical, chemical, and engineering properties, as well as limitations for military uses and ecological site descriptions and classifications. The soil survey contains data characterizing current conditions of soils, vegetation, and overall ecology, which may be useful in planning military actions and selecting sites for construction or training purposes. Soils and rock materials on Fort Bliss, including sand, gravel, and limestone, are currently produced in numerous quarries (U.S. Army 2010b).

Based on the Fort Bliss Soil Survey, soil units are broken down into eight general soil associations. Each soil association is a map unit that comprises two or more geographically associated soils or miscellaneous areas that are grouped as one (USDA 2004). Basic characteristics of each of these soil associations are presented in Table 3-14. Each of the eight soil associations is then broken down into more detailed soil map units. A total of 63 individual soil series are described for Fort Bliss (U.S. Army 2010b). Soil series occurring in the project area of the Proposed Action are presented in Table 3-15, and a discussion of the alternative and the potential impacts to the soil units is presented in the Environmental Consequences section for this resource area.

**Table 3-14. General Soil Association Characteristics**

| Soil Unit | Percent of Fort Bliss | Physical Characteristics |
|---|---|---|
| Copia-Mcnew-Elizario Association | 22 | 2–5% slopes, very deep, well drained to excessively drained, high proportion of sand on surface |
| Copia-Nations-Hueco Association | 15 | 0–5% slopes, very deep to moderately deep, loamy fine sand surface texture |
| Pendero-Copia-Piquin Association | 6 | 2–15% slopes, very deep, excessively drained, loamy fine sand to very gravelly sandy loam surface texture |
| Jerag-Reyab-Armesa Association | 14 | 0–5% slopes, well drained, very deep to shallow, very fine sandy loam and silt loam surface texture |
| Reyab-Infantry-Crossen Association | 20 | 0–10% slopes, well drained, very deep to very shallow, surface texture mixed (silt loam, very gravelly loam, gravelly fine sandy loam) |
| Bissett-Altuda-Rock Outcrop Association | 16 | 5–65% slopes, well drained, shallow and very shallow, very gravelly or very cobbly loam surface texture |
| Brewster-Rock Outcrop-Stallone Association | 4 | 5–90% slopes, well drained, very deep to very shallow, very gravelly loam to extremely bouldery, sandy loam surface texture and rock outcrop |
| Deama-Rock Outcrop-Penalto Association | 3 | 5–65% slopes, well drained, shallow and very shallow, very cobbly or gravelly loam surface texture |

Source: USDA (2004)

**Table 3-15. Soil Series Located in Proposed Project Areas**

| Soil Type | Slope (%) | Drainage | Permeability | Geographic Position | Major Use |
|---|---|---|---|---|---|
| Cavalry loamy fine sand (11) | 1–3 | Well drained | Moderate | Basin floor | Livestock grazing, wildlife habitat, military installation |
| Hueco loamy fine sand (21) | 1–3 | Well drained | Moderately slow | Basin floor | Wildlife habitat |
| Mcnew-Copia-Foxtrot complex (40) | 1–5 | Well drained | Moderately rapid | Basin floor | Livestock grazing, wildlife habitat |
| Elizario-Copia complex (41) | 2–5 | Well drained | Moderately rapid | Basin floor, hills | Livestock grazing, wildlife habitat |
| Copia-Nations complex (22) | 1–3 | Excessively well drained | Moderately slow-rapid | Basin floor | Wildlife habitat |
| Copia loamy fine sand (7) | 5–15 | Excessively well drained | Moderately rapid | Dune | Livestock grazing, wildlife habitat |
| Deama-Rock outcrop complex (77) | 35–65 | Well drained | Moderately slow | Hill | Livestock grazing, wildlife habitat |
| Deama-Rock outcrop complex (75) | 5–15 | Well drained | Moderately slow | Hill | Livestock grazing, wildlife habitat |
| Deama-Penalto-Rock outcrop complex (80) | 35–65 | Well drained | Moderately slow | Hill | Livestock grazing, wildlife habitat |
| Deama-Penalto-Rock outcrop complex (79) | 15–35 | Well drained | Moderately slow | Hill | Livestock grazing, wildlife habitat |
| Altuda-Rock outcrop complex (54) | 5–15 | Well drained | Moderately slow | Hill | Livestock grazing, wildlife habitat |
| Altuda-Rock outcrop complex (55) | 15–35 | Well drained | Moderately slow | Hill | Livestock grazing, wildlife habitat |
| Altuda-Rock outcrop complex (56) | 35–65 | Well drained | Moderately slow | Hill | Livestock grazing, wildlife habitat |
| Bissett-Rock outcrop complex (52) | 15–35 | Well drained | Moderately slow | Hill | Livestock grazing, wildlife habitat |
| Bissett-Rock outcrop complex (53) | 35–65 | Well drained | Moderately slow | Hill | Livestock grazing, wildlife habitat |
| Cale silt loam (81) | 2–5 | Well drained | Moderately slow | Valley | Livestock grazing, wildlife habitat |
| Oryx loam | 1–5 | Well drained | Moderately slow | Fan piedmont | Livestock grazing, wildlife habitat |

| Soil Type | Slope (%) | Drainage | Permeability | Geographic Position | Major Use |
|---|---|---|---|---|---|
| Crossen gravelly fine sandy loam (30) | 2–5 | Well drained | Moderately slow | Fan remnant | Wildlife habitat |
| Sonic very gravelly fine sandy loam (27) | 1–8 | Well drained | Moderately slow | Fan piedmont | Wildlife Habitat |
| Infantry-Sonic complex (12) | 3–10 | Well drained | Moderately rapid | Fan piedmont | Livestock grazing, wildlife habitat |

Source: USDA (2004)

Prime Farmland soils are protected under the Farmland Protection Policy Act of 1981 (FPPA). The intent of the act is to minimize the extent to which federal programs contribute to the unnecessary or irreversible conversion of farmland soils to nonagricultural uses. The FPPA also ensures that federal programs are administered in a manner that, to the extent practicable, would be compatible with private, state, and local government programs and policies to protect farmland. The Natural Resources Conservation Service is responsible for overseeing compliance with the FPPA and has developed rules and regulations for implementation of the act (see 6 CFR §658, revised 1 January 1998). No prime farmlands are listed at Fort Bliss (USDA 2004).

### 3.8.2 Environmental Consequences

Table 3-1 includes significance thresholds for impacts to geology and soils.

#### 3.8.2.1 Alternative 1 – No Action

Under Alternative 1, the current conditions in the ROI would persist and Fort Bliss would not pursue additional Net Zero initiatives beyond those policies and procedures that are currently in place. No grading or excavation of soils or removal of vegetation would occur under this alternative. Implementation of the No Action Alternative would not impact soils.

#### 3.8.2.2 Alternative 2 – Conservation Policies and Procedures

Under Alternative 2, the current soil and geologic conditions in the ROI would persist. Although Fort Bliss would continue to implement conservation policies and procedures, negligible impacts to soils are expected because only small-scale, limited construction activities would occur.

#### 3.8.2.3 Alternative 3 – Water Reclamation Pipeline

Under Alternative 3, Fort Bliss would pursue the construction and use of a water reclamation pipeline to provide Fort Bliss with reclaimed water for the Installation's secondary uses. The Copia-Mcnew-Elizario

Association is the only soil unit and Calvary loamy fine sand and Hueco loamy fine sand are the only soil series located in the area of Alternative 3. This soil unit and series are highly erodible to wind erosion but not highly erodible to water erosion. The primary recommended use of this soil unit is wildlife habitat and is classified as being somewhat limited in its building construction potential (USDA 2004).

Under Alternative 3, most impacts to soils would be the result of construction activities. Construction activities throughout the project area would temporarily compact, expose, disturb, and modify the structure of soils during earth-moving activities. The installation of the pipeline would require soil displacement to an approximate 7 foot depth and 7 foot width at the widest part, potentially changing the structure of the soil and resulting in the loss of some soil in the direct location of the pipeline. Construction and related activities, in particular the compaction and exposure of soils, could create increased potential for erosion and dust; however, all construction activities would adhere to the Fort Bliss Construction Stormwater Pollution Prevention Plan (SWPPP) guidance to prevent soil erosion (Fort Bliss DPW 2013). Overall, some soil would be permanently lost in the footprint of the proposed pipeline and an increased potential for erosion, dust, and alteration of the soil structure would occur during construction. Soils may be adversely affected over time from irrigation of areas with reclaimed water due to greater accumulation of salts. Higher salinity could have an adverse impact on salt-intolerant plants. The amount of soil affected is relatively small when compared to East and West Bliss and Fort Bliss as a whole. Therefore, when combined with the use of BMPs and the adherence to all applicable regulations, the impacts to soils under this alternative would be less than significant. In addition, it is not expected that the implementation of Alternative 3 would affect geologic features.

#### 3.8.2.4 Alternative 4 – Waste-to-Energy Plant

The specific soil associations and soil units that would be affected under Alternative 4 are not known because a project location has not been identified at this time; however, the following general impacts are anticipated. The construction of the WTE plant would result in the long-term loss of the soils within the building footprint as well as in the footprint of proposed access roads. Utility trenching would result in soil compaction, disturbance, and exposure, increasing the potential for erosion and the permanent loss of soils in the actual footprint of the transmission lines. Based on the increased potential for erosion from construction activities as well as the susceptibility of the general area of Fort Bliss to wind erosion, BMPs would be used to prevent erosion and dust, and the Fort Bliss Construction SWPPP guidance would be adhered to during construction. Overall, the construction and operation of a WTE plant would result in increased potential for erosion, the displacement of soils during construction, stockpiling of soil adjacent to the facility, and the loss of soils in the building footprints. Impacts resulting from Alternative 4 would be to be proportionally small when compared to the remainder of Fort Bliss and would be less than significant to soils. It is not expected that the implementation of Alternative 4 would affect geologic features because the magnitude of the proposed project would be too minimal to affect geology.

### 3.8.2.5 Alternative 5 – Geothermal Energy Facility

Under Alternative 5, Fort Bliss would establish and operate a geothermal energy facility for the production of energy and/or hot water. The facility would occur within one of the two 20-acre footprints at the Davis Dome site and require at least one injection and production well, as well as less than 2 miles of transmission line and a CST array to increase geothermal temperatures.

The Copia-Nations-Hueco, Pendero-Copia-Piquin, and Reyab-Infantry-Crossen soils units and Hueco loamy fine sand and Copia loamy fine sand soil series exist in the area of Alternative 5. Each of these soils units and series is highly erodible to wind erosion but not highly erodible to water erosion. The primary recommended use of the Copia-Nations-Hueco and Pendero-Copia-Piquin soil units is wildlife habitat, and the recommended use of the Reyab-Infantry-Crossen soil unit is grazing and wildlife habitat. The Copia-Nations Hueco soil unit is not limited in building construction potential, the Pendero-Copia-Piquin soil unit is very limited in building construction potential, and the Reyab-Infantry-Crossen soil unit is somewhat limited to very limited in building construction potential (USDA 2004).

Construction activities associated with the geothermal energy facility and potential CST array would temporarily compact, expose, disturb, and modify the structure of the soils during earth-moving activities. The construction of the geothermal energy facility and CST array would result in the permanent loss of the soils within their footprints. The drilling of the wells would result in the permanent loss of soils within the footprint of the wells. Utility trenching would cause soil compaction, disturbance, and exposure, increasing the potential for erosion. Based on the increased potential for erosion from construction, construction activities and operation of the CST array as well as the susceptibility of the area to wind erosion, BMPs would be used. Overall, the construction and operation of a geothermal energy facility would result in increased potential for erosion, the short-term displacement of soils, and the loss of soils in the building and well footprints; however, impacts would be proportionally small when compared to the remainder of Fort Bliss. Consequently, the implementation of Alternative 5 would result in less than significant impacts to soils.

Impacts to geology may occur from the construction and operation of the injection and production well; however, based on the minimal size of the wells, impacts are expected to be less than significant.

### 3.8.2.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Under Alternative 6, Fort Bliss would develop up to 300 acres in the STA for CSP technology as well as for the required transmission lines. The Copia-Nations-Hueco Association is the only soil unit and the

Copia-Nations complex is the only soil series location in the area of Alternative 6. This soil unit is highly erodible to wind erosion but not highly erodible to water erosion. The soil unit is classified as not limited in building construction potential (USDA 2004).

Construction activities associated with the CSP array would temporarily compact, expose, disturb, and modify the structure of the soils during earth-moving activities. The construction of the CSP array would result in the permanent loss of the soils in the footprint of the array and removal of all soil productivity of the soils directly below the solar mirrors. Utility trenching would result in soil compaction, disturbance, and exposure increasing the potential for erosion. Based on the increased potential for erosion from construction, construction activities and operation of the CSP array as well as the susceptibility of the area to wind erosion, BMPs would be implemented. The construction of the CSP array would also require the existing soil to be leveled to a 1 percent to 2 percent grade and would require concrete footers of 4 feet to 5 feet, displacing existing soils and leading to a permanent loss of soils in the footprint of the footers and if soils need to be removed to achieve this grade. Overall, the construction and operation of the CSP array would result in increased potential for erosion, the short-term displacement of soils, the loss of soils in the CSP footprints, and removal of all soil productivity of the soils directly below the CSP mirrors. Impacts to soils under Alternative 6 would be significant. It is not expected that the implementation of this alternative would affect geologic features because the magnitude of this alternative would be minimal and would not affect these features.

#### 3.8.2.7 Alternative 7 – Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as biomass, large-scale wind, and solar PV facilities, may be developed on Fort Bliss as long as the technology and location meet the alternatives screening criteria presented in Section 2.2 and the environmental screening criteria presented in Appendix C, *Environmental Screening Criteria*. Depending on the location of future geothermal, wind, or solar resources, impacts to soils and geologic features have the potential to occur. Impacts from the implementation of projects meeting the environmental screening criteria would have impacts less than significant to significant but mitigable.

#### 3.8.2.8 Alternatives Combined

The selection of all alternatives would have significant impacts to soils. Fort Bliss proposes to construct renewable energy projects that require some alteration to the existing soil structure, have the possibility of increasing potential for erosion and dust, and would result in the permanent loss of soils. The selection of a combination of alternatives would affect more soil than individual alternatives. Also, where applicable all soil would be returned to pre-construction level and all construction activities would adhere to the Fort Bliss Construction SWPPP guidance.

## 3.9 Hazardous Materials, Hazardous Waste, and Safety

This section describes the use, handling, and storage of hazardous materials at Fort Bliss facilities; the generation and disposal of hazardous wastes; and potential site contamination issues, including the potential presence of hazardous materials in any structures to be demolished. The ROI for hazardous materials and the environmental waste management program includes East Bliss, West Bliss, and the FBTC.

### 3.9.1 Affected Environment

#### 3.9.1.1 Hazardous Materials Use, Handling, and Storage

Hazardous materials are used in many facilities at Fort Bliss, ranging from small quantities of cleaners and printing supplies to larger quantities of fuels, oils, and chemicals. The following describes hazardous materials expected to be used, handled, and/or stored at the various sites assessed in this document, based on existing environmental data and studies and the description of the facilities provided. Current policy stipulates that DoD facilities use materials that are the most environmentally suitable and least damaging as long as the materials meet the criteria and specifications for a given task.

#### 3.9.1.2 Hazardous Waste Generation, Storage, and Disposal

Several activities routinely performed on the Installation generate hazardous waste; however, hazardous wastes that are stored for less than 90 days do not require a permit. Typical hazardous wastes that might be generated include acids, corrosives, caustics, glycols, compressed gases, aerosols, batteries, hydraulic fluids, solvents, paints, cleaning agents, pesticides, herbicides, lubricants, fire retardants, photographic chemicals, alcohols, insecticides, sealants, various petroleum products, oils and lubricants, brake fluid, degreasers, fuels (gasoline and diesel), and ordnance.

The Fort Bliss hazardous waste management program includes an Installation Hazardous Waste Management Plan (IHWMP) and Army Standard Operating Procedures (SOPs) for the handling and storage of hazardous wastes. These documents are consistent with federal and state regulations and provide detailed information about training; hazardous waste management roles and responsibilities; and hazardous waste identification, storage, transportation, and spill control.

The Fort Bliss Waste Analysis Plan documents procedures for USEPA classification and identification of hazardous wastes to ensure compliant management of all waste streams generated at Fort Bliss. It is intended to ensure compliance with 40 CFR, *Protection of Environment*; 30 TAC 335, *Industrial Solid*

*Waste and Municipal Hazardous Waste*; New Mexico Environment Division hazardous waste management regulations; and DoD rules. The Waste Analysis Plan is updated annually or more frequently if there is a change in waste streams.

Fort Bliss is registered with the USEPA as a “large quantity generator” of hazardous waste per the Resource Conservation and Recovery Act (RCRA) (42 USC §6901) as defined by 40 CFR §§262 and 264. Because Fort Bliss is located in Texas and New Mexico, it is registered in both states (USEPA identification number TX4213720101 and NM4213720101). The Installation’s status (large quantity generator or small quantity generator) changes from year to year in the state of New Mexico, depending on the activities at the ranges and the volume of resulting hazardous waste generated. Fort Bliss is permitted by TCEQ to operate a Treatment Storage Disposal Facility (TSDF) (U.S. Army 2007b). Fort Bliss submitted an application for permit renewal to the state regulatory agency in February 2012 and has received a satisfactory status for the completed application from the state. Once approved, the permit will allow continued operations for up to 10 years. The TSDF is permitted to store hazardous waste for up to 1 year. In addition, Fort Bliss operates two 90-day storage facilities in Texas and three 90-day storage facilities in New Mexico.

The Directorate of Public Works-Environment Division (DPW-E) and the Disposition Logistics Agency currently manage the Fort Bliss TSDF, which is located at the Building 11614 area of Biggs AAF (U.S. Army 2007b). Wastes generated throughout Fort Bliss are brought to one of the 90-day storage facilities or the permitted facility (Building 11614) area for classification, labeling, and storage. The DPW-E inspects containers of waste before the waste is removed from waste accumulation points, and the containers are then taken to a 90-day storage facility or the TSDF. Once containers are transferred to the TSDF, the DPW-E inspects the waste to determine if it can be classified as a material that can be reissued (e.g., unopened containers or expired shelf-life items). If it is determined that the substance is a waste, the DPW-E further characterizes the waste stream by applying documented process knowledge and Material Safety Data Sheet information or obtaining a chemical analysis of a sample of the waste and coordinates proper disposal. Wastes must be characterized and identified as hazardous or non-hazardous to determine proper disposition.

Waste processing at the facility is continual, resulting in a turnaround time of approximately 90 days to ensure that storage capacity is available for wastes generated during training exercises or spills. Several times a month, or more often if necessary, wastes are transported to an off-site TSDF (U.S. Army 2010b).

Fort Bliss submits an Annual Waste Summary Report to TCEQ detailing the management of each hazardous waste generated onsite during the previous calendar year. A waste minimization report is also submitted to TCEQ in accordance with the Installation’s hazardous waste permit. In addition, a Biennial

Report is submitted to the New Mexico Environment Department in every even-numbered year to describe the activities for the previous odd numbered year, per 40 CFR §262.41. These reports detail information on the hazardous wastes generated, the USEPA hazardous waste identification number, TCEQ waste codes, the quantity of waste, the USEPA identification number of each TSDF to which the waste was sent, and a description of the Fort Bliss waste minimization program.

All hazardous wastes are disposed of at permitted treatment, storage, and disposal facilities in compliance with all applicable regulations. Specific laws, regulations, and management plans govern the disposal of hazardous wastes and specialized waste streams.

#### 3.9.1.3 Pollution Prevention

Pollution Prevention (P2) encompasses activities that reduce the quantity of hazardous, toxic, or industrial pollutants at the source by changing production, industrial, or other waste generating processes. The goal is to reduce the generation of hazardous wastes by significantly reducing the use of products containing hazardous material compounds. Executive orders, Army regulations, and state environmental laws have been enacted to provide the method and means by which federal facilities would prevent pollution and reduce wastes. A basic requirement of these regulations is the creation of a P2 Plan.

The Fort Bliss P2 Plan establishes Fort Bliss' roadmap for achieving federal, state, Army, and Installation P2 goals. The Fort Bliss P2 Plan complies with current Army regulations and TCEQ requirements. In accordance with the Texas Waste Reduction Policy Act and Army Regulation 200-1, the Fort Bliss P2 Plan is revised every 5 years or when warranted by a change in function or process at Fort Bliss. The P2 Plan also contains listings of hazardous waste generating activities and Toxic Release Inventory activities at Fort Bliss, along with current inventories.

Since 1998, the Fort Bliss HazMart has been the central point for hazardous materials management. The HazMart process includes a free issue program, shelf-life extension service, and household hazardous waste turn-in.

Fort Bliss also has recycling programs for used antifreeze, wet lead acid batteries, used tires, used oil, scrap metal, aluminum cans, and solvents.

#### 3.9.1.4 Site Contamination

The Installation Restoration Program (IRP) is the DoD program designed to identify, characterize, and remediate the environmental contamination on military installations. The program was implemented in response to the Comprehensive, Environmental Response, Compensation, and Liability Act (CERCLA) requirements to remediate sites that posed a health threat. Section 211 of the Superfund Amendments

Reauthorization Act amended CERCLA and established the Defense Environmental Restoration Program that ensures that DoD agencies have the right to conduct their environmental restoration programs.

The IRP is an ongoing DoD-administered program for identifying, evaluating, and remediating contaminated sites on federal lands under DoD control. The program was implemented in response to CERCLA requirements to remediate sites that pose a health threat and to serve as the mechanism through which DoD funds and conducts its environmental restoration program.

The Fort Bliss IRP in New Mexico includes the McGregor, Doña Ana, and Meyer oxidation ponds, which have been moved into the compliance-related cleanup program for groundwater monitoring. All medium- and low-risk IRP sites in Texas and New Mexico have been remediated and closed, except Area A-1 in Castner Range, where investigation is ongoing. Fort Bliss may be required to maintain a Corrective-Actions Only Permit because several Solid Waste Management Units in New Mexico have not yet been granted No Further Action status (U.S. Army 2010b).

#### 3.9.1.5 Ordnance and Explosives

Ordnance is expended in a variety of grenades, mortars, howitzers, artillery, rockets, and missiles during training exercises and testing activities at Fort Bliss. The DoD 6055.9 Standard defines UXO as "explosive ordnance that has been primed, fused, armed, or otherwise prepared for action, and that has been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, Soldiers, or material and remains unexploded either by malfunction or design or for any other cause." Ordnance impact areas and buffer zones are off limits to unauthorized Soldiers and the public. In addition, impact areas are posted with warning signs indicating the potential risks of UXO and penalty for trespassing on the impact areas.

The Fort Bliss explosives ordnance disposal unit eliminates explosives hazards on ranges by detonating the UXO in place, or if safe to do so, by removing the hazard to the explosives ordnance disposal range for detonation (U.S. Army 2007b). None of the projects under the Proposed Action would be located in areas known to contain UXO.

#### 3.9.1.6 Items of Special Concern

This section provides a description of the materials of special concern at Fort Bliss facilities.

##### Asbestos Containing Material

Asbestos containing material (ACM) was routinely used in buildings constructed prior to 1980. Many of the buildings at Fort Bliss were built or renovated between 1940 and 1975, when the use of asbestos was common (U.S. Army 2007b). Approximately 80 percent of all buildings on Fort Bliss contain some form of ACM. The majority of the asbestos used was in the form of pipe insulation, most of which has been removed and replaced with nonhazardous material. Several other types of ACM, such as floor tiles, cement siding, and wall/ceiling coverings remain in place throughout Fort Bliss facilities. As long as the ACM remains undisturbed and in good condition, it is not considered a health risk (U.S. Army 2010b).

Fort Bliss has an Asbestos Management Plan for the identification and removal of deteriorating asbestos. It is Fort Bliss policy to presume all buildings built before 1990 contain asbestos. Prior to any renovation or demolition, asbestos surveys are performed and abatement is conducted as required. Limited ACM surveys are conducted for building renovations to comply with the National Emission Standards for Hazardous Air Pollutants asbestos requirements. Complete ACM building surveys are conducted for buildings identified for demolition (U.S. Army 2010b). Regulated ACM resulting from renovation and demolition projects is disposed offsite in an approved landfill (U.S. Army 2010b).

### Lead

Potential sources of lead at Fort Bliss include lead-based paint (LBP) and lead munitions. LBP was commonly used on buildings constructed prior to 1978. Many of the houses and facilities at Fort Bliss were constructed before 1978 and are likely to contain LBP. Approximately 2,303 of Fort Bliss' 3,070 military housing units were constructed prior to 1978 (U.S. Army 2007b).

LBP is regulated by the Texas Department of State Health Services, the USEPA, the Occupational Health and Safety Administration (OSHA), and the Centers for Disease Control and Prevention. Army policy is to follow the most stringent federal, state, or local lead regulations.

It is Fort Bliss policy to provide a lead-hazard-free living and working environment for Soldiers and their families. Fort Bliss conducted an LBP inspection of its housing units in 1998. Five major groups of houses built before 1978 were identified as having LBP (U.S. Army 2007b). Lead contamination has been found in soils near older homes where lead in peeling exterior paint has leached into the soil during rain events. A risk-based assessment was conducted on all family housing units at Fort Bliss. As a result, Fort Bliss implemented the encapsulation or abatement of lead-contaminated surfaces on the exterior porches of family housing units, where applicable. All lead wastes were tested and determined to be nonhazardous and were disposed of in the Fort Bliss landfill (U.S. Army 2010b).

Fort Bliss uses a private contractor to conduct LBP inspections and risk assessments, if necessary. The contractor provides the results to the Army and maintains a database that contains a list of the buildings that have been tested, LBP test results, and actions taken to abate potential LBP hazard (U.S. Army 2010b).

Other facilities that are potential sources of lead contamination at Fort Bliss include administrative buildings, warehouses, storage buildings, and water towers. Fort Bliss has instituted an SOP for the review of any type of work that may disturb LBP. An SOP for compliance with OSHA standards is attached to any applicable work order to ensure that OSHA's standard for lead in construction is adhered to during any operation.

Soils with lead contamination are found at gun and artillery practice ranges where lead munitions have been used. High levels of lead in soil have been found around steel structures, such as bridges, water towers, and shooting ranges (U.S. Army 2010b). The soils with lead are located in impact areas within the practice ranges. The access to these areas is restricted. Only authorized personnel are permitted to enter these areas.

#### Radon

Fort Bliss is located in an area where the USEPA radon levels are 2 to 4 picoCuries/Liter. The USEPA recommends radon mitigation at levels of 4 picoCuries/Liter or greater. Any building constructed would need to consider radon levels and appropriate actions taken to ensure safe radon levels for personnel.

#### Medical and Biohazardous Waste

Medical wastes include wastes generated by hospitals, clinics, physicians' offices, dental offices, veterinary facilities, and other medical laboratories and research facilities. The Army complies with MEDCOM 40-35, *Management of Regulated Medical Waste*, for the handing, use, and disposal of medical and dental supplies and wastes.

Biohazardous waste can typically include human blood and blood products, cultures and stocks of infectious agents and associated biological wastes, isolation wastes, contaminated and unused sharps, animal carcasses, contaminated bedding material, and pathological wastes. Fort Bliss generates approximately 13,000 pounds of medical and biohazardous waste per month at the Dental Clinic, two Blood Banks, the Veterinary Clinic, the Troop Clinic, and WBAMC (U.S. Army 2007b). Large-scale training exercises, such as Roving Sands, may add several thousand pounds of waste per month during the exercise. Waste is collected and stored at the generating locations. A licensed medical waste contractor picks up these wastes about once every other day and removes them from the Installation (U.S. Army 2010b).

#### Low-level Radioactive Waste

Various Fort Bliss organizations and the WBAMC generate small amounts of low-level radioactive waste. The use of radioisotopes for medical purposes generates short-lived (half-life less than 90 days), low level waste. Other Fort Bliss organizations also generate low-level radioactive waste from commodity items, such as unusable compasses, dials, targeting devices, gauges, rocket sights, and chemical weapons detection equipment. These wastes include the radioactive isotopes tritium, thorium 232, radium 226, americium 241, nickel 63, promethium 141, cesium 137, cobalt 60, and strontium 90. All low-level radioactive waste items are consolidated, inventoried, and the radioactive material is removed if possible, before being temporarily stored in waste containers (U.S. Army 2007b). The consolidated waste is collected for subsequent disposal at an authorized disposal site. The hospital Radiation Safety Officer manages short-lived radiological waste generated by the WBAMC (U.S. Army 2010b).

The Installation Radiation Protection Officer manages all other low-level waste. Low-level waste is segregated at a turn-in point and is stored within a double-fenced, locked area on East and West Bliss. During recent years, Fort Bliss has drastically reduced the amount of low-level radioactive waste generated (U.S. Army 2007b). The Installation Radiation Protection Officer coordinates all radiological waste shipments with Army Material Command. The Army coordinates with waste deposit sites in Nevada to dispose of low-level radioactive wastes from Fort Bliss. After a waste repository site has been designated, a disposal contractor transports the waste from Fort Bliss to the assigned waste deposit site (U.S. Army 2010b).

### Pesticides and Herbicides

Pesticides and herbicides are required for insect and rodent control and for the control of unwanted vegetation, including noxious weeds. Integrated pest management (IPM) is a sustainable approach that incorporates the use of multiple techniques to prevent or suppress pests in a given situation. Although IPM emphasizes the use of nonchemical strategies, chemical control may be an option used in conjunction with other methods. IPM strategies depend on surveillance to establish the need for control and to monitor the effectiveness of management efforts.

The Integrated Pest Management Plan (IPMP) establishes authority for pest management activities on Fort Bliss (U.S. Army 2010b). The function of the IPMP is to provide acceptable management of pests; outline the resources necessary for surveillance and control; and describe the administrative, safety, and environmental requirements of the program. Although the IPMP emphasizes the use of nonchemical strategies, chemical control may be used in conjunction with other methods.

The IPM Coordinator monitors management requirements and activities, and the DPW executes the pest control service orders. DPW, however, does not service all tenants including privatized housing. Major pests include mice, gophers, skunks, termites, mosquitoes, flies, cockroaches, crickets, ants, spiders, wasps and bees, ticks, and noxious weeds. The DPW reviews pest management practices to ensure the safety of Soldiers and their families, protection of natural resources, and compliance with environmental laws.

Pesticides are stored and mixed at two facilities on the Main Post, Buildings 2509 and 3008 (U.S. Army 2007b). Material Safety Data Sheets for the pesticides are kept at each of those buildings. The pesticides and equipment inventories at each of the storage facilities are updated every year, and an Annual Pesticide Use Report is generated. Copies of these inventories are provided to the Fort Bliss Fire Department and the Safety Officer.

### Polychlorinated Biphenyls

Transformers manufactured prior to 1976 and light ballast manufactured before 1979 are likely to contain polychlorinated biphenyls (PCBs). The Fort Bliss PCB management program comprises a PCB Management Plan; updated SOPs; and a PCB Compliance Tracking System database, which includes an inventory of all tested electrical and hydraulic equipment with data plate information, an updated inventory of new electrical equipment, and the tracking of out-of-service electrical equipment (U.S. Army 2010b). The Defense Reutilization and Marketing Office manages waste PCBs and PCB items. Disposal of such items is carried out in accordance with Toxic Substance Control Act regulations. PCB wastes are stored at a Toxic Substance Control Act-compliant facility, separate from the RCRA Part B facility, before disposal.

Fort Bliss has completed three PCB survey, testing, and labeling projects since 1990 (U.S. Army 2007b). All PCB transformers, capacitors, and other PCB items with a PCB level over 500 ppm have been removed from service and properly disposed of. Approximately 300 transformers with PCB contamination less than 500 ppm remain in service (U.S. Army 2010b), but currently, there are no regulatory requirements to replace those transformers.

### Petroleum Storage Tanks

Petroleum, oils, and lubricants (POLs), including engine fuels (gasoline, diesel, and JP-8), motor oils and lubricants, and diesel and kerosene heating fuels, are used throughout the Installation. Fort Bliss has completed a four-phase project to upgrade existing underground storage tanks (USTs) to meet federal and state requirements and reduce total number of USTs on the Installation. Records indicate that 98 USTs and 160 aboveground storage tanks (ASTs) are in use for storing diesel fuel, unleaded gasoline, used oil, antifreeze, JP-8, and heating oil (U.S. Army 2007b). One UST and three ASTs are located at the Doña Ana Range-NTA, three USTs and one AST are located at Orogrande Range, and five USTs and 18 ASTs are located on McGregor Range (U.S. Army 2010b). Fort Bliss identified 36 sites that formerly had leaking petroleum storage tanks, of which four were ASTs. All have been remediated and closed.

### 3.9.2 Environmental Consequences

Table 3-1 includes significance thresholds for hazardous materials, hazardous waste, and safety impacts.

#### 3.9.2.1 Alternative 1 – No Action

Under Alternative 1, Fort Bliss would not pursue additional Net Zero initiatives beyond those policies and procedures that are currently in place. Fort Bliss would continue to follow regulatory requirements, and its current policies and SOPs regarding the management of hazardous materials and hazardous wastes. No impacts are expected related to hazardous materials and hazardous waste management under this alternative. No beneficial impacts from the reduction of waste generation would occur.

#### 3.9.2.2 Alternative 2 – Conservation Policies and Procedures

Fort Bliss would continue to implement policies, procedures, and BMPs that would include efforts to limit or reduce waste generation and maximize resource reuse. These policies and procedures would help ensure that all personnel are following the same procedures and that the maximum amount of waste reduction occurs. Beneficial impacts are expected due to the reduction in waste generation. No adverse impacts are expected.

#### 3.9.2.3 Alternative 3 – Water Reclamation Pipeline

Under Alternative 3, Fort Bliss would construct approximately 24 miles of water reclamation pipeline on East and West Bliss. There would be potential for minor petroleum leaks from equipment during the construction of the water reclamation pipeline; however, because construction would comply with the Fort Bliss Construction SWPPP guidance, anticipated adverse impacts would be less than significant.

#### 3.9.2.4 Alternative 4 – Waste-to-Energy Plant

Fort Bliss would pursue the construction and operation of a WTE plant to reduce landfill waste through the incineration of non-recyclable waste. Waste produced by WTE facilities includes solid waste called ash, which can contain any of the elements that were originally present in the waste. There are different categories of incinerator ash, which can come from multiple sources as described below:

- Bottom ash as discharged from the bottom of the furnace (mainly the grate) and fallen through the furnace grates.
- Heat recovery ash, as collected in the heat recovery system including boiler, economizer and superheater, is frequently discharged into the bottom ash stream and thus is often included in a broader definition of bottom ash.

- Fly ash carried over from the furnace and removed before sorbents are injected to clean the flue gases.
- Air pollution control (APC) residues as collected in the APC equipment (i.e., scrubbers, electrostatic precipitators, and baghouses) including fly ash, sorbents, condensates and reaction products. The term “fly ash” usually includes APC residues.
- Combined ash as a mixture of the above categories.

The amount of each ash residue produced at an incinerator depends on several factors such as feed waste composition, incinerator technology and operation, and APC system technology and operation. The major constituents of concern in municipal waste combustion ash are heavy metals, such as lead, cadmium, zinc, and mercury. These metals may impact human health and the environment if improperly handled, stored, transported, disposed of, or reused.

Incinerator ash is usually disposed of in an MSW landfill or an ash-only landfill known as an ash monolandfill. These landfills are specially designed to reduce the ability of heavy metals to migrate from the ash into the environment, but depending on where it is landfilled, incinerator ash may require the use of treatment technologies, such as vitrification or chemical transformation methods for solidification/stabilization of fly ash and transformation to a material with reduced release of contaminants, before it is landfilled. Ash inspections would occur as part of normal operations at the facility. Under current regulations, MSW ash must be sampled and analyzed regularly to determine whether it is hazardous or not. Hazardous ash would be managed and disposed of as hazardous waste. Non-hazardous ash would be disposed of in an MSW landfill. Trash that cannot be burned, such as most metals, would also go to landfill. Any potential toxic waste mixed in with the municipal waste intended for the WTE plant would need to be separated, removed, and properly disposed.

The construction and operation of these facilities have the potential to cause leaks and spill of chemicals and petroleum products. Adherence to proper management procedures and SOPs are anticipated; therefore, impacts are anticipated to be less than significant. Any future WTE project would undergo appropriate, additional NEPA analysis, including analysis of the potential location of the WTE plant and the proposed technology.

#### 3.9.2.5 Alternative 5 – Geothermal Energy Facility

The project would involve the construction of a facility near Davis Dome. Hot water from geothermal sources could contain trace amounts of metals, such as mercury, arsenic, and antimony. Sludge generated when hydrothermal steam is condensed could contain high levels of silica compounds, chlorides, arsenic, mercury, nickel, and other toxic heavy metals. If these materials are generated, proper management and

SOPs would be followed. Care would be taken to ensure material pumped into injection wells does not introduce any contaminants.

There would potentially be leaks of petroleum products related to the construction and operation of these facilities; however, with adherence to proper management procedures and SOPs, anticipated adverse impacts would be less than significant.

#### 3.9.2.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Fort Bliss would develop up to 300 acres for dry-cooled CSP technology in the STA. This technology would use fans as a cooling mechanism instead of water. Therminol heat transfer fluid would likely be used in the CSP to absorb concentrated sunlight. Therminol would need to be stored according to guidelines on material safety data sheets. Any leaks in the system could potentially affect surrounding soils and would also need to be contained and cleaned up in accordance with material recommendations. Used Therminol would be disposed of as a hazardous waste in accordance with the RCRA. There could potentially be leaks and spill of chemicals and petroleum products related to the construction and operation of the transmission line. The impacts from these activities are anticipated to be less than significant if policies and procedures are followed.

#### 3.9.2.7 Alternative 7 – Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as biomass, large-scale wind, and solar PV facilities, may be developed on Fort Bliss as long as the technology and location meet the alternatives screening criteria presented in Section 2.2 and the environmental screening criteria presented in Appendix C, *Environmental Screening Criteria*. In some instances, combined cycle natural gas turbines may be used to effectively implement solar or other renewable technologies. The supplemental natural gas turbines would be used to generate a consistent amount of energy flowing into the electrical grid. They would run continuously at idle and boost electrical output only when required. Impacts from implementing this alternative are expected to be similar to those under Alternatives 5 and 6, depending on which technology is selected. Impacts associated with wind energy development are also anticipated to be similar those described for Alternative 5 and 6. The effects from these activities are anticipated to be less than significant.

#### 3.9.2.8 Alternatives Combined

Combining alternatives would result in impacts similar to those under Alternatives 4, 5, and 6. Compliance with established policies and procedures would be necessary to prevent potential release of hazardous materials related to the implementation of each technology. If policies and procedures are followed, less than significant impacts are expected.

## 3.10 Land Use

This section summarizes the existing configuration, land use categories, and management of Fort Bliss lands and the compatibility of these uses with other Installation lands and with surrounding land uses. General land use patterns characterize the types of uses within a particular area and can include urban, agricultural, residential, scenic, natural, military, and recreational uses. Land ownership is a categorization of land according to type of owner. The major land ownership categories include federal, Indian reservations, state/local, and private. Land management plans include those documents prepared by agencies to establish appropriate goals for future use and development. As part of this process, agencies often identify sensitive land use areas as being worthy of more rigorous or protective management.

### 3.10.1 Affected Environment

Fort Bliss is divided into five different components/areas: East and West Bliss, Castner Range, the STA, the Doña Ana Range-NTA, and McGregor Range. East Bliss is developed and includes Biggs AAF, as well as supply/storage, troop and family housing, and community facilities. West Bliss also is developed and adjacent to the urban and suburban areas of the city and county of El Paso, Texas. West Bliss also includes the Main Post, WBAMC, Logan Heights, and primarily house maintenance, supply/storage, troop housing, family housing, community facilities, and administrative facilities. Castner Range, the STA, the Doña Ana Range-NTA, and McGregor Range are surrounded primarily by undeveloped, publically owned lands. These areas primarily are used for training activities but, to a small extent, house the same land uses as East and West Bliss with these uses occurring at the base camps at the Doña Ana Range-NTA and McGregor Range. Castner Range is no longer used for training activities; however, it does support tenant activities. Land uses on-Installation at Fort Bliss are generally compatible with surrounding land uses; the majority of conflicts arise from residential areas being located next to training, maintenance, or industrial areas.

All areas used for training activities are divided into training blocks known as training areas. These training areas and Castner Range comprise approximately 98 percent of the Installation. The extent of each area within Fort Bliss is presented in Table 3-16.

Land use on East and West Bliss has expanded based on mission growth and has required additional facilities and the expansion of East Bliss in the form of housing, retail, and administrative uses. This expansion and land use on East and West Bliss as a whole are broken down into categories based on the Fort Bliss Real Property Master Plan Long Range Component and include: Garrison operations, medical, open space/recreation, residential/commercial, school/research, tactical, and transportation/supply/storage/maintenance (U.S. Army 2010b).

**Table 3-16. Fort Bliss Installation Areas**

| Component | Square Kilometers | Percent of Total |
|---|---|---|
| East and West Bliss | 96 | >2 |
| Castner Range | 27 | <1 |
| South Training Areas | 373 | 8 |
| Doña Ana Range-North Training Areas | 1,196 | 27 |
| McGregor Range | 2,814 | 62 |
| **Total** | 4,506 | 100 |

Source: U.S. Army (2010b)

East and West Bliss are home to the heaviest concentration of facilities and mission-support activities, including, as previously mentioned, the Main Post, Biggs AAF, family housing, and the WBAMC. The Main Post comprises a variety of support services including administration, maintenance, service, storage and supply buildings, housing, and medical and community facilities. Biggs AAF is the largest active army airfield in the world and the center of air operations at Fort Bliss. The airfield provides full services for all U.S. Military services, Department of Justice, and other government flight detachments and serves as an aerial departure point for all deployable units at Fort Bliss as well as other Army Reserve and National Guard units. Biggs AAF has a 13,572-foot-long, Class B, concrete runway. Family housing in the area includes Logan Heights and the Balfour Beatty Communities (Balfour Beatty); both are used primarily for troop and family housing, community facilities, and recreation. The WBAMC is an active DoD medical facility providing comprehensive care to all active duty military, their family members, and retirees. In addition, the WBAMC includes family housing and community services. Alternative 3 would be located on East and West Bliss; however, military land use restrictions do not apply in this area (U.S. Army 2010b).

Castner Range, located north of Logan Heights and adjacent to the Franklin Mountains, is a former firing and training area. Training and firing at the location have resulted in the accumulation of UXO throughout most of the range. The range also has a Border Control facility and two museums that were conveyed in fee to the City of El Paso. The range also hosts a Girl Scout facility, Chapin High School, Texas Department of Transportation (DOT) equipment yard via lease, and an easement for Transmountain Road. No proposed projects are located in Castner Range (U.S. Army 2010b).

Land use in the STA, the Doña Ana Range-NTA, and McGregor Range is broken down into military and non-military land uses and then is further broken down into numbered training areas, which allow land use to be more easily managed and provide greater flexibility in land use management. Military land uses include 12 categories, as presented in Table 3-17. The approximate size of each of the military uses in these areas is presented in Table 3-18. Non-military use also occurs in these training areas and includes public access through activities such as public utilities, outdoor recreational use, including hunting, hiking, camping, and off-road recreational biking; however, each of these uses must be compatible with ongoing military activities (U.S. Army 2010b).

**Table 3-17. Fort Bliss Training Center Military Uses**

| Military Use | Description |
|---|---|
| Off-road vehicle maneuver: heavy | Space for ground units to practice movements and tactics. Different unit types may work in support of one another (combined arms), or a unit may operate on its own to practice a specific set of tasks. The "heavy" designation refers to areas where maneuver may consist of all types of vehicles and equipment, including both tracked and wheeled vehicles. This category includes fixed sites (e.g., bivouac, assembly, command, and logistic support), limited digging (e.g., fighting positions), and other miscellaneous training activities. |
| Off-road vehicle maneuver: light | Same definition as above, except that the "light" designation refers to areas where vehicle maneuver is restricted to light, wheeled vehicles (e.g., high-mobility, multipurpose wheeled vehicles). This category includes fixed sites (e.g., bivouac, assembly, command, and logistic support), limited digging (e.g., fighting positions), and other miscellaneous training activities |
| Dismounted maneuver | Same definition as above, except that the "dismounted" designation refers to areas where maneuver is restricted to foot traffic only. This category includes fixed sites (e.g., bivouac, assembly, command, and logistic support), limited digging (e.g., fighting positions), and other miscellaneous training activities. |
| On-road vehicle maneuver | Use of wheeled or tracked vehicles on an existing road. |
| Aircraft operations | Fixed-wing and rotary-wing over flights and air-to-air training. |
| Controlled field training exercise (FTX) | Fixed sites (e.g., bivouac, assembly, command, logistic support), limited digging (e.g., fighting positions), and concentration of troops and vehicles may occur only at designated locations. Controlled FTX allow for fixed sites and specified activities described in this military use at designated locations regardless of the underlying maneuver use. |
| Mission support facilities | Ranges (including live-fire), test facilities, landing zones/pads/strips, drop zones, and radar facilities. |
| Live-fire | Firing of individual and crew-served weapons systems (surface-to-surface, surface-to-air, and air-to-surface); launch sites and firing points; and laser-certified ranges. These activities occur under controlled conditions. |
| Safety danger zone/safety footprint | Target debris areas and safety footprints for weapons and laser use. |
| Surface impact | Areas in which range activities are expected to produce unexploded ordnance. |
| Range camps | Built environment providing limited administrative, living, quality of life, and other support services closer to training locations. |
| Environmental management | Environmental management and training area maintenance activities and conservation efforts. |

Source: U.S. Army (2010b)

**Table 3-18. Approximate Size of Each Military Use at the Fort Bliss Training Areas**

| Military Use | Acres | Percentage of Fort Bliss Training Areas |
|---|---|---|
| Off-road vehicle maneuver | 745,199 | 67 |
| On-road vehicle and dismounted maneuver | 1,022,023 | 91 |
| Aircraft operations | 1,116,539 | 100 |
| Controlled field training exercise | 15,949 | 1 |
| Mission support facilities | 828,080 | 74 |
| Live-fire | 854,462 | 76 |
| Safety danger zone/safety footprint | 1,116,539 | 100 |
| Surface impact | 57,806 | 5 |
| Range camps | 2,160 | <1 |
| East and West Bliss | 23,929 | 2 |
| **TOTAL** | 1,116,539 | 100 |

Source: U.S. Army (2010b)

War Highway divides the NTA from the Doña Ana Range. Military land use in the Doña Ana Range-NTA is primarily focused on on-and off-road vehicle maneuvering. Also occurring within the NTA are aerial drop zones and artillery firing areas. A complex of weapon firing ranges is located within the Doña Ana Range with its impact area located in the foothills of the Organ Mountains. Doña Ana Range Camp provides mission support facilities to units using its firing ranges and training areas. Also, located within both areas are the digital multi-purpose training ranges, scout/reconnaissance qualification ranges, and light demolition range and infantry squad/platoon battle courses. Non-military uses are limited to utility easements and some recreational uses. Utility easements include aboveground transmission lines and underground natural gas and petroleum pipelines. Recreation in the area is low and is only permitted when the training areas are not being used for military activities (U.S. Army 2010b). None of the proposed projects occur in this area.

McGregor Range receives the most extensive military use including a variety of military training activities, such as heavy, light, and dismounted maneuver, individual and collective firing ranges, and missile training and testing programs. Approximately half of McGregor Range is used for heavy off-road vehicle maneuver. Two companies of firing ranges exist: Orogrande Range Complex east of the town of Orogrande, and McGregor/Meyer Range Complex adjacent to the McGregor Range Camp north of the Texas/New Mexico border. The Orogrande Range Complex allows platoon or larger gunnery exercises on a Digital Multi-purpose Range Complex and a Digital Air Ground Integration Range and has a combined arms collective training facility, urban assault course, machine gun range, and a live fire shoot house. The McGregor/Meyer Range Complex provides individual weapons training, small arms weapons qualification ranges, a convoy live fire course, a live fire/breach facility, shoot houses, and an urban assault course. McGregor Range also includes the 5,200-acre Centennial Bombing Range and the Wilde Benton airstrip. Non-military land uses in the area include livestock grazing, recreation, and pipeline and transmission line utility corridors (U.S. Army 2010b). Fort Bliss and the U.S. Bureau of Land Management (BLM) co-manage public lands withdrawn from the public domain for military use within McGregor Range. Fort Bliss and the BLM signed a memorandum of understanding in 2006 regarding the BLM's Resource Management Plan Amendment, which details management responsibilities. Detailed information regarding withdrawn land in McGregor Range can be found in the Fort Bliss Army Growth and Force Structure Realignment EIS (U.S. Army 2010b) or the Fort Bliss Mission and Master Plan, Final Supplemental Programmatic Environmental Impact Statement (U.S. Army 2007b).[11]

In addition, to land use restrictions in place by Fort Bliss, a number of off-limit areas and limited-use areas exist. Off-limit areas include endangered species habitat, archaeological sites, and specific mission activities where training does not occur. Limited-use areas occur in areas because of biological or cultural issues or operational issues to maintain sustainability of these lands for training. It is expected that all proposed projects would avoid all off-limit and limited-use areas.

### 3.10.2 Environmental Consequences

Table 3-1 includes significance thresholds for land use impacts.

#### 3.10.2.1 Alternative 1 – No Action

Under Alternative 1, the current conditions in the project area would persist and Fort Bliss would not pursue additional Net Zero initiatives beyond those policies and procedures that are currently in place, resulting in no change to the current site or surrounding land uses and resulting in no impacts.

#### 3.10.2.2 Alternative 2 – Conservation Policies and Procedures

Under Alternative 2, Fort Bliss would continue to implement policies, procedures, and BMPs to maximize resource re-use, limit waste generation, increase resource re-purposing, and increase water and energy use efficiencies in new and existing facilities. Also, under this alternative, Fort Bliss would install water and energy meters, improve the water distribution system, and install smart grid energy technologies. No changes to existing land uses are anticipated under this alternative because existing land use would most likely not be changed, resulting in negligible impacts.

---

[11] See Fort Bliss website at: https://www.bliss.army.mil/DPW/Environmental/EISDocuments2.html.

### 3.10.2.3 Alternative 3 – Water Reclamation Pipeline

Under Alternative 3, Fort Bliss would pursue the construction and use of a water reclamation pipeline and water tower to provide Fort Bliss with reclaimed water for secondary uses at the Installation. Land use in the location of the purple pipe expansion is primarily development, ranging from residential to commercial as well as some open space. Construction and related activities associated with the extension of the pipeline would result in temporary impacts to land use in the construction staging areas and in the footprints of proposed construction; however, these results would be short term in nature and less than significant. After construction of the purple pipe, all disturbed land is expected to be returned to its previous condition with in no permanent alteration to the existing land use because the pipeline is expected to be 7 feet below grade, resulting in no long-term impacts to land use. Overall, implementation of Alternative 3 would result in minor impacts to land use.

### 3.10.2.4 Alternative 4 – Waste-to-Energy Plant

Under Alternative 4, Fort Bliss would pursue the construction and operation of a WTE plant; however, the size and location of the plant have not been determined at this time. Construction associated with Alternative 4 would include a WTE plant and as associated transmission lines and access roads. Construction activities associated with each of these aspects would affect land use during the construction period; however, it is expected that these impacts would be short term and less than significant. The construction of each of these aspects would permanently change the land use from open space to developed land, resulting in impacts to land use. The amount of open space affected is not known; however, it would likely be relatively small compared to the amount of open space on Fort Bliss and therefore result in less than significant impacts. Siting of the WTE plant would adhere to the environmental screening criteria included in Appendix C. Based on these criteria, it is assumed that any future WTE plant location would be consistent with existing and predictable future land uses as well as mission compatibility and would result in less than significant impacts to land use. Any future WTE project would undergo appropriate, additional NEPA analysis, including analysis of the potential location of the WTE plant and the proposed technology.

### 3.10.2.5 Alternative 5 – Geothermal Energy Facility

Under Alternative 5, Fort Bliss would pursue the construction and operation of a geothermal energy facility for the production of energy and/or hot water. The facility would occur within one of the two 20-acre footprints at the Davis Dome site, involving at least one injection and production well, as well as less than 2 miles of transmission line and a CST array to increase geothermal temperatures. The site and surrounding area of the proposed geothermal energy facility have a mixture of developed and undeveloped land. Construction activities associated with the development of the geothermal energy facility, CST array, and transmission line would temporarily alter existing land uses; however, these short-term changes would be less than significant. The construction of the geothermal energy facility, CST array, and transmission line would permanently change existing land uses from open space to developed footprints. Because the changes to land use would be relatively small in scale compared to the amount of open space in the McGregor Range, impacts would be less than significant. In addition, the facility needed for the geothermal activity, CST array, and transmission line would be consistent with surrounding land uses, and Fort Bliss has screened the site to ensure it does not adversely impact mission compatibility, resulting in less than significant impacts to land use.

#### 3.10.2.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Under Alternative 6, Fort Bliss would develop up to 300 acres in the STA for CSP technology and the required transmission lines. Current development in the proposed area of the CSP array is minimal with housing existing to the east and south and petroleum storage tanks to the south. Construction activities associated with the development of a CSP array and transmission line would temporarily alter existing land uses and would take valuable training land; while the size of the area affected would be relatively small, impacts would still be significant. Similarly, although there is a vastness of undeveloped land in the area, all training land is considered valuable and needed to meet the military mission, and although Fort Bliss screened the area and found it to be compatible with the mission, Alternative 6 would result in significant impacts to land use.

#### 3.10.2.7 Alternative 7 – Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as biomass, large-scale wind, and solar PV facilities, may be developed on Fort Bliss as long as the technology and location meet the alternatives screening criteria presented in Section 2.2 and the environmental screening criteria presented in Appendix C, *Environmental Screening Criteria*. Based on these criteria, it is assumed that any potential future renewable energy development would occur in a way that would be consistent with existing and predictable future land uses as well as mission compatibility and would result in less than significant impacts to land use.

#### 3.10.2.8 Alternatives Combined

As part of the Net Zero initiative, Fort Bliss may select one or more of the proposed alternatives to reach Net Zero status. As a result, the effects of a combination of these alternatives have the potential to have greater impacts to resource sections than individual alternatives on their own. Each alternative would change undeveloped, open space land to developed land at Fort Bliss, and while the selection of a combination of alternatives would alter more land use than individual alternatives, the amount of land affected would still be relatively small compared to the amount of open space land available in the individual training areas/ranges and at Fort Bliss as a whole. Also, where applicable, all affected land would be returned to pre-construction conditions. Fort Bliss has screened all proposed alternatives as being consistent and compatible with existing land uses and mission activities. Impacts to land use from the alternatives combined would be significant due largely to the anticipated impacts from Alternative 6.

## 3.11 Noise

Noise is defined as unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. Noise may be intermittent or continuous, steady or impulsive, stationary or transient. Receptors have a wide diversity in responses to noise that not only vary according to the type of noise and the characteristics of the sound source but also according to the sensitivity and expectations of the receptor, time of day, and distance between the noise source (e.g., a bulldozer) and the type of receptor (e.g., a person or animal).

Noise levels are measured in decibels (dB), which are represented on a logarithmic scale of about 20 to 120 dB. On this scale, everyday noises range from 30 dB for a quiet room to 100 dB for a loud power lawn mower at close range. At a constant level of 70 dB, noise can be irritating and disruptive to speech; at louder levels, hearing loss can occur. The risk of hearing loss starts at 85 dB over an 8-hour period and represents the OSHA standard for daily exposure. A difference of 3 dB represents a doubling of sound levels in terms of energy; however, because of how humans detect sound, it is necessary to have a 10-dB increase to be perceived as a doubling in sound. Noise measurements are usually on an "A-weighted" scale that filters out very low and very high frequencies to replicate human sensitivity. It is common to add the "A" to identify that the measurement has been made with this filtering process (A-weighted decibel measurement, or dBA). One noise source that does not get A-weighted is blast noise because it is impulsive and includes very low frequencies that would not be appropriate to filter using A-weighting. Blast noise from large caliber weapons use a "C-weighted" scale, which is abbreviated dBC.

The following noise metrics are typically used in analyzing noise:

**Maximum Sound Level (Lmax)** – The highest A-weighted sound level measured during a single event in which the sound level changes value as time goes on (e.g., an aircraft overflight) is called the maximum A-weighted sound level or maximum sound level, for short. The maximum sound level is important in judging the interference caused by a noise event with conversation, TV or radio listening, sleeping, or other common activities.

**Equivalent Noise Levels (Leq)** – While maximum noise levels provide a measure of the loudest level during a noise event, noise levels vary throughout an event or could be repetitive over a span of time. As an example for construction noise, equipment is rarely used continuously at its highest power (noise) level throughout the day. Periods of preparation work also occur, positioning and repositioning of equipment, breaks, maintenance, and other factors when the machinery would be used at lower, quieter power levels. Consequently, the appropriate noise metric to use is the noise level averaged over a given period denoted as equivalent noise level and is expressed as dBA Leq. Typical periods for Leq are 1 hour, 8 hours, and 24 hours. If detailed noise levels are known for each hour within an 8- or 24-hour period, Leq would be calculated for 8 hours or 24 hours, respectively. On the other hand, if each hour within a given period is the same as any other hour in that period, the average for 1 hour would be the same as 8 or 24 hours. Unless otherwise denoted, noise levels in this EIS are 1-hour equivalent noise levels.

**Day-Night Average Sound Level** – Noise tends to be more intrusive at night than during the day. This effect is accounted for by applying a 10-dB penalty to events that occur after 10:00 p.m. and before 7:00 a.m. If $L_{eq}$ is computed over a 24-hour period with this nighttime penalty applied, the result is the day-night average sound level (DNL). DNL is the community noise metric recommended by the USEPA (USEPA 1974), and it has been adopted by most federal agencies (Federal Interagency Committee on Noise 1992). It has been well established that DNL correlates well with long-term community response to noise (Schultz 1978, Finegold et al. 1994).

To assess the potential impacts of construction noise, estimated onsite equipment usage was modeled using the Federal Highway Administration’s Roadway Construction Noise Model (RCNM) (U.S. Department of Transportation [USDOT] 2006). The project-related noise assessment for construction activities focuses on the output of the RCNM. The results calculated by the model are conservative. Noise levels in the model originated from data developed by the USEPA and were refined using an “acoustical usage factor” to estimate the fraction of time each piece of construction equipment would be operating at full power (i.e., its loudest condition) during the project (USDOT 2006). The RCNM also was used to predict operational noise levels by activities that would use similar equipment, i.e., WTE waste handling operations.

The Federal Transit Administration has a screening tool (a noise impact assessment spreadsheet) for assessing potential impacts from linear transportation corridor noise from locations such as roadways and railway systems. This tool is geared for preliminary noise assessments when a general alignment of a corridor is known but detailed engineering has not been undertaken (Federal Transit Administration 2006). The 1-hour A-weighted Leq metric is used to assess roadway and railroad noise.

The DoD and the Army use three models—Noisemap, Small Arms Range Noise Assessment Model (SARNAM), BNoise2—to analyze typical Army operations that generate noise due to aircraft noise, small arms range noise, and blast noise from large caliber weapons, respectively. The Proposed Action in this EIS does not include any of these activities, but these models were used in reference documents (U.S. Army 2010b) that established the existing noise levels used in this EIS. Each of these models use data to predict noise levels given certain operational parameters, such as timing, location, and intensity, and produce predictive lines of equal noise levels referred to as "noise contours." The area between the contour lines comprise the Land Use Planning Zone (LUPZ), Zone I, Zone II, and Zone III used for land use planning and zoning. Because blast noise from large caliber weapons is impulsive and more startling than aircraft noise, their noise zones are a few dB less than for aircraft noise. Table 3-19 shows the noise zones and levels for both aircraft and large caliber weapons.

**Table 3-19. Army Noise Zones and Land Use Planning Zone**

| Noise Zones | Large Caliber Weapons [dB(C) DNL] | Aircraft Operations [dB(A) DNL] |
|---|---|---|
| I | < 62 | <65 |
| II | 62–70 | 65–75 |
| III | > 70 | >75 |
| Land Use Planning Zone | 57–62 | 60–65 |

Source: U.S. Army (2010b)

Notes: dB(A) DNL = A-weighted day-night average sound level, dB(C) DNL = C-weighted day-night average sound level

In an elevated noise environment, people react in different ways. When hearing the noise, the reactions of people can be affected by a number of variables:

- Intensity (how loud the noise is)
- Duration (does it last a second or an hour)
- Repetition (does it occur every day or once a month)
- Abruptness of the onset or stoppage of the noise (does it startle or come about at unpredictable times)
- Background noise levels (does the person hearing the noise live in an urban or rural environment)
- Interference with activities (does it interrupt phone conversations or listening to the radio or television)

- Previous community experience with the noise (some neighbors may be new or have lived there for most of their lives)
- Time (does noise occur in the middle of the day or night)
- Fear of personal danger from the noise sources (can the noise be associated with ammunition escaping from the Installation boundary)

All of these factors play into how annoyed the community may feel at any one time when noise is generated at an installation like Fort Bliss. To assist the community in land-use planning and zoning, the Army uses the aforementioned planning zones, LUPZ, Zone I, Zone II, and Zone III, where noise levels are separated into these four categories associated with noise level contours.

### 3.11.1 Affected Environment

Fixed-wing aircraft from Biggs AAF and El Paso International Airport along with the rotary-wing aircraft stationed at Biggs AAF are the primary noise sources affecting East and West Bliss. The LUPZ extends off-Installation to the southwest of East and West Bliss with noise levels in residential areas between 60 and 65 dBA DNL. None of the alternatives would affect these residential areas. Road, railroad, and construction noise are also present. Fort Bliss is surrounded by a network of major roadways. Noise levels generated from vehicular traffic are more noticeable at the perimeter of East and West Bliss.

#### 3.11.1.1 Aircraft Noise

The LUPZ 60 day-night average sound level for A-weighted noise (ADNL) contour extends off the northern and southwestern boundaries of Fort Bliss into El Paso. The Noise Zone II 65-ADNL contour extends off the northern boundary of Fort Bliss into El Paso. Additionally, the Noise Zone II contour also extends along U.S. Route 54, reflecting the increased operations to and from Biggs AAF and the ranges. Table 3-20 presents the acreage underlying the Noise Zone contours and the populations that are currently affected.

Approximately 3,361 acres (13.6 square kilometers) of off-Installation land are exposed to noise levels between 60 and 65 dB(A) DNL, and 889 acres (3.6 square kilometers) are exposed to noise levels between 65 and 75 dB(A) DNL. The area in Noise Zone II (65 dB(A) to 75 dB(A)) includes some residents, although most housing is to the west of the corridor along U.S. Route 54 that is used by helicopters transitioning to the restricted airspace. Commercial and industrial parcels in the affected area are generally compatible with noise levels.

**Table 3-20. Off-Installation Acreage and Populations Exposed to Aircraft Noise**

| Contour Level dB(A) DNL | Off-Installation Acreage | Rural Population Underlying Noise Contour | Urban Population Underlying Noise Contour | Total Population Underlying Noise Contour |
|---|---|---|---|---|
| Land Use Planning Zone (60–65) | 3,361 | 388 | 2,380 | 2,768 |
| Noise Zone II (65–75) | 889 | 34 | 128 | 162 |
| TOTAL | 4,250 | 422 | 2,580 | 2,930 |

Source: U.S. Army 2010b

Notes: dB(A) DNL = A-weight day-night average sound level

Acreage listed from operations in U.S. Army (2010b), the actual acreage may be slightly different due to mission changes, but most of the changes to flight paths are between the airfield and the training areas within restricted airspace.

In the range areas of Fort Bliss, existing sources of noise include military aviation activities, small arms ranges, use of artillery, large caliber weapons training, combat demolition activities, and vehicular traffic, and these sources of noise would continue. Aviation activities occur en route between Biggs AAF and the McGregor and the Doña Ana ranges, along a flight track that generally flies over U.S. Route 54. Impulse noise from small arms artillery and large caliber weapons training also occur at the McGregor and Doña Ana ranges.

### 3.11.1.2 Large Caliber Weapons Noise

The edge of the LUPZ (57 dB(C) DNL) under existing conditions extends off the Installation at the northern, southern, and western boundaries of Doña Ana Range, southeast of the boundary where the STA and McGregor Range meet, and east of Training Area 23. The Noise Zone II 62 (C) DNL contour extends off the northern, southern, and western boundaries of Doña Ana Range and south of McGregor Range.

The LUPZ noise levels are generally compatible with residential use, although they are calculated and presented because potential effects from operational noise in this area warrant additional consideration in the land use planning process. Noise sensitive land uses are normally not recommended in Noise Zone II.

## 3.11.2 Environmental Consequences

Noise analyses for this EIS focus on the construction and operation of each alternative. Construction noise is generated by the use of heavy equipment on job sites and is short term in duration (i.e., the duration of the construction period). Commonly, use of heavy equipment occurs sporadically throughout daytime hours. Table 3-21 provides a list of representative samples of construction equipment and associated noise levels, adjusted for the percentage of time equipment would typically be operated at full power at a construction site. Construction noise varies greatly depending on the construction process, type and condition of equipment used, and layout of the construction site. Overall, construction noise levels are governed primarily by the noisiest pieces of equipment, or impact devices (e.g., jackhammers, pile drivers).

Noise associated with the operation of machinery on construction sites is typically short term, intermittent, and highly localized. The loudest machinery generally produces maximum sound pressure levels ranging from the mid-70s to the low 100s dBA at 50 feet from the source (Table 3-21). The dB level of a sound decreases (or attenuates) exponentially as the distance from the source increases. For a single point source, like a construction bulldozer, the sound level decreases by approximately 6 dBs for each doubling of distance from the source. Sound that originates from a linear, or "line" source, such as a passing aircraft or a busy roadway, attenuates by about 3 dBs for each doubling of distance where no other features such as vegetation, topography, or walls absorb or deflect the sound. Depending upon their nature, the ability of such features to reduce noise levels may range from minimally to substantially. Additionally, interior noise levels would be reduced by 18 to 27 dBA due to the noise level reduction properties of the building's construction materials (FAA 1992). Noise levels from construction activities are intermittent in nature and the USDOT developed an "acoustical usage factor" that represents a percentage of time a piece of equipment runs generating maximum sound levels.

With the exception of safety standards for construction workers, the Army does not have a formal policy for managing construction noise. Construction noise is typically confined within an Installation boundary, occurs during daylight hours, and is only present during the period of construction. On a well-traveled highway, motor vehicles can be described as an acoustic line source. While the noise from an individual vehicle is transient in nature, the heavy use on busy roadways makes the road a fairly continuous noise source.

**Table 3-21. Samples of Construction Noise Equipment**

| Equipment Description | Impact Device[a] | Acoustical Usage Factor[b] (%) | Actual Measured $L_{max}$ @ 50 feet[c] (dBA, slow) (samples averaged) | Number of Actual Data Samples[d] (count) |
|---|---|---|---|---|
| All other equipment > 5 HP | No | 50 | NA | 0 |
| Backhoe | No | 40 | 78 | 372 |
| Clam shovel (dropping) | Yes | 20 | 87 | 4 |
| Compactor (ground) | No | 20 | 83 | 57 |
| Compressor (air) | No | 40 | 78 | 18 |
| Concrete mixer truck | No | 40 | 79 | 40 |
| Concrete saw | No | 20 | 90 | 55 |
| Crane | No | 16 | 81 | 405 |
| Bulldozer | No | 40 | 82 | 55 |
| Dump truck | No | 40 | 76 | 31 |
| Excavator | No | 40 | 81 | 170 |
| Front-end loader | No | 40 | 79 | 96 |
| Generator | No | 50 | 81 | 19 |
| Grader | No | 40 | NA | 0 |
| Impact pile driver | Yes | 20 | 101 | 11 |
| Jackhammer | Yes | 20 | 89 | 133 |
| Pavement scarifier | No | 20 | 90 | 2 |
| Paver | No | 50 | 77 | 9 |
| Roller | No | 20 | 80 | 16 |
| Scraper | No | 40 | 84 | 12 |
| Tractor | No | 40 | NA | 0 |
| Vibratory pile driver | No | 20 | 101 | 44 |

Source: USDOT (2006)

Note: NA = not applicable

[a] Indication whether or not the equipment is an impact device.

[b] The acoustical usage factor refers to the percentage of time the equipment is running at full power on the job site and is assumed at a typical construction site for modeling purposes.

[c] The measured "actual" emission level at 50 feet for each piece of equipment based on hundreds of emission measurements performed on Central Artery/Tunnel, Boston, MA, work sites.

[d] The number of samples that were averaged together to compute the "actual" emission level.

Army Pamphlet 40-501, *Hearing Conservation Program* (U.S. Army 1998), and Technical Guidance TG250, *Readiness through Hearing Conservation* (USACHPPM undated), describe the hearing conservation measures required for Army personnel, active duty and civilian, exposed to elevation noise environments. Some of the guidelines include: 1) implementing engineering controls, such as the use of sound barriers or replacement with quieter machinery, to reduce noise; 2) properly applying and using hearing protection, including earplugs and earmuffs; 3) monitoring hearing, such as annual hearing testing; and 4) providing hearing conservation education.

When evaluating noise effects, several aspects are examined, including: 1) the degree to which noise levels are generated by construction and operations, which are higher than the ambient noise levels; 2) the degree to which there is annoyance; and 3) the proximity of noise-sensitive receptors (i.e., residences) to the noise source. An environmental analysis of noise includes the potential effects on the local population. Such an analysis estimates the extent and magnitude of the noise generated by the various alternatives. As shown in Table 3-22, the City of El Paso has set noise limits codified in City Code Chapter 9.40 as 55 dBA in residential areas between the hours of 7:00 a.m. to 10:00 p.m.

**Table 3-22. El Paso Noise Standards from Chapter 9.40.040A**

| Noise Zone[1] | Time Interval | Allowable Exterior Noise Level |
|---|---|---|
| I[a] | 10:00 p.m. to 7:00 a.m.<br>7:00 a.m. to 10:00 p m. | 50 dBA<br>55 dBA |
| II[b] | 10:00 p.m. to 7:00 a.m.<br>7:00 a.m. to 10:00 p m. | 60 dBA<br>65 dBA |
| III[c] | 10:00 p.m. to 7:00 a.m.<br>7:00 a.m. to 10:00 p m. | 65 dBA<br>70 dBA |

Source: City of El Paso (Undated,a)

Notes: These zones are from City Code Chapter 9.40.030 and differ from Army noise zones.

[a] Noise Zone I: All single, double and multiple-family residential structures or property.

[b] Noise Zone II: All commercial properties.

[c] Noise Zone III: All manufacturing or industrial properties (Prior code §§12–109).

The City of El Paso allows for increased levels above the listed standard for short-term periods of elevated noise levels but cumulatively no more than the times and noise levels shown in Table 3-23. For example, noise generated in Noise Zone I during the day would have a limit of 55 dBA, but for a cumulative period of 15 minutes during any 1 hour, 60 dBA would be allowed.

**Table 3-23. El Paso Noise Cumulative Period Allowances per Chapter 9.40.040B**

| Noise Zone | | Allowable Cumulative Noise per 9.40.040B (minutes/allowance) | | | | |
|---|---|---|---|---|---|---|
| | | 30 min./ 0 dBA | 15 min./ 5 dBA | 5 min./ 10 dBA | 1 min./15 dBA | Any/20 dBA |
| I | Night | 50 | 55 | 60 | 65 | 70 |
| | Day | 55 | 60 | 65 | 70 | 75 |
| | Construction day[a] | 65 | 70 | 75 | 80 | 85 |
| II | Night | 60 | 65 | 70 | 75 | 80 |
| | Day | 65 | 70 | 75 | 80 | 85 |
| III | Night | 65 | 70 | 75 | 80 | 85 |
| | Day | 70 | 75 | 80 | 85 | 90 |

Source: City of El Paso (Undated,a)

Note: dBA = A-weighted decibel

[a] Noise levels presented in the table are general noise impacts. Chapter 9.40.120 raised the standard limits for daytime, construction noise in residential areas to 65 dBA as well as the cumulative period allowances to those presented.

Base housing on Fort Bliss is also subject to City of El Paso noise level standards, and construction activities would be required to comply with those standards. These levels would not necessarily determine significant impacts but are thresholds for which higher levels need to be investigated further. Construction activities near residences are normally avoided during nighttime hours and would likely occur only from 7 a.m. to 10 p.m., so equivalent noise level works well for construction noise. In this case, the USEPA standards provide a good basis for comparing noise levels for long-term noise exposure. The USEPA noise standard for 8-hour equivalent noise levels is 75 dBA for the general population, and that standard drops to 70 dBA if operations are on a continuous basis (USEPA 1979). Table 3-1 presents the significance thresholds for noise impacts. For this analysis, a noise impact off-Installation was considered significant if noise levels would exceed the City of El Paso standards, as presented in Tables 3-22 and 3-23. Noise impacts on-Installation were considered significant if they would exceed the USEPA standards. Occupational noise levels below 85 dB for an 8-hour day would be considered less than significant.

### 3.11.2.1 Alternative 1 – No Action

Under the No Action alternative, none of the Net Zero initiatives would be implemented and noise levels would remain as the current conditions within the ROI of each of the alternatives, resulting in no impacts.

### 3.11.2.2 Alternative 2 – Conservation Policies and Procedures

As discussed in Section 3.10.1, under Alternative 2, conservation policies and procedures anticipated would not require heavy construction activities or noise intensive operations. Noise generated from activities such as the replacement of existing HVAC facilities or small-scale, renewable energy projects would be temporary and largely confined to the building where the work is being performed. Under this alternative, the existing noise environment would remain and negligible impacts would occur.

#### 3.11.2.3 Alternative 3 – Water Reclamation Pipeline

Under Alternative 3, Fort Bliss would construct a water reclamation pipeline. The ROI for construction associated with the installation of the pipeline would be along the construction lateral, which includes several housing areas on the Installation. These housing areas are currently affected by noise from aircraft operations, are adjacent to the intersection of Sheridan Road and Merritt Road, and are in LUPZ with noise levels between 60 and 65 dBA DNL, but the remainder of the potentially affected residences is in areas outside the LUPZ with noise levels less than 60 dBA DNL. The water reclamation pipeline lateral runs adjacent to numerous on-Installation residences along Sheridan Road, Border Road, Club Road, Pershing Road, and Doniphan Road. At several points along the lateral, the pipeline would come as close as 50 feet to the nearest residence. The loudest piece of equipment used for pipeline construction would be an excavator and a dump truck. Assuming the space available for digging operations allows only one excavator and dump truck to be about 50 feet from a residence, noise levels for one excavator and one dump truck would be 78.1 dBA Leq. Because the equipment would be so close, this exceeds the City of El Paso noise standards; however, the noise levels at any individual residence would last a very short period, only when the equipment is immediately adjacent to the residence. As the distance from the noise increases, noise levels would be reduced, and at a distance of 75 feet, the noise level would drop below the USEPA standard of 75 dB Leq. As the trenching occurs, the equipment would move along a linear path as the construction proceeds. On a path 50 feet from a residence, noise levels above 75 dBA would occur during 110 linear feet of trenching from when the equipment would approach 75 feet from the structure to the point when it would be past 75 feet from the residence. Assuming that a Caterpillar 330BL or John Deere 350 excavator would be used and an experienced excavator operator can trench about 300 feet per workday (Gabe Mendez Excavating, Inc. 2012), it is anticipated that elevated noise levels at any particular residence would occur for approximately 3 hours and therefore would be less than significant. This level would also be below the occupational noise level standard of 85 dB.

#### 3.11.2.4 Alternative 4 – Waste-to-Energy Plant

Under Alternative 4, Fort Bliss would construct and operate a WTE plant. The ROI for a WTE plant would be approximately the same for both construction and operational activities. Because a location and size of the WTE plant have not been identified, this section describes only general noise impacts that would occur. Any future WTE project would undergo appropriate, additional NEPA analysis, including analysis of the potential location of the WTE plant and the proposed technology.

Noise impacts under this alternative would occur during construction of the WTE plant, transmission lines, and access roads. Construction would involve numerous pieces of equipment including graders, excavators, dump trucks, concrete batch plant, concrete mixing trucks, backhoes, pavers, and rollers just to name a few pieces of the louder equipment. Working all of the equipment at the same location on a site would be impractical but provides the worst case from a noise assessment point of view. With 20 pieces of equipment operating simultaneously, noise levels at a distance of 1,000 feet would be approximately 64.9 dBA and below City of El Paso noise standard of 65 dBA for construction, representing a less than significant impact. If the WTE plant were located closer than 1,000 feet to sensitive noise receptors, use of construction equipment could be sequenced such that only a few pieces of equipment would be used in areas nearest the receptors. Other measures include using sound mufflers on heavy equipment and sound walls between the work areas and sensitive receptors.

Operational noise impacts would occur from trash hauling and WTE operations, including hauling MSW and power generation (turbine) noise. Noise associated with WTE plant operations would occur as a result of plant machinery operations, including the turbine, pumps, and cooling fans. A study for a dual 162-MW gas turbine cogeneration plant indicated that the plant would generate noise levels of about 60 dBA at about 330 feet (100 meters) from the turbines (SVT Engineering Consultants 2006). This noise level includes the sound attenuation from the turbine enclosure and the building that houses the turbine. A future WTE plant would have many of the same noise generating elements as the above-referenced plant; however, it would not likely be as large. If site conditions require locating the WTE plant closer than 1,000 feet (305 meters) to the nearest sensitive noise receptors, design requirements would be specified for sound attenuation measures to keep sound levels below the City of El Paso standards at the property line. Such measures would be up to the designers but could include a combination of sound insulation and application of sound deadening materials to both the turbine enclosure and to the plant building. Dozers and dump trucks hauling waste would also generate noise during WTE operations. Once final design details for the WTE plant and truck hauling routes are determined, future NEPA analysis would be completed as necessary.

Construction and operation of the WTE would generate sufficiently high, localized noise levels to warrant hearing protection for workers within certain areas of the plant. Regulations and guidelines developed by OSHA and the Army (U.S. Army 1998, USACHPPM Undated) would be followed for to ensure hearing protection and conservation. No occupational hearing impacts would occur if proper and mandatory requirements are followed.

### 3.11.2.5 Alternative 5 – Geothermal Energy Facility

Under Alternative 5, Fort Bliss would construct and operate a geothermal energy facility. The ROI for this alternative would be in the vicinity of the proposed geothermal plants. Only construction noise is anticipated under this alternative. The geothermal energy facility would be located in Training Areas 32A and/or 32B well away from any noise sensitive receptors. Noise levels due to construction activities would be similar to those described above for the WTE plant. In this case, the receptors would be located at McGregor Range Camp about 1 mile away. The area is also within the Zone II noise contours (62 to 70 dB DNL). Therefore, noise levels would be unnoticeable compared to existing conditions. Similar to Alternative 4, localized noise levels would be sufficiently high to warrant hearing protection for plant workers. Regulations and guidelines regarding hearing protection would be strictly enforced; therefore, anticipated impacts would be less than significant.

### 3.11.2.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Under Alternative 6, Fort Bliss would construct and operate dry-cooled CSP technology. The ROI for dry-cooled CSP technology would be in the STA but not on any steep slope. Dry-cooled CSP technology would be employed at the site, and construction traffic, transmission line installation, and operational activities to build the power plant would be similar to the WTE plant without the waste-handling features. It is expected that if the CSP were at least 1,000 feet from the nearest receptor, noise impacts would be similar or less and less than significant.

The same noise levels and hearing protection requirements for construction workers as described for Alternative 4 would also apply to this alternative.

### 3.11.2.7 Alternative 7 – Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as biomass, large-scale wind, and solar PV facilities, may be developed on Fort Bliss as long as the technology and location meet the alternatives screening criteria presented in Section 2.2 and the environmental screening criteria presented in Appendix C, *Environmental Screening Criteria*. Additional renewable energy development projects are proposed programmatically rather than by specific projects. Because the location of the additional projects have not yet been developed, the ROI could be anywhere on the Installation or range. Noise levels are calculated programmatically for this alternative. Construction noise assumes two scenarios: 1) moderate construction activity involving approximately eight pieces of construction equipment, including graders, bulldozers, concrete trucks, and other equipment; and 2) heavy construction involving 20 pieces of equipment with additional pavers, graders, and bulldozers with a batch plant added to the moderate scenario. Under the moderate scenario, a distance of 625 feet from the project to the nearest residence would be required to maintain the City of El Paso's construction noise standard of 65 dBA for receptors off-Installation. The distance calculated for the heavy construction scenario would be 1,000 feet.

Operational noise from renewable energy projects would vary greatly depending on the type, size, power output, input requirements, and other factors. As a result, project-specific analyses would be necessary once projects are defined. Most noise generating aspects of renewable energy projects involve the power generating unit itself and are usually located within a building. Noise absorption enclosures would be designed as part of the project and can be designed such that noise levels at the nearest receptors can be maintained to the City of El Paso's noise standards.

#### 3.11.2.8 Alternatives Combined

When considering noise impacts combined, the timing of the source of the noise is compared to the receptor's locality. Combined noise effects on a receptor have to occur within the same equivalent noise level measuring period, during the same hour for Leq(1) or same day for Leq(24). At this time, none of the ROIs for alternatives combined have the potential to be heard by the same receptor at the same time, but a location for the WTE plant under Alternative 4 has not been identified. All of the alternatives are sufficiently separated geographically that noise impacts from one alternative would not interact with any other alternative.

## 3.12 Socioeconomics and Environmental Justice

### 3.12.1 Affected Environment

The Proposed Action would occur on Fort Bliss, which is located within El Paso County, Texas, and Doña Ana and Otero counties, New Mexico. These counties encompass the entirety of Fort Bliss as well as the population and services that serve the Installation. It is anticipated that these counties would contain a majority of the population that would serve as the construction workforce for the projects being considered under the action alternatives. Therefore, the ROI for socioeconomic analysis encompasses these three counties. The ROI is defined as the geographic area within which the principal direct and secondary socioeconomic effects of actions associated with activities at Fort Bliss would likely occur and where most consequences for local jurisdictions are expected. The range of the ROI can also vary depending on the impact to specific socioeconomic resources, such as employment, law enforcement, and housing; thus, the geographic extent of the ROI may vary from one socioeconomic resource to another.

#### 3.12.1.1 Population

Approximately 1,073,677 persons lived in the three-county ROI in 2010 with a majority (75 percent) of those persons presently residing in El Paso County (Texas State Data Center 2012). The rate of population growth in the ROI has steadily declined between 1980 and 2010 (Texas State Data Center 2012, U.S. Department of Commerce 1990a,b). Population growth slowed in the ROI from 25 percent growth between 1980 and 1990 to 18 percent between 1990 and 2000 and to 16 percent between 2000 and 2010 (Table 3-24) (New Mexico Bureau of Business and Economic Research 2012, Texas State Data Center 2012, U.S. Department of Commerce 2000a).

**Table 3-24. Historic Population for ROI, 2010**

| Geography | 1980 | 1990 | 2000 | 2010 |
|---|---|---|---|---|
| El Paso County, Texas | 479,899 | 591,610 | 679,622 | 781,932 |
| Dona Ana County, New Mexico | 96,340 | 135,510 | 174,682 | 215,828 |
| Otero County, New Mexico | 44,665 | 51,928 | 62,298 | 66,292 |

Sources: New Mexico Bureau of Business and Economic Research (2012), Texas State Data Center (2012), U.S. Department of Commerce (2000a)

The University of Texas and the University of New Mexico developed population forecasts for the study area for the years 2020 and 2030. The total population in the ROI is projected to increase by 13 percent between 2010 and 2020 and increase again, by an additional 10 percent, between 2020 and 2030. A majority of this population growth is anticipated to occur in El Paso County during this time. The population growth levels are higher than the state of Texas' projected population increases of 7 and 5 percent, respectively between the same years, but lower than New Mexico's projected population increases of 17 and 13 percent, respectively (Table 3-25) (New Mexico Bureau of Business and Economic Research 2012, Texas State Data Center 2012).

**Table 3-25. Population Forecast for the ROI, State of New Mexico and State of Texas**

| Geography | 2010 | 2020 | 2030 | 2010 to 2020 | 2020 to 2030 |
|---|---|---|---|---|---|
| State of Texas | 2,802,983 | 24,330,687 | 25,449,114 | 7% | 5% |
| El Paso County, Texas | 781,932 | 870,831 | 949,960 | 11% | 9% |
| New Mexico | 2,162,331 | 2,540,145 | 2,864,796 | 17% | 13% |
| Otero County, New Mexico | 66,292 | 71,051 | 73,436 | 7% | 3% |
| Dona Ana County, New Mexico | 215,828 | 256,619 | 291,895 | 19% | 14% |

Sources: New Mexico Bureau of Business and Economic Research (2012), Texas Data Center (2012)

The total number of military personnel stationed at Fort Bliss was approximately 35,411 people in FY 2012 (Pacific Northwest National Laboratory [PNNL] 2012). Between 15 January 2012 and 21 January 2012, 7,926 military personnel were living in the barracks. The number of military personnel living in family housing on-Installation was estimated to be 3,500, and the number of military personnel living off-Installation was determined to be 20,955. The number of dependents living on-Installation was estimated to be approximately 10,600 persons (PNNL 2012). The number of civilian and contractor personnel working on the Installation in FY 2012 was 10,783 (PNNL 2012).

#### 3.12.1.2 Income

In 2010, median household incomes in Doña Ana and Otero counties were $35,869 and $37,342, respectively, between approximately 21 and 17 percent lower than the state of New Mexico’s median income. El Paso County’s median household income in 2010 was $36,647, which is approximately 35 percent lower than the state of Texas’ median household income (U.S. Department of Commerce 2010a).

#### 3.12.1.3 Labor Force, Unemployment, and Employment by Industry

In 2010, the total labor force in the study area was 438,203 persons. The ROI had an unemployment rate of 9 percent during this period. Much of Doña Ana County’s workforce resides in Las Cruces, New Mexico, and along the Interstate 25 corridor between Las Cruces and El Paso, Texas, while a large amount of Otero County’s workforce resides in Alamogordo, New Mexico. Much of El Paso County’s workforce resides in the cities of El Paso and Socorro, Texas, located along the border with Mexico, just to the southeast of the city of El Paso (U.S. Department of Commerce 2012a).

Average annual employment in the construction industry in the Upper Rio Grande Workforce Development Area, which includes El Paso County along with five other counties, is expected to increase from 14,650 in 2008 to 17,240 in 2018 (Texas Labor Market & Career Information Department 2012a). The growth rate in employment in this industry is being fueled to a large degree by the construction laborer and pipe layer occupations, which are expected to grow by 23.6 and 26.7 percent during this period, respectively (Texas Labor Market & Career Information Department 2012b,c). The New Mexico Department of Workforce Solutions projects that employment in construction and extraction industry in the Las Cruces Metropolitan Statistical Area will grow from 4,690 in 2008 to 5,150 in 2018, a growth of 9.9 percent. Employment in the professional, scientific, and technical industries is expected to increase by 21.2 percent during this period, and the utilities industry is expected to grow by 6 percent during this period (New Mexico Department of Workforce Solutions 2012).

#### Unemployment

As mentioned above, in 2010, the ROI had an unemployment rate of 9 percent, which is slightly higher than the unemployment rates for the states of New Mexico and Texas, both at 8 percent in 2010. El Paso County had a higher unemployment rate, at 10 percent, than Doña Ana County and Otero County at 8 and 7 percent, respectively, in 2010. The unemployment rates in each of these counties increased by between 3 and 4 percent between 2008 and 2010, reflecting the national economic downturn that occurred during that time. The state unemployment rates also increased by this same amount between 2008 and 2010 (U.S. Department of Labor 2012a).

### Employment by Industry

In 2010, the latest year for which employment by industry data were available at the time of this analysis, the health care and social assistance and retail trade industries made up the largest percentage of total employment in the study area, each representing 11 percent of the total employment in the ROI. Employment in state and local government made up 15 percent of total employment during this time. Employment in the military represented 1 percent of total employment in Doña Ana County, 6 percent of total employment in El Paso County, and 16 percent of total employment in Otero County in 2010. Employment in the professional, technical, and scientific services industry made up 4 percent of total employment in the study area during this time. Employment in the construction industry represented approximately 7 percent of total employment in the study area during 2010; additionally, employment in this industry remained relatively stable between 2007 and 2010 (Table 3-26) (U.S. Department of Commerce 2012b).

**Table 3-26. Employment by Industry, 2010**

| Line Title | Region of Influence | | | State of Texas | | | State of New Mexico | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2010 | Percent Change 2007 to 2010 | Percent of Total, 2010 | 2010 | Percent Change 2007 to 2010 | Percent of Total, 2010 | 2010 | Percent Change 2007 to 2010 | Percent of Total, 2010 |
| Total employment | 510,701 | 4 | 510,701 | 14,285,773 | 2 | 14,285,773 | 1,064,452 | –3 | 1,064,452 |
| Farm employment | 4,353 | –6 | 1 | 263,684 | 0 | 2 | 24,710 | –4 | 2 |
| Forestry, fishing, and related activities | 1,881 | 19 | 0 | 54,546 | 0 | 0 | 5,327 | 3 | 1 |
| Mining | 922 | 24 | 0 | 369,496 | 15 | 3 | 25,938 | 3 | 2 |
| Utilities | 1,599 | 9 | 0 | 53,626 | 5 | 0 | 4,560 | 3 | 0 |
| Construction | 33,417 | –1 | 7 | 922,121 | –11 | 6 | 62,460 | –29 | 6 |
| Manufacturing | 22,027 | –19 | 4 | 874,993 | –13 | 6 | 35,711 | –20 | 3 |
| Wholesale trade | 13,807 | –8 | 3 | 548,926 | –4 | 4 | 26,803 | –8 | 3 |
| Retail trade | 54,274 | –3 | 11 | 1,419,381 | –3 | 10 | 111,810 | –6 | 11 |
| Transportation and warehousing | 20,612 | –6 | 4 | 508,828 | –5 | 4 | 23,705 | –15 | 2 |
| Information | 7,182 | –1 | 1 | 234,258 | –12 | 2 | 16,867 | –11 | 2 |
| Finance and insurance | 18,559 | 19 | 4 | 875,365 | 18 | 6 | 36,640 | 9 | 3 |
| Real estate and rental and leasing | 16,289 | –3 | 3 | 565,738 | 0 | 4 | 39,701 | –7 | 4 |
| Professional, scientific, and technical services | 20,301 | 5 | 4 | 913,179 | 2 | 6 | 79,161 | –3 | 7 |
| Management of companies and enterprises | 1,524 | 18 | 0 | 115,289 | 25 | 1 | 5,511 | –10 | 1 |
| Administrative and waste management services | 38,193 | 12 | 7 | 934,722 | –1 | 7 | 55,493 | –9 | 5 |

| Line Title | Region of Influence | | | State of Texas | | | State of New Mexico | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2010 | Percent Change 2007 to 2010 | Percent of Total, 2010 | 2010 | Percent Change 2007 to 2010 | Percent of Total, 2010 | 2010 | Percent Change 2007 to 2010 | Percent of Total, 2010 |
| Educational services | 6,176 | 16 | 1 | 217,711 | 13 | 2 | 16,699 | 6 | 2 |
| Health care and social assistance | 54,214 | 9 | 11 | 1,377,681 | 10 | 10 | 120,088 | 7 | 11 |
| Arts, entertainment, and recreation | 6,472 | 6 | 1 | 232,323 | 7 | 2 | 23,407 | 2 | 2 |
| Accommodation and food services | 37,456 | 5 | 7 | 986,366 | 3 | 7 | 81,622 | –4 | 8 |
| Other services, except public administration | 26,510 | –4 | 5 | 804,343 | –1 | 6 | 50,933 | –5 | 5 |
| Government – federal, civilian | 18,818 | 16 | 4 | 210,325 | 11 | 1 | 33,722 | 10 | 3 |
| Government – military | 28,866 | 29 | 6 | 183,641 | 3 | 1 | 17,136 | 12 | 2 |
| Government – state and local | 76,357 | 3 | 15 | 1,619,231 | 6 | 11 | 166,448 | 1 | 16 |

Source: U.S. Department of Commerce (2012b)

### 3.12.1.4 Housing

Approximately 4,300 housing units were available for rent in El Paso County in 2010. Approximately, 858 housing units in Otero County and 2,000 units in Doña Ana County were available for rent in 2010 (U.S. Department of Commerce 2010b). Therefore, the total number of rental units available in the ROI in 2010 was 7,273. This represents an approximately 29 percent decrease in the number of rental housing units available between 2000 and 2010 as approximately 10,218 housing units were available for rent in ROI in the year 2000 (Table 3-27) (U.S. Department of Commerce 2010b, 2000a).

**Table 3-27. 2010 Housing Supply**

| Census Unit | State of New Mexico | State of Texas | Doña Ana County, New Mexico | Otero County, New Mexico | El Paso County, Texas |
|---|---|---|---|---|---|
| Total number of housing units (2010) | 901,388 | 9,977,436 | 81,492 | 30,992 | 270,307 |
| Increase (percentage) in the number of housing units (2000 to 2010) | 15% | 22% | 25% | 6% | 20% |
| Total number of rental units | 271,423 | 3,631,890 | 29,072 | 8,742 | 99,223 |
| Total number of units available for rent | 22,150 | 394,310 | 2,054 | 858 | 4,361 |
| Percent of rental units available for rent | 8% | 11% | 7% | 10% | 4% |

Source: U.S. Department of Commerce (2010b)

### 3.12.1.5 Government and Emergency Services

Law enforcement on all areas of Fort Bliss is conducted by federal, state, and city personnel as applicable. The Fort Bliss Fire Department provides fire protection services for the Installation and works cooperatively with the BLM to fight fires on the McGregor Range. Each of the counties located within the study area has its own sheriff's department, and the police departments within the cities of El Paso, Las Cruces, and Anthony are also responsible for police protection within their respective municipalities (U.S. Army 2000).

The WBAMC provides care for military personnel and their families residing both on and off Fort Bliss and serves as a trauma center for the surrounding community. Additionally, El Paso County has several acute care hospitals and specialty medical centers, Las Cruces has two hospitals, and Alamogordo has one hospital. The city of El Paso has the University Medical Center of El Paso, which is the only Level 1 trauma facility within a 250-mile radius of El Paso. This hospital serves approximately 61,800 patients annually (University Medical Center of El Paso 2012). It is likely that construction workers associated with constructing facilities under the action alternatives would be treated at this hospital if they were to require emergency medical attention.

A number of Independent School Districts (ISD) serve the Installation. In Texas, this includes both the El Paso ISD, which serves the majority of the students on the Installation in addition to the Socorro ISD. Hughey Elementary, Bliss Elementary, Bassett Middle School, Ross Middle School, Chapin High School, Austin High School, and Burges High School served the population living on Fort Bliss in 2011. Powell Elementary, Logan Elementary, Ross Middle School, Chapin High School, and Irvin High School served the area of Logan Heights (El Paso ISD 2012). Milam Elementary, Ross Middle School, Austin High School, and Chapin High School service the area of East Bliss. Bliss, Powell, Logan, and Milam Elementary Schools as well as Chapin High School are located on the Installation. These schools' catchment areas service portions of the population of the El Paso area residing both on and off the Installation.

The Ysleta, Socorro, and Clint ISDs also serve students that reside in the city of El Paso who may be dependents of personnel serving or working on Fort Bliss. Doña Ana County and the Installation are also served by the ISDs of Las Cruces and Gadsden. The Alamogordo ISD serves Otero County; however, some students residing in the southwest corner of Otero County, near Chaparral, attend schools in the Gadsden ISD under a cost agreement between the two school districts (U.S. Army 2010b).

Several child development centers are also located within the Main Post, Logan Heights, and East Bliss (Fort Bliss Family, Morale, and Welfare & Recreation 2012). In addition to these child development centers, several daycare centers are located close to, but outside of, the Installation.

#### 3.12.1.6 Utilities – Electrical, Water, and Waste

EPEC services Fort Bliss in both Texas and New Mexico on the grid system coordinated by the Western Electricity Coordinating Council, a regional coordinator for power reliability in the western United States. EPEC provided 290,368 MWh to Fort Bliss in 2010 and 339,086 MWh in 2011 (EPEC 2012b). EPEC has indicated that a majority of the locally generated power that is supplied to Fort Bliss is generated from natural gas; however, as EPEC's electrical grid is tied into the national electrical grid, it is possible that some electricity generated by other means, including coal, solar, and nuclear energy, among others, could also be used to power Fort Bliss (EPEC 2012b). Currently, Fort Bliss consumes approximately 3 percent on average of all power sold by the EPEC (Favela 2012). Fort Bliss does not pay sales tax on the power that it purchases from EPEC because it is a federal entity. EPEC, however, may pay some taxes on the energy that it purchases and then, in turn, it charges its customers, such as Fort Bliss, a reimbursement fee (Office of Texas Comptroller 2012a).

Potable water at Fort Bliss is supplied by a combination of on-site wells and purchased water from the City of El Paso (PNNL 2012). From FY 2008 to FY 2011, Fort Bliss withdrew an average of 1.4 billion gallons of water per year from wells and purchased an average of 390 million gallons of water per year from EPWU (PNNL 2012). Fort Bliss has water rights to withdraw water from wells; therefore, the cost of withdrawing this water is limited to the costs associated with pumping and chemical treatment. Fort Bliss purchases any additional water that it requires from EPWU. Wells supplied approximately 94 percent of Fort Bliss' total potable water in FY 2008. This percentage declined to 68 percent for FY 2011 (PNNL 2012). The cost of water purchased from EPWU varied greatly from FY 2008 to FY 2011; however, these costs stabilized during FY 2011. In FY 2011, the monthly low cost for purchased water was $1.00/thousand gallons (kgal), the monthly high cost was $1.21/kgal, and the average cost for the year was $1.10/kgal (PNNL 2012). Fort Bliss' major water uses are for irrigation. Golf course irrigation is the largest consumer of water, followed by family housing irrigation, and miscellaneous on-Installation irrigation. Use of water in domestic plumbing makes up the remaining major water use category on the Installation. The use of water for these categories comprises approximately 89 percent of accounted for water consumption on the Installation (PNNL 2012).

EPWU has undertaken several efforts to make water supply more sustainable in the area, including construction of several water reclamation facilities that supplies 5.83 million gallons per day of reclaimed water for secondary uses, including irrigation, agriculture, cooling towers, fire protection, and other uses (EPWU 2012a). The Fred Hervey Water Reclamation Plant located in northeast El Paso uses tertiary treatment to produce reclaimed water to drinking water quality level. Although not used for drinking (potable) purposes, the reclaimed water is re-injected into the Hueco Bolson through a series of injection wells and infiltration basins in northeast El Paso for aquifer replenishment. In 2010, more than 500 million gallons of reclaimed water were returned to the Hueco Bolson. As noted in Chapter 2, reclaimed water is treated to remove pathogens; although it tends to have higher salinity than potable drinking water, it has been used successfully for irrigation and other similar uses.

The utility has also increased its freshwater production using previously unusable brackish groundwater through the construction and operation of one of the largest inland desalination plants in the world. The plant produces 27.5 million gallons of freshwater per day by treating brackish water from the areas aquifers and from the Rio Grande. The plant is projected to provide storage volume sufficient for 50 years of operation (EPWU 2012b).

In the FY 2009/2010, Fort Bliss generated and disposed of 14,113 tons of solid waste (R.W. Beck 2011). During this same period, Fort Bliss recycled 3,470 tons of material of which 1,650 tons were recovered through the single stream recycling program (R.W. Beck 2011). The amount of waste recycled or diverted on Fort Bliss has more than tripled in the last 3 years. Fort Bliss uses three landfills, and, of these, the Fort Bliss Sanitary Landfill is the only one of the three landfills currently located on the Installation, and it is expected to reach capacity in 2012. Fort Bliss currently also uses two off-Installation landfills—the City of El Paso Clint Landfill and the Camino Real Landfill (R.W. Beck 2011). Approximately 1,500 tons of MSW are disposed of each day at the Clint Landfill from the city's residential garbage collection operations, private haulers, surrounding communities, and the general public (City of El Paso undated,b).

### 3.12.1.7 Environmental Justice and Protection of Children

#### Environmental Justice

On 11 February 1994, President Clinton issued Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. Executive Order 12898 directs agencies to address environmental and human health conditions in minority and low-income communities so as to avoid the disproportionate placement of any adverse effects from federal policies and actions on these populations. The general purposes of this executive order are to:

- Focus the attention of federal agencies on human health and environmental conditions in minority communities and low-income communities with the goal of achieving environmental justice
- Foster nondiscrimination in federal programs that substantially affect human health or the environment
- Improve data collection efforts on the impacts of decisions that affect minority communities and low-income communities and encourage more public participation in federal decision-making by ensuring documents are easily accessible (e.g., available in multiple languages and made readily available)

As defined by the *Environmental Justice Guidance under NEPA* (CEQ 1997a), "minority populations" include persons who identify themselves as Asian or Pacific Islander, Native American or Alaskan Native, Black (not of Hispanic origin), or Hispanic. Race refers to census respondents' self-identification of racial background. Hispanic origin refers to ethnicity and language, not race, and may include persons whose heritage is Puerto Rican, Cuban, Mexican, and Central or South American.

A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. Low-income populations are identified using the Census Bureau's statistical poverty threshold, which is based on income and family size. The Census Bureau defines a "poverty area" as a census tract with 20 percent or more of its residents below the poverty threshold and an "extreme poverty area" as one with 40 percent or more below the poverty level. A census tract is a small geographic subdivision of a county and typically contains between 1,500 and 8,000 persons (U.S. Department of Commerce 2000b).

As of the 2010, 218 census tracts are located within the ROI. A total 99 census tracts within El Paso County have at least 20 percent of their population living below the poverty level, and 33 of these tracts have at least 40 percent of their population living below the poverty level. Otero and Dona Ana counties had 5 and 22 census tracts, respectively, with at least 20 percent of their populations living below the poverty level in 2010, while a total of 3 and 6 of these, respectively, had at least 40 percent of their total population living below the poverty level. The ROI has 189 census tracts with minority populations whereby the percentage of respondents identifying themselves as a minority either exceeds 50 percent of the total population of their census tract or makes up a proportion of their census tract that is at least 10 percent or higher than the minority population at the state level. El Paso County had 154 census tracts that had proportionately high minority populations. These 154 tracts represent approximately 96 percent of all census tracts within the county. Otero County, New Mexico, had four census tracts with proportionately high minority populations, while Dona Ana County had 31 tracts with proportionately high minority populations levels (Table 3-28) (U.S. Department of Commerce 2010c, d).

Several census tracts reside entirely within the Installation of Fort Bliss. The potential environmental justice status of these tracts is identified in parentheses next to their census tract number. East and West Bliss reside within census tracts 101.02 (No Potential EJ Community) and 101.03 (Potential Poverty Area) within El Paso County. The rest of the census tracts that comprise the entirety of Fort Bliss are tracts 106 (No Potential EJ Community), 101.01 (Potential Minority Area), and portions of tract 102.11 (No Potential EJ) in El Paso County; tract 9.02 (Potential Minority and Extreme Poverty Area) in Otero County; and tract 19 (No Potential EJ Community) in Dona Ana County (U.S. Department of Commerce 2010c,d). Several of these census tracts, including tract 9.02 in Otero County and tract 19 in Dona Ana County, are sparsely populated. Several tracts surrounding the Installation, including tract 103.19 in El Paso County, are also sparsely populated compared to surrounding census tracts. Figure 3-6 shows those census tracts within which Fort Bliss resides as well as census tracts surrounding the proposed alternatives identified in Chapter 2 (U.S. Department of Commerce 2010c,d).

### Protection of Children

Executive Order 13045, *Protection of Children from Environmental Health and Safety Risk*, requires federal agencies, to the extent permitted by law and mission, to identify and assess environmental health and safety risks that might disproportionately affect children. This Executive Order, dated 21 April 1997, further requires federal agencies to ensure that their policies, programs, activities, and standards address

**Table 3-28. Minority Population, Poverty Level, and Median Household Income, 2010**

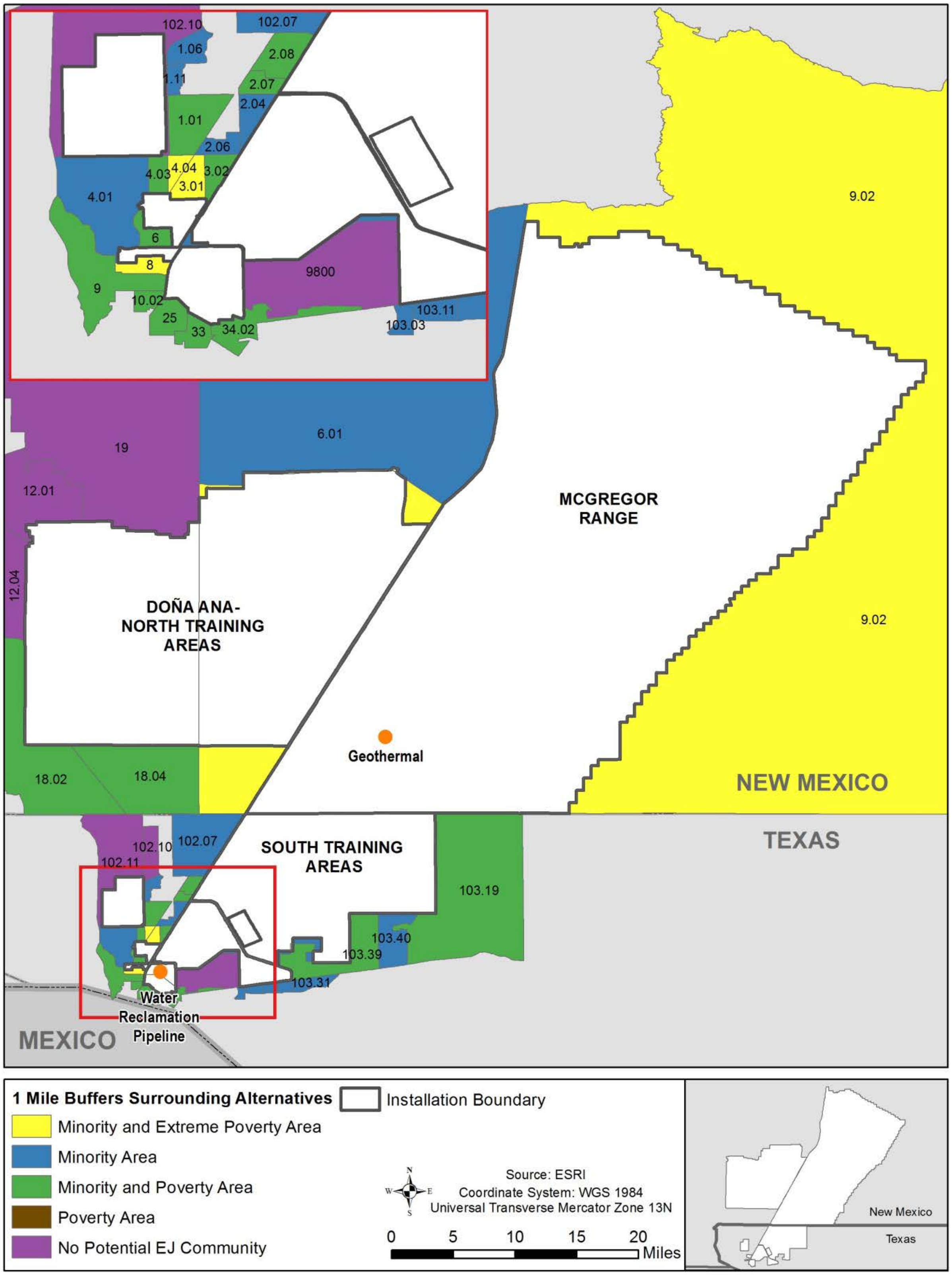
| Geographic Area | Total Population | Number of Census Tracts | Percent Minority[a] | Percent Latino | Number of Census Tracts that have 10% or higher than state average minority population | Number of Census Tracts Below Poverty Level[b] | Number of Census Tracts Below Extreme Poverty Level | Percent of Poverty Level | Median Household Income |
|---|---|---|---|---|---|---|---|---|---|
| Region of Influence | 25,348,623 | 218 | 81% | 76% | 189 (86.7%) | 84 (38.5%) | 42 (19.3%) | 25.0% | N/A |
| State of New Mexico | 2,013,122 | -- | 68% | 45% | -- | -- | -- | 18.4% | $43,820 |
| Doña Ana County, NM | 201,670 | 41 | 70% | 65% | 31 (75.6%) | 22 (53.6%) | 6 (14.6%) | 24.5% | $36,657 |
| Otero County, NM | 62,782 | 16 | 46% | 34% | 4 (25%) | 5 (31.3%) | 3 (18.8%) | 20.0% | $39,615 |
| State of Texas | 24,311,891 | -- | 80% | 37% | -- | -- | -- | 16.8% | $49,646 |
| El Paso County, TX | 772,280 | 161 | 87% | 82% | 154 (95.7%) | 99 (61.5%) | 33 (20.5%) | 25.6% | $36,333 |

Source: U.S. Department of Commerce (2010c,d)

Note: Percentages within parentheses represent the percentage of all census tracts within that geographic level that are impacted under a column.

[a] Percent Minority includes Percent Latino.

[b] Census tracts below poverty level include census tract below the extreme poverty area as well.




Source: U.S. Department of Commerce (2010c,d)

**Figure 3-6. Potential Environmental Justice Census Tracts**

these disproportionate risks. Executive Order13045 defines environmental health and safety risks as "risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink and use for recreation, the soil we live on, and the products we use or are exposed to)."

Children reside in neighborhoods and schools within proximity to Fort Bliss and walk along the sidewalks of the roadways that could potentially be used by construction and waste truck traffic associated with the identified alternatives. Children also attend daycares both on and off the Installation and reside on the Installation within family housing. Impacts to children specific to the action alternatives are identified in the following impacts analysis.

### 3.12.2 Environmental Consequences

Socioeconomic impacts associated with the proposed alternatives are examined separately, and as one, in the subsequent sections. Impacts from the alternatives on the ROI's demographics, economy, housing, and quality of life are examined as well as impacts that could occur to public services, such as law enforcement, fire and rescue, schools, and medical services. Environmental justice impacts and impacts to children are also addressed where applicable. Separate analyses were undertaken for the construction activities and the increased employment associated with the facility operation of alternatives that are anticipated to require new full time operations period employees. Table 3-1 includes the significance thresholds for socioeconomic resources including environmental justice.

In order to analyze the effects of the alternatives on socioeconomic resources in the ROI, an economic forecasting model that evaluates the significance of the impact of the alternatives on the ROI was used (USACE 2012). The model results associated with construction spending in the ROI were assessed for both direct effects, such as construction employment and salaries, and induced effects, such as the effect of construction workers' salaries and associated spending on the ROI's economy.

Changes in local economic activity associated with the project are computed as the product of initial changes in sales volume and a local impact multiplier. In total, the model examines changes in economic indicators including sales volume, income, employment, and population in the ROI, estimating the direct and induced effects of the action. Appendix D, *Economic Impact Forecast System*, discusses this methodology in more detail and presents the model input and output tables for this analysis. The direct and induced effects of each alternative are dependent on whether funds are spent within or outside the ROI. This analysis assumed that all funding is primarily consumed within the ROI and forecasted impacts are shown as if all funding is primarily consumed within the ROI. This method of economic impact analysis represents a conservative estimate of the economic impacts. It is likely that funding under each alternative would be used to purchase goods from outside the ROI, which would result in fewer impacts to the local ROI than those described here.

The thresholds of significance for the economic variables are determined by the model and are based on actual historical deviations from the historical trends for extreme events. To determine the historical range of economic variation, the model calculates a rational threshold value (RTV) profile for the ROI. This analytical process uses historical data for the ROI and plots the average growth rate for the sales volume, income, employment, and population patterns as a trend over a 30-year period. This model then can identify and evaluate the historical annual extremes of these values over this 30-year period as a deviation from the average growth trend. These deviations are called historical extremes and the largest deviations during this 30-year period are the thresholds of significance (i.e., the RTVs) for social and economic change. If the estimated effect of an action falls above the positive RTV or below the negative RTV, the effect is considered to be significant.

Total construction dollars for the year 2012were input into the model; however, in reality, the construction expenditures for some alternatives, noted in the following, would occur over a longer construction period. Therefore, the model outputs show the impact of the construction spending associated with the Proposed Action if it were started and completed in 1 year. To better characterize the more gradual economic impacts, where applicable, the impacts are also discussed as if they were dispersed over the expected time span of the construction period for each alternative.

Local spending as a result of any of the action alternatives would support the employment of the construction workforce and Fort Bliss employees that already live in the ROI. Increases in the salaries and income of this workforce may provide slightly higher household spending in the ROI. The construction workforce and new operations period employees of Fort Bliss who currently live outside the ROI and move to the ROI as a result of any of the action alternatives would provide new economic stimulus to the ROI, such as increasing household spending (induced effects), which would increase downstream jobs and income in the ROI. Construction workers who may relocate temporarily also provide economic stimulus to the ROI's economy because they would spend a portion of their income on food, beverages, and possibly lodging in the ROI.

All the action alternatives identified in the following sections may provide a positive socioeconomic benefit to the local community as a result of the local community's positive reception to new waste and water use reduction measures and through increased supplies of renewable energy. Additionally, the implementation of these technologies may support a local "future technology" field. Creating local energy producing projects, like the ones proposed under these alternatives, may assist in keeping a high end educated workforce and/or engineers in the region. The degree of impact that these projects would have on local employment and research surrounding the renewable energy and waste and water reduction fields would depend on the action alternatives finally selected. For instance, it is likely that the action alternatives would have a greater impact on local employment and research opportunities in the region if all the alternatives are carried out as opposed to only one or two alternatives.

#### 3.12.2.1 Alternative 1 – No Action

The No Action Alternative is not expected to create impacts or changes to the current socioeconomic characteristics at or surrounding Fort Bliss. Fort Bliss' population and employment would not be impacted, and no new construction would occur as a result of any of the action alternatives. Furthermore, benefits to economic development, employment, and income associated with the construction activity would not occur. Additionally, up to 128 support jobs would not be created on the Installation.

Under Alternative 1, Fort Bliss would likely be subject to increasing costs of centralized utility-provided energy. Utility rates for electric utility providers and EPWU would not be impacted by the alternatives. No impacts to housing, utilities, or government and emergency services are expected to occur under this alternative. No environmental justice impacts or impacts to children are expected to occur under this alternative.

#### 3.12.2.2 Alternative 2 – Conservation Policies and Procedures

Some energy conservation and energy efficiency measures, such as increased energy awareness programs, would have little or no socioeconomic effect. Other energy efficiency measures, such as replacement of conventional lighting with energy-efficient lighting; installation of more energy-efficient HVAC systems; improved building envelope features such as added installation or more energy-efficient windows, or installation of small-scale, renewable energy features, for example, the installation of solar panels on existing buildings, may temporarily increase off-Installation economic levels if off-Installation workers were needed to implement the measures or if equipment and supplies were purchased from off-Installation vendors.

The reduced use of off-Installation energy supplies, from improved energy conservation, efficiencies, or from the development of new on-Installation renewable energy sources, could have a beneficial or adverse effect on the socioeconomics of the surrounding community. Socioeconomic benefits would occur as both direct effects from the wages and salaries, procurement of goods and services, and collection of state sales and income taxes and indirect effects from new jobs, income, expenditures, and tax revenues subsequently created as the direct effects circulate through the economy. Adverse effects to the local economy as a result of a reduction in electric power purchases could affect local utility rates and revenue collected by local municipalities and states in the form of taxes on the power sold.

Some water conservation and water efficiency measures, such as increased water awareness programs, would have little or no socioeconomic effect. Other water efficiency measures, such as increased water awareness programs, replacement of conventional plumbing fixtures with water-efficient plumbing fixtures, or implementing small-scale water capture projects, such as installing rain barrels or constructing small collection ponds, may temporarily increase off-Installation economic levels if off-Installation workers were needed to implement the measures or if equipment and supplies were purchased from off-Installation vendors.

Potential beneficial socioeconomic effects could also be realized, including economic growth and a positive reception to the repurposing, recycling, and recovery of existing water supplies. The reduced use of off-Installation water supplies (from improved water conservation, efficiencies, or from the development of new on-Installation alternate water sources) may have positive effects on socioeconomics of the surrounding community because a higher percentage of the available water supply is available for off-Installation use or adverse effects on water rates as Fort Bliss reduces its purchases of water from EPWU, which may impact water rates.

Some waste avoidance measures, such as improved procurement practices, should have little socioeconomic effect since the Army would continue to purchase materials and supplies. If purchasing practices shifted to more sustainable products, such as non-toxic cleaning supplies and higher recycled content paper, the same volume and general types of products would still be purchased.; however, a shift to fewer disposable products in favor of reusable items could reduce the overall volume of goods/products purchased, which may not have a direct effect on the local economy, for example, if the goods/products were manufactured elsewhere, but could have a slight effect on the overall U.S. economy. Increased reuse or recycling efforts could result in additional employment, either for on-Installation workers or in the surrounding community, at local recycling facilities (U.S. Army 2012a). Overall, Alternative 2 would result in beneficial impacts as described and any adverse impacts would be considered less than significant.

#### 3.12.2.3 Alternative 3 – Water Reclamation Pipeline

The construction sector is considerable in the ROI with employment of approximately 33,417 jobs, comprising 7 percent of total employment in 2010. With the recent economic downturn, the ROI lost 205 construction jobs between 2007 and 2010, a 1 percent decrease over this period (U.S. Department of Commerce 2012a, b). The Economic Impact Forecast System estimates that approximately 62 workers would be required during the construction period for Alternative 3. With the current economic conditions, it is likely that the construction workforce would be supplied from within the ROI. Therefore, none of the construction workers for the construction of the water reclamation pipeline are assumed to move into the

ROI. Some specialized construction workers, however, may relocate temporarily to the ROI, which would have beneficial effects on lodging and the food and beverage sectors, although these effects are expected to be relatively small.

A recently completed 16-inch reclaimed water line in El Paso involved the installation of approximately 4,500 linear feet of new pipeline for a final cost of $630,000 (Cieslik 2012), or approximately $740,000 per mile. Because the entire length of the new water reclamation pipe on Fort Bliss is estimated to be approximately 24 miles, construction of the entire project is forecast to cost around $17,538,000.

**Economic Impact Forecast System** – The following model results are estimated based on all impacts occurring within a 1 year period. In reality, the construction project would likely occur over a 1- to 2-year duration. As a result, the following impacts are likely higher than what is anticipated to occur during the construction period. Construction spending associated with this alternative would generate sales of approximately $41,214,300 in 2012, which represents a less than 1 percent deviation of sales volume change over time in the ROI. Direct income and induced income are estimated to be $7,427,659, which is a less than 1 percent deviation from the average rate of income change over time in the ROI. The project would support approximately 209 jobs, which is a less than 1 percent deviation from the average rate of employment change over time in the ROI. These 209 jobs include 62 construction jobs, as previously mentioned, and other jobs that are directly supported by the purchase of goods and materials for this project. Additionally, this number includes the secondary and induced employment associated with projected expenditures. None of the forecasted sales, income, or employment estimates has a deviation from the average rate of change greater than their respective historical extreme deviations. Therefore, the anticipated economic changes in these indicators are expected to have a less than significant impact on the ROI's economy. As discussed previously, population growth in the ROI is expected to increase; however, it is likely that all construction workers under this alternative would come from within the ROI. Therefore, the anticipated economic impacts resulting from this alternative are expected to have less than significant impacts on the ROI's economy.

**Housing** – Some small impact to housing may occur as a result of temporary construction workers relocating to the ROI. Because the ROI had approximately 7,300 housing units available for rent in 2010, it is likely, however, that this alternative would have a negligible impact on the local housing supply.

**Government and Emergency Services** – The University Medical Center of El Paso Hospital, given its proximity to the alternative's location, would likely treat most injuries of construction personnel if they were to occur. Impacts to local law enforcement and emergency services are expected to be negligible as a result of this alternative. Additionally, while some construction workers may temporarily relocate to the area as a result of this construction, it is not expected that they would relocate with their families. Therefore, impacts to educational services are anticipated to be negligible.

**Utilities** – This project is not anticipated to have an impact on the rates of water supplied by EPWU. Currently, water rates for potable tap water start at $1.99 per kgal of water consumed. Water rates for potable tap water increase depending on the volume of water consumed; however, rates for reclaimed water are $1.28 per kgal of water consumed and rates do not increase depending on the volume of water consumed (EPWU 2012c). The recycled use of off-Installation water supplies would have a negligible economic impact because water purchased through the purple pipe would still be purchased from EPWU. Additionally, the availability of freshwater supplies for the local community would likely increase as Fort Bliss reduces its demand for potable water from EPWU. This alternative would not likely impact water rates because Fort Bliss would still purchase this same portion of its water from EPWU; however, this portion of water would be supplied from the purple pipe instead of potable water line.

**Environmental Justice and Protection of Children** – The analysis has not identified any significant environmental or human health impacts that may directly or indirectly affect people or their activities. Census tracts with impoverished populations and proportionally high minority populations were identified above for the area that this alternative may impact. Under this alternative, Fort Bliss proposes to construct a reclaimed water pipeline within a census tract (tract 101.03 in El Paso County) identified as having at least 20 percent of its population living below poverty; however, this census tract would not be affected by disproportionately high and adverse impacts from the Proposed Action.

TCEQ has established general requirements for the use of reclaimed water, including stipulations requiring that vegetative cover be maintained and application times for reclaimed water avoid time frames when wet vegetation would be contacted by people. Fort Bliss would ensure that the application of reclaimed water would avoid time frames during which human exposure would be likely. In addition, potential mitigation would include appropriate signage identifying areas where reclaimed water is applied. Additionally, this alternative would not have any disproportionately high or adverse impacts to children. Therefore, no impacts to environmental justice populations or children are expected to occur under this alternative.

#### 3.12.2.4 Alternative 4 – Waste-to-Energy Plant

Alternative 4 would include the construction of a WTE plant and associated infrastructure. The construction workforce and duration for Alternative 4 is dependent on the size of the WTE plant, which is not known at this time. Given that employment in the construction industry in the ROI decreased by 205 jobs between 2007 and 2010 and the total occupational employment level of this industry is projected to increase by 2018, it is likely that the ROI would be able to provide most of the construction force necessary to construct the facilities under this alternative. Additionally, some of the construction workforce and some specialized construction workers may relocate temporarily to the ROI, which would have beneficial effects on lodging and the food and beverage sectors, although these effects are expected to be relatively small.

Although economic impacts to the ROI as a result of the construction of the WTE plant and associated infrastructure have not been calculated under this alternative, it is anticipated that construction of these facilities would provide positive socioeconomic benefits to the local and regional economy. The benefits would be from direct effects from wages and salaries, procurement of goods and services, and collection of state sales and income taxes and from indirect effects from new jobs, income, expenditures, and tax revenues subsequently created as the direct effects circulate through the economy. Estimates of the number of jobs supported under Alternative 4 depend on the size and location of the WTE plant.

**Housing** –It is estimated that a portion of the workforce required for this project would migrate into the ROI from elsewhere in the local region or the United States, depending on the technical skills required. Because approximately 7,300 housing units were available for rent in 2010, it is expected that the ROI would be able to supply the housing necessary for temporary workers migrating to the ROI under this alternative. Additionally, many hotels in the local area also would be able to house construction workers on a temporary basis. A majority of the new operations period employees resulting from this construction project are expected to come from within the ROI. Some of these employees may migrate into the ROI as a result of this alternative. Their impact to local housing is expected to be less than significant.

**Government and Emergency Services** – Impacts to emergency services under this alternative would be the same as to those described under Alternative 3. Given the anticipated larger number of temporary construction workers associated with this alternative, it is expected that the demand placed on public services would be greater than that described under Alternative 3; however, this demand is expected to be less than significant because few, if any, of these construction workers are anticipated to relocate with their families and no new housing for these workers is anticipated to be constructed as a result of their temporary relocation. Additionally, while temporary workers are expected to migrate to the ROI during the construction period, it is not expected that many would bring their families. Therefore, little to no impact to local educational services is expected under this alternative. New operations staff that migrates into the ROI as a result of this alternative may relocate with their families. Some of these families may have school-age children. Less than significant impacts to the local educational system are anticipated due to the size of the operations force and the percentage of that force that would migrate into the ROI.

**Utilities** – Fort Bliss currently consumes approximately 3 percent of EPEC's annual sales; therefore, as Fort Bliss reduces its electrical demand from EPEC, local utility rates may be both positively and negatively impacted (Favela 2012). Currently, Fort Bliss receives a 20 percent deduction from the base portion of its tariffed rate for electric service. EPEC is allowed, by the Texas Public Utilities Commission, to recoup the funding lost in this deduction by spreading the amount of that deduction across the rest of its rate base in Texas in the form of a reimbursement fee, and the amount of this fee that ratepayers are charged could be impacted by the full or partial removal of Fort Bliss from the electric grid. It is anticipated that electricity rates may be slightly impacted by the partial or full removal of Fort Bliss' power demand from the local electric grid, depending on the arrangements made between Fort Bliss and EPEC, but specific impacts to electricity rates associated with the removal of this demand for electricity are not known at this time. Additionally, a wide variety of external influencers, including the price of fuel for producing energy and the need for EPEC to purchase some of its power from other electrical utility providers, constantly impact electricity rates for the community. Therefore, at this time, it is not clear the extent to which the removal of a customer such as Fort Bliss from the electrical grid would have an impact on electricity rates compared to other external influencers of electric utility rates.

**Environmental Justice and the Protection of Children** – Depending on the location of the WTE plant and associated truck routes, the construction and operation of a WTE plant has the potential to affect environmental justice communities. Potential environmental justice populations, including minority and poverty populations, are located adjacent to Fort Bliss (Figure 3-6). Several daycares and schools are located on Fort Bliss and in the census tracts adjacent to Fort Bliss. The appropriate level of additional project-specific NEPA analysis, including an evaluation of the potential impacts to children, would be completed once a location and size for the WTE plant and truck routes have been identified.

### 3.12.2.5 Alternative 5 – Geothermal Energy Facility

As discussed under Alternative 3, the construction sector in the ROI is considerable. The construction period for this alternative is estimated to be approximately 1.5 years. During this period, it is estimated that approximately 35 full-time equivalent workers would be required to construct the geothermal energy facility; however, this number may fluctuate during the construction period depending on the phase of construction. Additionally, the actual number of construction and operation employees would depend on the size of the facility constructed (Hillesheim 2013). Given that employment in the construction industry has decreased by 205 jobs between 2007 and 2010, it is likely that the local construction workforce would be able to supply the jobs for this project. Some specialized construction workers may temporarily relocate to the ROI, which would have beneficial effects on lodging and the food and beverage sectors, although these effects are expected to be relatively small.

After the geothermal energy facility has been constructed, it is anticipated that up to six people would be employed to operate it. It is anticipated that these staff would have an average annual salary of $58,725 during their employment. Additionally, it is anticipated that an additional three to five persons would be employed once during the year for a 4- to 6-week period to perform annual maintenance. The impact of these additional maintenance workers is not quantified in this analysis, but it is anticipated that they would further contribute positive socioeconomic impacts to the local economy as a result of their short-term employment.

Anticipated impacts associated with the construction portion of this alternative are presented separately from impacts associated with changes in staff for operations of the facility. No permanent in-migration to the ROI as a result of construction activities or increase in support staff is expected to occur under this alternative. Transmission lines would be required to connect this alternative to the electrical grid. Although economic impacts to the ROI as a result of the construction of transmission lines to connect this alternative to the electrical grid have not been calculated for this alternative, it is anticipated that construction of these facilities would provide positive socioeconomic benefits to the local and regional economy. The benefits would be from direct effects from wages and salaries, procurement of goods and services, and collection of state sales and income taxes, as well as from indirect effects from new jobs, income, expenditures, and tax revenues subsequently created as the direct effects circulate through the economy.

**Economic Impact Forecast System** – The estimated costs for this project range between $15 million and $30 million, depending on the final design of the facility. This analysis uses the high end of this range to determine the socioeconomic impacts of this project (Dahle 2012). The following model results are estimated based on all impacts occurring within a 1-year period. Construction spending associated with this alternative would generate sales of approximately $70,499,990 in 2012, which represents a negligible deviation of sales volume change over time in the ROI. Direct income and induced income are estimated to be $12,705,540, which is a negligible deviation from the average rate of income change over time in the ROI. Spending associated with this project could support approximately 357 jobs, which is a negligible deviation from the average rate of employment change over time in the ROI. Note that these 357 jobs include the 35 construction jobs previously mentioned and other jobs that are directly supported by the purchase of goods and materials for this alternative. Additionally, this number also captures the secondary and induced employment associated with the projected expenditures. None of the forecasted sales, income, or employment estimates has a deviation from the average rate of change greater than their respective historical extreme deviations. Therefore, the anticipated economic impacts resulting from this alternative are expected to have less than significant effects on the ROI's economy. Construction costs associated with the CST array were not available at the time of this analysis; therefore, the costs presented only include those costs associated with the construction of the geothermal energy facility.

Salary payments and benefits to the new six employees during the operations period under this alternative are estimated to be $58,725 annually, on average. This increase in support staff would support sales of approximately $949,020 in 2012, which is a negligible deviation in 2012, based on the average rate of sales volume change over time in the ROI. Direct income and induced income at the place of work associated with this new employment are estimated to be approximately $472,328, which is a negligible deviation from the average rate of income change over time in the ROI. These six new jobs would directly support an additional 7 jobs and provide induced support for another 3 jobs, which is a total supported employment of 11 jobs. This is also a negligible deviation from the average rate of employment change over time in the ROI. None of the forecasted sales, income, or employment estimates has a deviation from the average rate of change greater than their respective historic extreme deviations. Therefore, the anticipated economic impacts resulting from this alternative are expected to have less than significant effects on the ROI's economy.

**Housing** – It is possible that some specialized construction workers may have to temporarily relocate to the ROI during the construction period. Impacts to housing would be similar to those described under Alternative 3. Because no new, permanent operations period employees are anticipated to be added as a result of this alternative, the local housing supply is not anticipated to be impacted.

**Government Services** – Impacts to governmental and emergency services would be the same as those described under Alternative 3.

**Utilities** – Impacts to utilities would be the same as those described under Alternative 4; however, local landfill and waste management operations would not be impacted under this alternative.

**Environmental Justice and Protection of Children** – The analysis has not identified any significant environmental or human health impacts that may directly or indirectly affect people or their activities. Census tracts with impoverished populations and proportionally high minority populations were identified previously for the area that this alternative may impact. While under this alternative, Fort Bliss proposes to construct a geothermal energy facility within a census tract (tract 9.02 in Otero County) identified as having a proportionally high minority population and at least 40 percent of its population living below the poverty, this tract would not be affected by disproportionately high and adverse impacts from the alternative. Additionally, this geothermal energy facility would be located entirely within Fort Bliss and would not be located within proximity to any residential communities. Therefore, no environmental justice impacts are expected to occur as a result of this alternative.

No impacts to children are expected to occur under this alternative because no sensitive populations of children were identified to reside at any facilities in proximity to the proposed location for this alternative.

#### 3.12.2.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

As discussed under Alternative 3, the construction sector in the ROI is considerable. The construction period for this alternative is estimated to between approximately 1 to 2 years. During this period, it is estimated that approximately 400 full-time equivalent workers would be required annually to construct the CSP array. Given that the number of construction jobs in the ROI has decreased by 205 jobs between 2007 and 2010, and the total occupational employment level of this industry is projected to increase by 2018, it is likely that most of the construction workforce for this alternative would be able to supply the jobs for this project. The construction workforce supply would be similar, though less than, that described under Alternative 4.

As a result of the development of the CSP array, it is anticipated that an additional 28 people would be employed at this facility because operations period staff and the addition of these staff would occur after completion of the construction period. It is anticipated that these staff would have an average salary of $60,275 during their employment (U.S. Department of Labor 2012b). Anticipated impacts associated with the construction portion of this alternative are presented separately from impacts associated with an increase in staff for operations of the facility. Some in-migration to the ROI as a result of construction activities or the increase in support staff is expected to occur under this alternative. It is possible that some specialized construction workers may have to temporarily relocate to the ROI to support the more technical aspects of the construction project. Transmission lines would be required to connect this alternative to the electrical grid. Impacts to the local economy as a result of the construction of these transmission lines would be similar to those described under Alternative 5.

**Economic Impact Forecast System** – The total estimated cost of this project is approximately $217 million (Dahle 2012). The following model results are estimated based on all impacts occurring within a 1-year period. In reality, the construction project would likely occur over a 1- to 2-year duration. As a result, the following impacts are likely higher than what is anticipated to occur during the construction period. Construction spending associated with this alternative would generate sales of approximately $509,950,000 in 2012, which represents an approximately 2 percent positive deviation of sales volume change over time in the ROI. Direct income and induced income are estimated to be $91,903,410, which is a less than 1 percent positive deviation from the average rate of income change over time in the ROI. This project would support approximately 2,582 jobs, which is a less than 1 percent positive deviation from the average rate of employment change over time in the ROI. Note that these 2,582 jobs include the 400 construction jobs previously mentioned and other jobs that are directly supported by the purchase of goods and materials for this alternative. Additionally, this number also captures the secondary and induced employment associated with the projected expenditures. None of the forecasted sales, income, or employment estimates has a deviation from the average rate of change greater than their respective historical extreme deviations. Therefore, the anticipated economic impacts resulting under alternative are expected to have less than significant effects on the ROI’s economy.

Salary payments to the 28 new employees during the operations period of this alternative are estimated to be $60,275 on average annually (Dahle 2012, U.S. Department of Labor 2012b). This increase in support staff would support sales of approximately $4,545,634 in 2012, which is a negligible deviation in 2012 based on the average rate of sales volume change over time in the ROI. Direct income and induced income at the place of work associated with this new employment are estimated to be approximately $2,262,367, which is a negligible deviation from the average rate of income change over time in the ROI. These 28 new jobs would directly support an additional 35 jobs and provide induced support for another 16 jobs, which is a total supported employment of 51 jobs. This is also a negligible deviation from the average rate of employment change over time in the ROI. None of the forecasted sales, income, or employment estimates has a deviation from the average rate of change greater than their respective historical extreme deviations. Therefore, the anticipated economic impacts resulting from this alternative are expected to have less than significant effects on the ROI’s economy.

Additional positive economic impacts to the community would result from the construction of transmission lines and substations associated with connecting this alternative to the local power grid; however, no costs for the construction of these transmission lines and substations were available at the time of the preparation of this EIS.

**Housing** – Impacts to housing would be similar to those described under Alternative 4.

**Government and Emergency Services** – Impacts to government and emergency services would be similar to those described under Alternative 4.

**Utilities** – Impacts to utilities would be similar to those described under Alternative 4.

**Environmental Justice and Protection of Children** – The analysis has not identified any significant environmental or human health impacts that may directly or indirectly affect people or their activities. Alternative 6 would be constructed in a census tract (tract 101.01 in El Paso County) with a proportionally high minority population compared to the state of Texas; however, this census tract resides entirely within Fort Bliss. Under this alternative, Fort Bliss would locate facilities within 1 mile of proportionally high minority populations and poverty populations in census tract 103.39 in El Paso

County. This census tract, however, would not be impacted by disproportionately high and adverse impacts from the alternative. Additionally, construction trucks and equipment would likely be moved into the development site via Montana Avenue. One daycare resides along Montana Avenue and is located approximately 1.8 miles east of the proposed truck route entrance to the WTE plant on Montana Avenue. Additionally, El Dorado High School is located approximately 1 mile south of Montana Avenue where Justice Road meets Montana Avenue. Hershel Antwine Elementary is located approximately 3 miles from Montana Avenue where construction trucks are anticipated to move from Montana Avenue onto Fort Bliss. Some impacts to children, such as releases of dust during the construction of this alternative, may occur under this alternative because children reside in the neighborhoods to the south and east of the proposed location for this alternative. Because these impacts would not have a disproportionately high and adverse impact on children and because the adverse impacts, such as dust releases, resulting from this alternative are anticipated to be mitigated using BMPs, such as dust and erosion controls measure, no environmental justice impacts or impacts to children are expected to occur under this alternative.

#### 3.12.2.7 Alternative 7 – Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as biomass, large-scale wind and solar PV facilities, may be developed on Fort Bliss as long as the technology and location meet the alternatives screening criteria presented in Section 2.2 and the environmental screening criteria presented in Appendix C, *Environmental Screening Criteria*. Impacts from additional renewable energy development would be site specific; therefore, if these renewable energy projects are both similar in design and size to and occur within the same area as those alternatives identified previously, then it is likely that impacts would be similar to those previously described. Impacts, however, would remain site specific and new impacts could result in the future that would not occur today as a result of population shifts or changes in the local economy. Therefore, additional assessment at the time of these developments in the future would be necessary to determine their site-specific environmental impacts. Finally, additional renewable energy development projects would seek to minimize negative socioeconomic and environmental justice impacts during their construction and operation.

Impacts to housing, government and emergency services, utilities, and environmental justice communities would depend on the size of future energy development projects. Site-specific impact assessments would need to be undertaken in the future to determine the level of impact these renewable energy development projects might have. If transmission lines are required to connect any of these renewable energy developments to the electrical grid, then the impacts would be similar to those described under Alternative 4.

### 3.12.2.8 Alternatives Combined

The following analysis discusses the combined impacts of Alternatives 2, 3, 5, 6, and 7.

As shown under Alternative 3, the construction sector in the ROI is considerable. The construction period for all of the alternatives combined is estimated to be approximately 2 years. During this period, it is estimated that approximately 493 workers would be required annually to construct all of the alternatives, and this estimate does not include all of the construction workers that would be required to construct transmission lines and substations to tie the two energy producing alternatives into the electrical grid because the costs associated with constructing these electrical tie-ins is not known for all of the alternatives. Given that employment in the construction industry decreased by 205 jobs between 2007 and 2010, and that the total occupational employment level of this industry is projected to increase by 2018, it is likely that the local construction workforce would be able to supply most of the workforce for this project.

It is anticipated that an operation period staff of 34 would be added to the Installation as a result of the operations of the geothermal energy facility (Alternative 5) and the CSP array (Alternative 6). These staff would have average salaries of approximately $58,725.00 and $60,274.76 at the geothermal energy facility and the CSP array, respectively. This salary would be $60,001, on average, among these 34 employees. No other alternatives are anticipated to have operations staff. Anticipated impacts associated with the construction portion of these alternatives are presented separately from impacts associated with changes in staff for operation of these facilities. No permanent in-migration to the ROI as a result of construction activities is expected to occur under these alternatives. It is possible that some specialized construction workers may have to temporarily relocate to the ROI to support the more technical aspects of the construction project. Some permanent in-migration into the ROI as a result of operations period activities may occur. Transmission lines would be required to connect these alternatives to the electrical grid. Impacts to the local economy would be similar to those described under Alternative 5.

**Economic Impact Forecast System** – The total estimated construction cost of all of the alternatives combined is approximately $264,538,000. The following model results are estimated based on all impacts occurring within a 1-year period. In reality, these construction projects would likely occur during 2 years. As a result, the following impacts would likely be higher than what is anticipated to occur during the construction period. Construction spending associated with all the alternatives combined would generate sales of approximately $621,664,300 in 2012, which represents an approximately 2.7 percent positive deviation of sales volume change over time in the ROI. Direct income and induced income are estimated to be $112,036,600, which is an approximately 1 percent positive deviation from the average rate of income change over time in the ROI. The Proposed Action would support approximately 3,148 jobs, which is an approximately 1 percent positive deviation from the average rate of employment change over time in the ROI. Note that these 3,148 jobs include the 493 construction jobs previously mentioned and other jobs that are directly supported by the purchase of goods and materials for this alternative. Additionally, this number also captures the secondary and induced employment associated with the projected expenditures. None of the forecasted sales, income, or employment estimates has a deviation from the average rate of change greater than their respective historical extreme deviations. Therefore, the anticipated economic impacts resulting under alternative are expected to have less than significant effects on the ROI's economy.

Salary payments to the 34 new employees during the operations period of all of the alternatives combined are estimated to be $60,001 on average, annually (Dahle 2012, U.S. Department of Labor 2012b). This increase in support staff would support sales of approximately $5,494,628 in 2012, which is a negligible deviation in 2012 based on the average rate of sales volume change over time in the ROI. Direct income and induced income at the place of work associated with this new employment are estimated to be approximately $2,734,682, which is a negligible deviation from the average rate of income change over time in the ROI. These 34 new jobs would directly support an additional 42 jobs and provide induced support for another 20 jobs, which is a total supported employment of 62 jobs. This is a negligible deviation from the average rate of employment change over time in the ROI. None of the forecasted sales, income, or employment estimates has a deviation from the average rate of change greater than their respective historical extreme deviations. Therefore, the anticipated economic impacts resulting from this alternative are expected to have less than significant effects on the ROI's economy.

Additional positive economic impacts to the community would result from the construction of transmission lines and substations associated with connecting these alternatives to the local power grid; however, no costs for the construction of these transmission lines and substations are available at the time of this EIS.

**Housing** – Construction of all the alternatives combined would occur in phases over a 2-year construction period. Some phases of construction would necessitate having more workers onsite during these periods than during other periods. It is estimated that a portion of the workforce required for these projects would migrate into the ROI from elsewhere in the local region or the United States, depending on the technical skills required. Because approximately 7,300 housing units were available for rent in 2010, it is expected that the ROI would be able to supply the housing necessary for temporary workers migrating to the ROI as a result of these combined alternatives. Additionally, many hotels in the local area would also be able to house construction workers on a temporary basis. The impact to the local housing as a result of the increase in operations period employment is therefore expected to be less than significant.

**Government and Emergency Services** – The construction and operations period demand and impacts placed on government and emergency services are expected to be less than significant.

**Utilities** – Impacts to utilities are anticipated to be less than significant.

**Environmental Justice and Protection of Children –**No environmental justice impacts or impacts to children are expected to occur as a result of the alternatives based on details known at this time.

## 3.13 Water Resources

### 3.13.1 Affected Environment

Water resources are sources of water available for use by humans, flora, or fauna, including surface water, groundwater, nearshore waters, wetlands, and floodplains. Surface water resources, including, but not limited to, stormwater, lakes, streams, rivers, and wetlands, are important for economic, ecological, recreational, and human health reasons. Groundwater is classified as any source of water beneath the ground surface and may be used for potable water, agricultural irrigation, and industrial applications.

Both water quantity and water quality are important in this EIS. Water quantity deals with the amount of water needed for the Installation and its uses, particularly in relationship to available water supply. Water quality describes the chemical and physical composition of water as affected by both natural processes and human activities.

The main surface water feature in the vicinity of Fort Bliss is the Rio Grande, located to the west of the Installation. Fort Bliss and El Paso are located approximately halfway down the length of the Rio Grande, which is used as a source for drinking water, industrial water, and irrigation along its length. Fort Bliss lies within an arid region, and surface waters within the region are scarce and some are only intermittent or seasonal in nature. The Installation is located atop four watershed basins that do not currently contain any significant areas of surface water but provide recharge to the aquifers below. These basins are the Salt Basin in the eastern part of the Installation, the Tularosa Basin in the northwestern part of the Installation, the Upper Hueco Bolson to the southeast, and the Mesilla Bolson, which skirts the western edge of the Installation. The actions considered in this EIS would take place in the Tularosa Basin and the Upper Hueco Bolson.

No natural, perennial lakes currently exist in the area; however, shallow depressions known as playa lakes are common features and are important habitats for migrating waterfowl and resident wildlife species. Human-made lakes and reservoirs are present, though predominantly in the mountains outside of the boundaries of Fort Bliss. None of the surface waters found on Fort Bliss are waters of the state subject to the CWA.

Groundwater at Fort Bliss comes from two major aquifer systems—the Hueco Bolson and Mesilla Bolson, which are separated by the Franklin Mountains, and roughly correspond with the basins of the same name discussed previously. A bolson is a semiarid, flat-floored desert valley or depression, usually centered on a playa or salt pan and entirely surrounded by hills or mountains. Thirty-nine deep wells from the Hueco Bolson Aquifer provide most of the water used at Fort Bliss (Fort Bliss 2001). The Hueco Bolson is located in the southern half of the Tularosa Basin paralleling the eastern base of the Franklin Mountains. Groundwater recharge is provided by runoff of precipitation percolating through alluvial deposits at nearby mountain bases. The freshwater aquifers in the Hueco Bolson are of very high quality and require only chlorination (Fort Bliss 2001). The Mesilla Bolson lies on the west side of the Franklin Mountains, extending along the Rio Grande Valley through New Mexico and Mexico. The geology in the Mesilla Bolson is similar to that of the Hueco Bolson with basin fills that are contemporaneous formations of Recent and Sante Fe geologic periods. The Texas portion of the Mesilla Bolson Aquifer has significantly less available water than the Texas portion of the Hueco Bolson aquifer (Jenicek et al. 2009). Fort Bliss uses only limited water resources from Mesilla Bolson (Fort Bliss 2001).

Because of the climate, water is a scarce commodity at the Installation, and water conservation plans are in place (U.S. Army 2010b). Military water use is only about 3 percent as large as the municipal use in the El Paso-Ciudad Juarez area (U.S. Army 2010b). El Paso obtained an average of 24 percent of its water supply from the Rio Grande as of 2002, and the remainder from the two aquifers. Substantial growth is occurring in the area with the factories on the Mexican side of the border, and these factories and general urban growth in the area are increasing demand for water. El Paso is expected to grow from 700,000 in 2009 to more than 1.5 million by 2050, and Ciudad Juarez from 1.4 million in 2009 to more than 3.5 million in 2050 (Jenicek et al. 2009). There are places where both aquifers are overdrawn (The Watercourse 2001). It has been estimated that Fort Bliss' main water supply, the Hueco Bolson Aquifer, is capable of providing an adequate water supply for 70 years, but that the aquifer is a non-renewable resource given current withdrawal rates (Jenicek et al. 2009).

Upstream demands on the Rio Grande and on other waters in New Mexico also affect availability of water at Fort Bliss with growing populations in Albuquerque and other New Mexico towns and increased interest in drawing from the Rio Grande (Jenicek et al. 2009). Regionally, WWTPs treat and recharge water back to the aquifer. In a regional context, these efforts currently contribute to Net Zero attainment.

A draft water balance study for Fort Bliss (PNNL 2012) lists the major water use categories for the Installation as golf course irrigation (23 percent), family housing irrigation (21 percent), and on-Installation irrigation (17 percent) with use being highest in the summer. Family housing (14 percent) and barracks (7 percent) are the next most significant water use categories. It is also estimated that approximately 10 percent of total water used is lost in the distribution system. The majority of these uses are concentrated on East and West Bliss. Annual water use on the Installation between 2006 and 2011 ranged between 1,260 million gallons per year (2008) to 2,200 million gallons per year (2011). The increase is consistent with the population increase resulting from the relocation of the 1st Armored Division to Fort Bliss. With additional new functions projected at Fort Bliss, water use at the Installation is expected to increase from 8.1 million gallons per day in 2010 to 9.4 million gallons per day in 2040; water use at Fort Bliss was 4.8 million gallons per day in 2000 (Jenicek et al. 2009).

The majority of electrical power supplied to Fort Bliss is generated by local natural gas-fired plants (Chacon 2012). Water demand for such plants in gallons per kilowatt hour (G/kWh) of lifetime energy output ranges between 0.38 and 0.98 G/kWh (Clark et al. 2011). The source for the water at these plants is not specified.

Portions of Fort Bliss are covered in EPWU's Master Stormwater Plan, and the Installation has developed its own drainage studies for East and West Bliss, including Biggs AAF. All drainage design activity on the Installation must at a minimum meet the design criteria of EISA Section 438 of retention of the 95th percentile rainfall event.

### 3.13.2 Environmental Consequences

Table 3-1 includes the significance thresholds for impacts to water resources.

#### 3.13.2.1 Alternative 1 – No Action

Under the No Action Alternative, Fort Bliss would not implement any new energy or water conservation or production measures. There would be no new construction or increase in the amount of impermeable surfaces on the Installation; therefore, no impacts to surface water or groundwater would occur from erosion or stormwater runoff.

Baseline water consumption for Fort Bliss is projected to continue to increase, more than doubling in usage from 4.6 million gallons per day in 2005 to approximately 9.4 million gallons per day by 2015 (Jenicek et al. 2009). With no new reduction or conservation measures in place to help offset the projected increase in baseline consumption, and given regional growth and water demand, Fort Bliss would be subject to fluctuations in water availability, affecting water security and independence. As noted in the Affected Environment section, it is estimated that Fort Bliss' main water supply, the Hueco Bolson Aquifer, is capable of providing an adequate water supply for 70 years, but that the aquifer is a non-renewable resource given current withdrawal rates (Jenicek et al. 2009), which would continue under the No Action Alternative.

### 3.13.2.2 Alternative 2 – Conservation Policies and Procedures

Under Alternative 2, Fort Bliss would continue to implement aggressive conservation policies, procedures, and BMPs to maximize resource re-use, limit waste generation, increase resource re-purposing, and increase water and energy use efficiencies in new and existing facilities. Fort Bliss also would improve the water distribution system and install smart grids to improve monitoring, and install new water meters to establish baseline metrics. Incentives for conservation and disincentives to discourage waste and overuse would be put in place to encourage Soldier, civilian, and contractor behavior in support of Net Zero goals on the Installation. Construction activities would result in less than 5 acres of ground disturbance; therefore, there would be negligible impacts to water quality associated with construction activities.

The conservation policies and procedures that Fort Bliss would implement would increase the overall efficiency in water use and reduce the supply demand for potable and irrigation water, resulting in beneficial per capita impacts to surface water (i.e., Rio Grande) and groundwater supply sources. In addition, these measures would decrease energy use per capita on the Installation, which would have an indirect beneficial impact to Fort Bliss-related water consumption for energy production. Overall, water demand would continue to rise; however, because the population at Fort Bliss is projected to increase with the realignment and new training activities, the pace with which water demand would increase would not be as rapid as under the No Action Alternative.

Improving and repairing the water distribution system on Fort Bliss would decrease the amount of water loss in the system from evaporation and leaks. Reducing this water loss would have beneficial impacts on the overall regional water supply because water loss through the distribution system is currently the fifth largest "use" of water on Fort Bliss. Installing water metering for Installation housing, implementing and enforcing water conservation policies, installing xeriscaping and low-water demand landscaping all would increase the efficiency of water use on the Installation, thereby lowering the water supply demand, resulting in beneficial impacts to the surface water and groundwater supply sources. Installing lower water using systems/technology would also reduce water supply demands and help Fort Bliss move toward meeting its Installation goals for water use.

### 3.13.2.3 Alternative 3 – Water Reclamation Pipeline

Fort Bliss would pursue the construction and use of a water reclamation pipeline (referred to as the purple pipe) to provide Fort Bliss with reclaimed water for secondary water uses on the Installation, which would result in both short- and long-term impacts. The Army’s Net Zero water target is a 50 percent reduction in water use by 2020, roughly doubling the current federal goals of 26 percent reduction for 2020. Installation of the reclaimed water system would include trenching to install an estimated 24 miles of pipe, generally within already developed areas. Construction activities would result in short-term, localized increases in erosion and runoff. Clearing and grading would expose soils to erosion, and compaction of near-surface soils by heavy equipment could result in increased runoff and sedimentation. Accidental release of POLs from construction equipment could affect both surface and groundwater quality, but employing engineering controls, using BMPs (including sediment and erosion control practices in keeping with Texas sediment and erosion control requirements), and following industry standards would minimize potential adverse effects, resulting in less than significant impacts to surface and groundwater from construction activities.

Long-term, beneficial impacts to surface and groundwater sources are anticipated resulting from reduced demand for potable water because of the reuse of wastewater for secondary uses on the Installation. Reclaimed water would be used primarily for landscape and golf course irrigation at Fort Bliss. Use of the reclaimed water would reduce demand for primary removal of water from the aquifers, and the reduction could be substantial. As noted in Section 3.13.1, golf course, family housing, and on-Installation irrigation constitutes 61 percent of water use on Fort Bliss. EPWU estimates that every gallon of reclaimed water used to irrigate crops and landscapes or for construction or manufacturing is 1 gallon of potable water that is saved and does not have to be pumped from aquifers or treated from the Rio Grande (EPWU 2012a). Fort Bliss estimates that 375 million gallons per year of reclaimed water would be used, which would therefore reduce the amount of water withdrawn from the aquifer (Cabe 2012).

Minimal impacts would be associated with water quality in receiving waters from the use of the reclaimed water. TCEQ requires that reclaimed water not be applied in a manner that would allow excess water to flow onto streets and eventually in stormwater systems. EPWU treats the water slated for reclamation in two plants to either potable quality or Type 1 quality. Type 1 water is near-potable and has been treated to remove pathogens, such as bacteria and other contaminants, so that it is suitable for uses where the public might come into contact with the water (TNRCC 1997) and would therefore cause little or no adverse impacts to water quality or other issues, such as human health.

#### 3.13.2.4 Alternative 4 – Waste-to-Energy Plant

Under this alternative, WTE plant, access roads, and transmission lines would be constructed, but the WTE plant location and size have not been determined at this time. The exact magnitude of direct impacts from construction activities would depend on the location of the WTE plant in relationship to the surface water features on Fort Bliss. The WTE plant would increase the amount of impermeable surface. Access roads would be constructed, further increasing impermeable surface area. Impermeable surface area from the transmission lines would be limited to the footers for the towers and some points of access for maintenance. These impacts are anticipated to be less than significant.

Water would be used for boiler(s) and plant cooling at the WTE plant. The heat from the incinerated waste would be used to flash the water to steam that would then power the turbines to produce electricity. Pollutants can build up in the water used in both the plant boiler and cooling systems (USEPA 2010, Office of Texas Comptroller 2012b). The steam and cooling systems would be largely self-contained, however, and water reuse in the plant would be maximized. If surface water discharge were necessary, such discharge would be subject to National Pollutant Discharge Elimination System permit requirements that would likely include temperature restrictions to prevent thermal water pollution. TCEQ regulates and permits discharges (Office of Texas Comptroller 2012b). If it is necessary to reinject water to the aquifers, this would require permits through the Underground Injection Control program to ensure that the water quality of the aquifer would be protected as a drinking water source, and water would need to be treated prior to injection (USEPA 2010). The project would also be subject to Section 438 of EISA, which requires any development or redevelopment projects involving federal facilities with footprints larger than 5,000 square feet to use strategies to maintain or restore the predevelopment hydrology to the maximum extent technically feasible, meaning that stormwater management measures would be necessary.

Operation of the WTE plant would require an estimated 41 gallons of water per ton of MSW processed, assuming dry-cooling (Davis 2013). The amount of water consumed by the WTE plant would depend on the size of the plant and the amount of MSW processes, factors which are unknown at this time.

Impacts to water resources under Alternative 4 would have the potential to be significant if the water supply for the WTE plant were to entirely come from potable water. If the Army chooses to pursue construction and operation of a WTE facility, supplemental NEPA would be conducted upon receipt of a final design proposal. The appropriate level of additional project-specific NEPA, including evaluation of identified water supply, would then be completed prior to construction of the project.

#### 3.13.2.5 Alternative 5 – Geothermal Energy Facility

Under Alternative 5, Fort Bliss would develop up to a 20-MW geothermal energy facility at Davis Dome to supply energy to nearby McGregor Range Camp. In developing geothermal energy and hot water resources under Alternative 5, impacts to surface and groundwater sources from construction activities would be similar to those described for the construction of the WTE plant and transmission line construction under Alternative 4, although the geothermal energy facility site would be half the size and less than 2 miles of transmission lines would be constructed. These impacts include increased potential for stormwater runoff and erosion that could adversely affect water quality in surface waters, although there are no surface waters of the state subject to CWA in this area. The potential for pollution would be minimized through the use of sediment and erosion control management practices consistent with the Fort

Bliss Construction SWPPP guidance, and are anticipated to be less than significant. This facility would be large enough that it would be subject to Section 438 of EISA.

Long-term water quality impacts could occur to groundwater resources. Geothermal energy has the potential to affect groundwater levels and thus can affect local water supplies. In the case of flash steam technology, geothermal waters would be withdrawn, flashed to steam, and run through turbines to generate electricity, then reinjected into the geothermal well. The plant at Fort Bliss could be a binary, air-cooled closed system. Binary power plants have very low water demand. Geothermal water would be isolated during production, injected back into the geothermal reservoir, and separated from groundwater by thickly encased pipes, making the risk of water pollution much lower than with other types of electrical generation (Kagel et al. 2007).

Although the geothermal energy trade association claims there is no record of water quality issues associated with geothermal energy, because wells are much deeper than the drinking water aquifers (Kagel et al. 2007), there is a potential for the geothermal brines, the wastewater from the geothermal plant, to impact groundwater. The most notable impacts on water resources from geothermal energy are associated with the management and disposal of wastewaters associated with geothermal energy generation (i.e., geothermal brines) (Heath 2002).

Geothermal chloride brines with sodium and calcium can contain different metals, including lead, iron, zinc, and other metals, that can contaminate groundwater. Contamination of shallower groundwater aquifers can also be caused by drilling fluids if a well casing fails; however, potential impacts can be mitigated through effluent treatment and reinjection into deep (as opposed to shallow) wells and through careful monitoring of the well casing (Heath 2002); therefore, impacts are anticipated to be less than significant.

The potential adverse impacts to both water quality and water demand from the possible CST facility under Alternative 5 would be similar to those described under Alternative 6, but scaled appropriately. Short-term impacts associated with erosion and runoff during construction would occur, and new impermeable surfaces would require stormwater management facilities because the project would be subject to Section 438 of the EISA. Approximately 2,280 gallons per MW per year would be required to clean the arrays.

Different geothermal technologies are available, and they have varying water demand. Fort Bliss is considering a binary air-cooled plant, which would reduce the water demand significantly compared to the other types of geothermal technologies. Binary plants are closed systems and have very little water demand. For operation of a 20-MW facility, water consumption would be estimated at approximately

744,000 to 1.5 million gallons per year (0.005 to 0.01 gallon/kWh[12]) (Clark et al. 2011). For comparison, a 20-MW natural gas plant operating 85 percent of the time would be estimated to use between 13.4 million and 102.7 million gallons per year (0.09 and 0.69 gallon/kWh) for plant operation (Clark et al. 2011).[13] The comparison, however, ultimately depends on the type of geothermal technology selected.

Long-term benefits may arise from Alternative 5 if the water supply demand for the geothermal and CST facilities is less than that required to produce the equivalent electricity from existing power plants.

#### 3.13.2.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Alternative 6 would involve the development of up to 300 acres for CSP technology with a dry-cooled steam turbine. Impacts to surface water and groundwater sources from construction activities under Alternative 6 would be similar to those described under Alternative 4, but they also would depend on the siting of the facilities in relationship to surface water features on Fort Bliss. Impacts would result from the construction of the CSP facility and the transmission line on the Installation; however, these impacts are anticipated to be less than significant impacts resulting from newly created impermeable surfaces.

BLM and DOE (2012) estimated operational water use of the CSP arrays (i.e., parabolic trough) would range from 0.2 to 1.0 acre-foot/year/MW for dry-cooling. An additional 0.5 acre-foot/year/MW was estimated for mirror and panel washing. Assuming a 50-MW array, a range of 11.4 to 24.4 million gallons of water per year would be needed to operate the CSP arrays. Long-term benefits may arise from Alternative 6 if the water supply demand for the CSP facilities were less than that to produce the equivalent electricity from existing power plants.

#### 3.13.2.7 Alternative 7 – Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as biomass, large-scale wind and solar PV facilities, may be developed on Fort Bliss as long as the technology and location meet the alternatives screening criteria presented in Section 2.2 and the environmental screening criteria presented in Appendix C, *Environmental Screening Criteria*. These sites would need to meet screening criteria and also would include construction of 15-kW to 20-MW natural gas-fired turbines, although they would only be used to supplement the other energy sources when they fluctuate. Impacts under Alternative 7 for the different

---

[12] One kilowatt-hour of electricity is equivalent to the electricity consumed by a 100-watt light bulb left on for 10 hours.

[13] Clark et al. (2011) presented results in gallons/kWh for specific technologies. These results were converted to gallons per year assuming a 20-MW facility and an 85 percent capacity factor.

energy technologies would be similar to those described under Alternatives 5 and 6. Wind turbines have little or no water demand related to plant operations. Therefore, long-term benefits to water resources would occur by reducing the amount of electricity used on Fort Bliss and the surrounding community that is produced by power plants that require water supply.

Additional adverse impacts would arise from the construction and operation of a natural gas-fired power plant, not only from the construction of the facility but also from the water supply demand for the facility for cooling purposes. Long-term benefits may arise under Alternative 7 if the water supply demand for the facilities were less than what it would be to produce the equivalent electricity from existing power plants.

#### 3.13.2.8 Alternatives Combined

This scenario would combine the aggressive conservation policies, implement the water reclamation system, and implement the many renewable energy options, including the WTE plant, CSP arrays, and a small geothermal energy facility for the McGregor Base Camp Complex, in addition to taking advantage of opportunities for additional development of renewable energy technologies across the Installation. Implementation of the conservation policies and reclaimed water system would result in benefits to water supply by reducing demand, as would implementation of wind energy and the WTE plant. The CSP arrays and geothermal technologies would also likely result in benefits compared to water demand by the natural-gas fired plants currently serving Fort Bliss, but the geothermal power would be comparable or slightly higher in water demand per unit of energy.

Short-term impacts on water quality associated with erosion and runoff would result from construction activities. The short-term impacts would be mitigated by sediment and erosion control practices. Long-term water quality impacts associated with increased stormwater runoff resulting from new impermeable surfaces would be subject to stormwater management practices. Other water quality impacts would be related to discharge of any water from the plants that is not reused; most of these technologies use steam to run the turbines, and waste water from such processes is warm and can pick up pollutants in the steam process.

## 3.14 Transportation and Traffic

### 3.14.1 Affected Environment

#### 3.14.1.1 Transportation System

The affected environment would include the ground transportation systems within the region of Fort Bliss. The ROI for the ground transportation systems within East and West Bliss is El Paso County, Texas. The ROI for the ground transportation systems within the FBTC consists of the STA, Doña Ana Range-NTA, and McGregor Range.

Several highways provide regional access to El Paso and Fort Bliss (Figure 3-7). The major east-west access is provided by Interstate 10, which runs through downtown El Paso and passes just south of East and West Bliss. Interstate 10 is the most heavily traveled roadway in El Paso and connects the region to western and central Texas to the east, and southern New Mexico and Arizona to the west. The segment on Interstate 10 between U.S. Route 54 and Loop 375 ranks number 68 in the 2011 Most Congested Roadways in Texas. Interstate 25 is the major northern access route to the El Paso region and is available by following Interstate 10 approximately 44 miles northwest to Las Cruces, New Mexico. U.S. Route 54 (locally referred to as the Patriot Freeway), a major non-Interstate freeway, also provides northern access to Alamogordo, New Mexico. Another key inter-regional roadway is Montana Avenue (U.S. Route 62/180), which is located immediately south of Fort Bliss and provides access to locations east of El Paso.

Loop 375, also an important regional traffic corridor, connects the northeast and eastern portions of the city and helps to reduce traffic congestion along U.S. Route 54. Loop 375 crosses Fort Bliss between Montana Avenue and U.S. Route 54. Under and overpasses have been constructed to allow military vehicles and equipment to pass under the roadway, preventing through-traffic interference with military operations. West of U.S. Route 54, Loop 375 becomes Woodrow Bean Trans Mountain Drive, which connects to Interstate 10 northwest of El Paso and has the advantage of few cross streets, allowing traffic to be carried at high speeds. Spur 601 has been constructed to provide a 7.4-mile mobility connection between U.S. Route 54 on the west and Loop 375 on the east. The alignment follows the existing Fred Wilson Avenue from U.S. Route 54 to the Airport Road/Sergeant Major Boulevard intersection, progresses eastward through an undeveloped area north of and along Founders/Walter Jones boulevards, traverses the property lines between El Paso International Airport, Biggs AAF and Fort Bliss Military Reservation and terminates at Loop 375.

East and West Bliss are surrounded by major arterial city streets. The north boundary is Fred Wilson Avenue and the east boundary is Airport Road. U.S. Route 54 forms the west boundary and Montana Avenue serves as the south boundary. Other major roadways in the area of the Installation are Railroad Drive and Dyer Street.

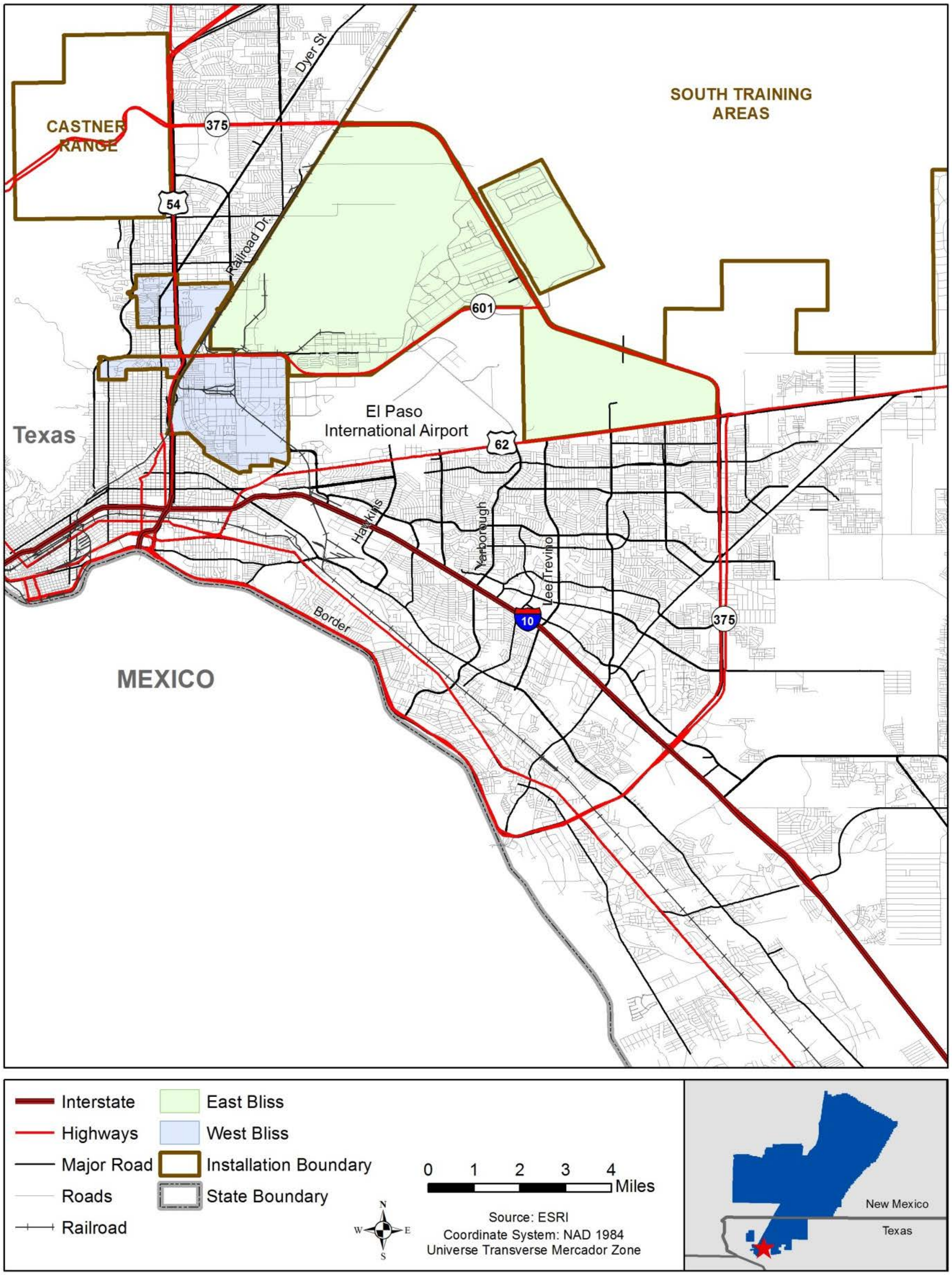



**Figure 3-7. Regional Roadway Network**

Access to East and West Bliss is controlled by 17 Access Control Points. Nine of the gates provide access to West Bliss: Cassidy Gate, Chaffee Gate, Jeb Stuart Gate, Marshall Gate, Pershing Gate, Remagen Gate Buffalo Soldiers Gate, Sheridan Gate, and Jeb Stuart South. Five gates provide access to East Bliss: Biggs Gate, Global Reach Gate, North Sargent Major Boulevard Gate, General Harmon Gate (Constitution), and Old Ironsides Gate. Two gates provide access to WBAMC: Fred Wilson Gate and Alabama Gate. Two gates also provide access to the IBCT complex: IBCT South and NE IBCT. Depending on Installation-construction activities or operational needs, some of these gates are closed from time to time. At this time, entry onto the Installation requires photo identification. The general public may use the Fort Bliss movie theater and shopping district. During elevated threat levels, day passes may be issued at Buffalo Soldiers and Cassidy Gates (which are open 24/7). Other gates such as Pershing and Chafee are only open certain hours. Gate hours and access procedures are subject to change at any time. All cars are subject to random searches.

U.S. Route 54 runs along the northwest boundary of the STA, and the southernmost boundary is U.S. 62/180 (Montana Avenue). Loop 375 is the only major north-south roadway travel within the western portion of STA. None of the remaining areas of STA are near any major roadways.

Doña Ana Range is located west of U.S. Route 54 and is provided access from Fort Bliss by Martin Luther King Highway (Ranch Road 3255) in Texas and War Highway (NM 213) in New Mexico, which runs along the Franklin and Organ Mountains on the eastern boundary of the range. War Highway (NM 213) is closed occasionally for safety reasons during certain military operations. U.S. Route 54 connects El Paso, Texas, with Alamogordo, New Mexico, and is on the western border of the McGregor Range. New Mexico Highway 506, an east-west arterial, crosses the northern portion of McGregor. It provides access to McGregor Range from the west via U.S. Route 54 and travels east, intersecting County Road FO52 and exiting the range to the northeast. New Mexico Highway 506 is a semi-improved road (i.e., portions have been paved) maintained by Otero County and provides access to several communities in the area. BLM maintains the road network on grazing units 1 through 15. The Army maintains the remainder of the road network on the McGregor Range. These intra-range roads primarily consist of dirt roads that provide access to different parts of the range.

Military convoy traffic between West Bliss and the FBTC on U.S. Route 54 is limited to wheeled vehicles. Tracked vehicles are generally transported to and from the FBTC by Heavy Equipment Tactical Trucks or are transited through the training areas on tank trails.

#### 3.14.1.2 Annual Average Daily Traffic Volumes

Average daily traffic volumes for each access control point on both East and West Bliss are available for January 2011from the Fort Bliss Department of Emergency Services and summarized in Table 3-29.

**Table 3-29. 2011 Average Daily Traffic Volumes by Access Control Point**

| West Bliss | | | East Bliss | |
|---|---|---|---|---|
| Access control point location | Daily | | Access control point location | Daily |
| Cassidy | 8,735 | | Biggs Main | 5,601 |
| Sheridan | 3,335 | | Global Reach | 6,417 |
| Pershing | 1,629 | | Constitution | 5,339 |
| Buffalo Soldiers | 4,623 | | IBCT South | 1,237 |
| Jeb Stuart | 937 | | NE IBCT | 1,284 |
| Remagen | 2,714 | | 1 AD North Construction | 2,345 |
| Chaffee | 2,628 | | Hann Road Bridge | 6,042 |
| WBAMC (Alabama) | 1,642 | | Carrington Road Bridge | N/A |
| WBAMC (Wilson) | 3,870 | | | |
| Total | 30,113 | | Total | 28,265 |

Source: Jacobs/Huitt-Zollars (2011)

Notes: IBCT = Infantry Brigade Combat Team, WBAM = William Beaumont Army Medical Center

### 3.14.2 Environmental Consequences

Table 3-1 includes significance thresholds for transportation and traffic impacts.

#### 3.14.2.1 Alternative 1 – No Action

Under the No Action Alternative, Fort Bliss would not pursue additional Net Zero initiatives to accelerate reduction of energy, water, and waste consumption beyond those policies and procedures that are currently in place. Therefore, no transportation impacts are anticipated under the No Action Alternative.

#### 3.14.2.2 Alternative 2 – Conservation Policies and Procedures

Under Alternative 2, Fort Bliss would continue to implement policies, procedures and BMPs to maximize resource re-use, limit waste generation, increase resource re-purposing, and increase water and energy use efficiencies in new and existing facilities. No impacts to intersections and roadway operations would occur as a result of implementation of Alternative 2.

#### 3.14.2.3 Alternative 3 – Water Reclamation Pipeline

Under Alternative 3, Fort Bliss would pursue the construction and use of a water reclamation pipeline to provide Fort Bliss with reclaimed water for Installation secondary uses. The purple pipe would connect to a conduit pipe from the City of El Paso's WWTP near the Pershing Gate and water would be distributed.

Traffic generated by the estimated 20 construction staff would not alter traffic conditions on Fort Bliss and public roadways. Temporary closure of the Pershing Gate and along the pipeline alignment would be required during the constructions of the pipeline. Pershing Gate is currently open limited hours; therefore, closure of this gate during construction would not have a significant impact on gate operations of the Installation. Temporary closures along the pipeline alignment would occur on a small section of the internal roadways within the Installation including Sheridan Road, Pershing Road, Pleasonton Road, JEB Stuart Road, Cassidy Road, and Hann Road. Road closures or detours would create short-term traffic delays on East and West Bliss. Thus, less than significant temporary adverse impacts are anticipated and would end with the construction phase at each site.

Under Alternative 3, no new employees or staff would be added on East and West Bliss as a result of the purple pipe. Therefore, no impacts to intersections and roadway operations would occur.

#### 3.14.2.4 Alternative 4 – Waste-to-Energy Plant

Under Alternative 4, Fort Bliss would pursue the construction and operation of a WTE plant to reduce landfill waste and provide the Installation with a consistent source of alternative power. Traffic impacts associated with Alternative 4 would depend on the size and location of the WTE plant and associated MSW truck delivery routes. These features of Alternative 4 have not been determined at this time; therefore, traffic impacts in this section are discussed generally. Traffic impacts would occur during the construction and operation phases of the project. During construction, impacts would result from construction workers and commuting to and from the construction site, as well as construction vehicles such as dump trucks and concrete trucks. Impacts would depend on the location of the WTE plant on Fort Bliss and the access routes taken by construction workers. It is anticipated that impacts could range from less than significant to significant but mitigable and that these would be short-term impacts that would last the duration of the construction period. Operation impacts would be the result of employees commuting to and from the WTE plant as well as trucks hauling MSW to the WTE plant and taking ash from the WTE plant to its point of disposal. Traffic volumes would depend on the size of the plant relative to the required number of operations employees and required amount of MSW for power generation. It is also anticipated that operations impacts would range from less than significant to significant but mitigable. Any future WTE project would undergo appropriate, additional NEPA analysis, including analysis of the potential location of the WTE plant and the proposed technology.

#### 3.14.2.5 Alternative 5 – Geothermal Energy Facility

Under Alternative 5, a geothermal energy facility would be constructed and operated within some portion of two 20-acre footprints at the Davis Dome site. The proposed construction at the Davis Dome site would generate additional traffic from worker vehicles and equipment. Temporary traffic delays may occur; however, there would be minimal changes to traffic patterns or flows on public roads. Construction traffic impacts to public roadways would be temporary and are expected to be less than significant and short term. Because a maximum of six new employees would be added for the geothermal energy facility, no impacts to traffic on Fort Bliss and public roadways are expected.

#### 3.14.2.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Under Alternative 6, Fort Bliss would develop the dry-cooled CSP array in the STA. Transmission lines would be constructed and tied in with the substation by the BCTs about 7 miles to the west of the proposed development site. Transmission lines would follow existing easements and the Installation boundary.

Additional construction-related traffic delays and volume changes would occur as a result of the construction of the CSP and transmission line within the STA. Construction traffic impacts to public roadways would be short term and are expected to be less than significant.

The proposed dry-cooled CSP site would add 28 new employees (56 daily trips) to the site within the Installation. These additional 56 daily employee trips and other vehicle trips on public road Loop 375 would likely represent a minor increase in the regional population. Therefore, impacts to traffic on Fort Bliss and public roadways are expected to be long term and less than significant.

#### 3.14.2.7 Alternative 7 – Implement Other Renewable Energy Technologies

Under Alternative 7, other renewable energy technologies, such as biomass, large-scale wind and solar PV facilities, may be developed on Fort Bliss as long as the technology and location meet the alternatives screening criteria presented in Section 2.2 and the environmental screening criteria presented in Appendix C, *Environmental Screening Criteria*. Impacts to traffic on Fort Bliss and public roadways under this alternative are expected to be less than significant based on the impacts described under Alternatives 5 and 6.

#### 3.14.2.8 Alternatives Combined

All alternatives would result in less than significant traffic impacts. Impacts under Alternative 4 would undergo appropriate, additional NEPA analysis, including analysis of the potential location of the WTE plant and the proposed technology.

## 3.15 Irreversible and Irretrievable Commitments of Resources

An irreversible/irretrievable commitment of resources results from a decision to use or modify resources when they are renewable only over a long period, such as soil productivity, or when they are nonrenewable resources, such as cultural resources. The single most irreversible and irretrievable commitment of resources associated with the Proposed Action is the loss of vegetation/habitat for the actions associated with the construction of new renewable energy facilities and associated infrastructure. It is considered an irreversible commitment because, for the foreseeable future, these areas would be converted to renewable energy facilities and re-establishing the vegetation types is not reasonable for quite some time. Some vegetation would be permanently lost due to construction; in addition, there is a potential for the displacement of wildlife or sensitive species and their habitat. Although these actual resources would be lost, through the design and other mitigation, many of the impacts would be minimized.

The materials and energy required for the construction, operation, and maintenance of the projects under the Proposed Action, particularly the renewable energy facilities and operations, also represent irretrievable commitments of resources. The total amount of construction materials required for this action is relatively insignificant when compared to the resources available in the region. The energy required for construction consists of the fuels necessary to operate heavy construction equipment and trucks. Although energy conservation is a vital and critical issue, the energy resource commitment to the Proposed Action is not anticipated to be excessive in terms of region-wide usage. Materials and energy are not in short supply and their use would not have an adverse effect upon continued availability of these resources. Construction, operation, and maintenance would also require a substantial expenditure of federal funds that would not be directly retrievable.

## 3.16 Relationship between Short-term Use of the Environment and Long-term Productivity

Alternative 1, No Action, would have no impact on the short-term use of the environment because no Net Zero initiatives would be implemented. The city of El Paso and Fort Bliss currently withdraw water from the Hueco Bolson in quantities that exceed the aquifer’s ability to recharge. This drawdown would continue under the No Action alternative; therefore, it would likely result in the reduction of long-term productivity of the aquifer.

Under Alternative 2, Fort Bliss would implement conservation policies and procedures and BMPs to reduce the consumption of energy and water resources and maximize re-use and reduction of waste at Fort Bliss. These activities would not result in any perceptible short-term uses of the environment; however, they would enhance the long-term productivity of the aquifer and the environment by minimizing electricity and water use and waste generation at Fort Bliss.

Implementation of Alternative 3 would not result in any short-term use of the environment because land disturbance would be temporary during construction and would occur within previously developed areas on East and West Bliss. The reuse of reclaimed water for irrigation of landscapes and other secondary uses at Fort Bliss would result in an improvement to the long-term productivity of the aquifer due to the reduced need to withdraw water for Installation use.

The use of land on Fort Bliss for construction of renewable energy facilities as described under the Proposed Action and under Alternatives 4 through 7 would result in a long-term reduction in the productivity of that land for others uses (e.g., wildlife habitat). The actions proposed under these alternatives would result in the transition from an existing energy generation source using non-renewable fossil fuels to renewable energy sources. As a result, the long-term productivity of the environment would be enhanced due to a net reduction in the consumption of fossil fuels for use in energy generation.

## 3.17 Unavoidable Adverse Impacts

The environmental analysis of the alternatives includes the avoidance, minimization, or other mitigation of potential adverse effects on natural, cultural, and environmental resources; however, all adverse impacts may not be completely avoided and/or mitigated. Some adverse effects would be temporary in nature, for example, the temporary, less than significant effects on air quality due to emissions from construction equipment; the temporary habitat, vegetation, and soil disruption and removal from construction staging and activities; and temporary, less than significant noise, traffic, and water resources impacts associated with construction activities. Other adverse effects could be long term in nature, for example, the permanent removal of vegetation, soils, and wildlife or sensitive species habitat due to land-clearing activities for construction of renewable energy facilities and the alteration of land uses as described for Alternatives 3 through 7. Other long-term, unavoidable impacts include impacts to air quality from operations emissions of Alternatives 4 through 7, and noise and traffic associated with Alternative 4 operations.

# 4.0 CUMULATIVE IMPACTS

In addition to identifying the direct and indirect environmental impacts of their actions, the CEQ's NEPA regulations require federal agencies to address cumulative impacts related to their proposals. A cumulative impact is defined in the CEQ regulations (40 CFR §1508.7) as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." This section describes the process used to identify potential cumulative impacts related to the Proposed Action at Fort Bliss and discusses those impacts for each of the resources addressed in Chapter 3.

## 4.1 Process for Identification of Cumulative Impacts

The CEQ has published guidance for assessing cumulative impacts in *Considering Cumulative Effects under the National Environmental Policy Act* (CEQ 1997b). In summary, the process outlined by CEQ includes identifying significant cumulative effects issues, establishing the relevant geographic and temporal (time frame) extent of the cumulative effects analysis, identifying other actions affecting the resources of concern, establishing the cause-and-effect relationship between the Proposed Action and the cumulative impacts, determining the magnitude and significance of the cumulative effects, and identifying ways in which the agency's proposal might be modified to avoid, minimize, or mitigate significant cumulative impacts.

Issues to be addressed in this cumulative impacts analysis were determined based on the identification of resources that would be affected by the alternatives under evaluation. These resources, discussed in Chapter 3, were identified based on information received during public scoping or through the analysis of direct and indirect effects that have the potential to combine with other past, present, or reasonably foreseeable future actions to produce a larger impact. If the analysis demonstrated there would be no direct or indirect impact to a resource, it was not included in the cumulative impacts analysis because the Proposed Action would not add to the cumulative impact.

An ROI was defined for each resource in Chapter 3. These ROIs represent the geographic areas within which all notable impacts from the Proposed Action and alternatives are expected to occur. The geographic extent of the cumulative impacts analysis generally coincides with the ROI of each resource and is described by resource in Section 4.3. In addition, significance thresholds defined for each resource in Chapter 3 also apply to the assessment of cumulative impacts.

CEQ regulations specify that cumulative impacts analyses encompass past, present, and reasonably foreseeable future actions. As a practical matter, the impacts of past actions are already reflected in the conditions that currently exist, as described in the Affected Environment sections in Chapter 3. Where appropriate and feasible, those sections note past activities that may have cumulatively contributed to the current condition of the environment. Past, present, and reasonably foreseeable future actions considered in the analysis are identified in Section 4.2. In general, this EIS considered present and reasonably foreseeable future actions as those that are under construction, are the subject of a plan or proposal, or have identified funding. Actions beyond that become increasingly speculative and difficult to assess.

## 4.2 Identified Past, Present, and Reasonably Foreseeable Future Actions

Military activity, as well as other government and non-government industrial, business, and institutional activities, historically have affected Fort Bliss and its surrounding area. The latter influences have included foundries, diverse manufacturing, mixed agricultural practices, mining operations, government facilities, financial institutions, educational institutions, health services, and other, smaller entrepreneurial sources of growth. Many of these activities have been shaped by the geographic position of El Paso as an international border crossing and its "sister city" of Ciudad Juárez and as a historical transportation hub. Future impacts will mostly occur through the continued growth of these diverse components of the El Paso community, exacerbated and accelerated by the continued growth and expanded influence of the much larger Ciudad Juárez.

The following past, present, and reasonably foreseeable future actions were considered as part of this cumulative impacts analysis.

### 4.2.1 Past Actions

Specific past actions considered include:

**2005 Base Realignment and Closure** – Through the Base Realignment and Closure of 2005 (BRAC), the Secretary of Defense recommended that Fort Bliss be realigned by relocating the 1st Armored Division from Germany and Korea to Fort Bliss. In addition, it was recommended to realign Fort Sill by relocating an artillery (fires) brigade to Fort Bliss and realign Fort Hood, Texas, by relocating maneuver battalions, a support battalion, and aviation units to Fort Bliss. Some of these actions are ongoing.

**Fort Bliss Mission and Master Plan, Supplemental EIS** – In April 2007, a ROD was signed for the Fort Bliss Mission and Master Plan Supplemental Programmatic EIS. The Fort Bliss Mission and Master Plan Supplemental EIS evaluated alternatives to:

- Modify current land use on Fort Bliss to more fully realize the Installation's capability and flexibility to support Army training and testing requirements; the evolving force structure; potential future missions; and joint, interagency, intergovernmental, and multinational agencies, without compromising the commitment to stewardship of natural and cultural resources
- Construct additional facilities and infrastructure in the Main Cantonment Area (referred to herein as East and West Bliss) necessary to support BRAC actions and Integrated Global Presence Basing Strategy stationing decisions
- Develop live-fire, qualification, and testing ranges required to support the requirements of units stationed at Fort Bliss
- Develop range camps, auxiliary facilities, and other improvements

The selected alternative included the following attributes:

- Increase the military personnel, total personnel (civilians and military), and military dependents to 40,300, 57,800, and 66,500, respectively
- Increase the primary additional equipment to 6,260 wheeled vehicles, 2,360 tracked vehicles, and 220 helicopters
- Develop an additional 4,900 acres on East and West Bliss
- Construct 25.8 million square feet of additional buildings on East and West Bliss
- Disturb 4,300 acres to complete construction on East and West Bliss
- Create 1,600 acres of additional impermeable surface on East and West Bliss
- Create 352,000 acres of additional off-road vehicle maneuver area for a total of 687,000 acres

**Grow the Army Stationing and Training** – As part of the Grow the Army stationing and training (Grow the Army) actions, Fort Bliss received one additional IBCT and converted a BCT to a Stryker Brigade Combat Team.

**Kay Bailey Hutchinson Desalination Plant** – In 2007, EPWU finished construction on the Kay Bailey Hutchinson Desalination Plant, located off Montana Avenue within the STA of Fort Bliss. The plant is the world's largest inland desalination plant with a capacity of treating 27.5 million gallons per day.

### 4.2.2 Present and Reasonably Foreseeable Future Actions

The following actions are ongoing or are considered reasonably foreseeable future actions.

**Modification of Special Use Airspace at Fort Bliss, Texas and New Mexico** – Fort Bliss has finalized an EA for the proposition to modify SUA over the STA and some adjacent lands to separate military and civilian aircraft operating in those areas. Specifically, the proposal would modify the designation of SUA in the STA and Training Areas 8 and 9 in McGregor Range from the surface to a ceiling of 1,200 feet AGL, including a triangular area over private land extending east of the STA and south of the Terrain Flying Area, and correct restricted airspace coordinates currently in effect for R-5103A airspace to extend that airspace south to the Texas/New Mexico state line and the edge of Fort Bliss property.

**Expansion of U.S. Air Force Student Training** – The U.S. Air Force 204th Security Forces Squadron (Desert Defenders) proposes to increase the throughput of student Airmen at Fort Bliss, training up to 850 students on the ground at one time and also increase the training vehicle fleet by 50 percent. Although pre-deployment training can be conducted on other U.S. Air Force properties, the use of existing Army training areas, ranges, and building assets provides the U.S. Air Force with the flexibility to complete training required by Central Command. Fort Bliss training areas and ranges are suitable for all training requirements set by Central Command.

**Construction and Use of Advanced Operations Bases at McGregor Range Camp, Contingency Operating Location Westbrook, and Doña Ana Range Camp** – The U.S. Army Special Forces Command's Special Operations Force Pre-Mission Training Cell is planning to improve pre-mission training capabilities in the Tularosa Basin portion of McGregor Range and the Doña Ana-NTA on Fort Bliss. Advanced Operations Bases (AOBs) will be constructed at McGregor Range Camp, Contingency Operating Location Westbrook, and Doña Ana Range Camp to billet approximately 130 Soldiers each. The AOBs will serve as training centers for Special Operations Force teams preparing for deployment to current operational theaters. Each AOB will have dimensions of approximately 800 feet by 400 feet, covered with a layer of base course or gravel. Activities will include 12 acres of ground disturbance in previously disturbed areas.

**Texas Department of Transportation Route Location Study** – The Texas DOT, in cooperation with the New Mexico DOT, conducted a route location study for a limited access highway to connect Loop 375 in northeast El Paso near Railroad Drive with Interstate 10 in Anthony, New Mexico. The project examined the feasibility of establishing an alternative route to the congested Interstate 10 corridor through El Paso for through truck and other traffic. Congestion on Interstate 10 is a function of the unique political and mountainous physical geography of the El Paso area that effectively channels all interstate traffic through the center of El Paso on Interstate 10. An alternative cross-mountain route entails steep grades that preclude its use on a regular basis by truck and through traffic. As a result, there is frequent severe congestion on Interstate 10 with no possibility for alternative routing of through truck and auto traffic and hazardous cargoes. Currently, the project is still in the planning/study phase with an exact construction date unknown. The possible construction of the roadway, however, has the possibility of altering the route of trucks carrying hazardous materials.

**Army 2020 Force Structure Realignment** – On 5 January 2012, the President and DoD officials presented a strategic guidance document called *Sustaining U.S. leadership: Priorities for 21st Century Defense*. (21st Century Strategic Guidance). As part of this presentation, DoD officials stated that the Army end-strength would decline to 490,000. The Army's Chief of Staff stated: "We will reduce our active force end strength from 570,000 to 490,000, which will include a reduction of at least eight brigade combat teams." The Army's Proposed Action is to conduct force reductions and realign existing forces in accordance with Congressional authorizations to a size and configuration that is capable of meeting national security and defense objectives, implements the 2010 QDR recommendations, sustains unit equipment and training readiness, and preserves a high quality of life for Soldiers and their families. Army 2020 force structure realignment will allow for the adjustment of the composition of its forces to meet force requirements in high-demand military occupational specialty areas while rebalancing the number and types of units in lower priority military occupational skill areas. The implementation of Army force structure realignment will allow the Army to reduce its operational costs and to field a smaller force that still can meet the mission requirements of the current and future global security environment. As part of the Army 2020 force structure realignment, military (Soldier and civilian) manning levels may change at Fort Bliss in the range of anywhere from -8,000 to + 3,000 (the range being considered to support Army 2020 at all major bases). Primary potential impacts identified in the 21st Century Strategic Guidance were to traffic/transportation and socioeconomics with impacts to traffic/transportation deemed mitigable. On 18 January 2013, the Army published a Final Programmatic EA and Draft Finding of No Significant Impact evaluating the impacts of potential force realignment at Fort Bliss and other potentially affected Army installations. The Finding of No Significant Impact was signed on 4 April 2013.

**Construction and Operation of Solar PV Facilities on the FBTC** – Fort Bliss proposes to construct, operate, and maintain proven solar PV technology to supply supplemental power to outlying range camps and the IBCT area of East Bliss to meet the federal government's near-term requirements for use of renewable energy. It is estimated that the Proposed Action would generate 73,000 MWh per year, which would supply approximately 15 percent of the total energy annually consumed by Fort Bliss. Currently, two solar PV facilities are being planned by Fort Bliss: a 20-MW solar PV located within the STA adjacent to the IBCT and a 1-MW solar PV array at McGregor Range Camp.

**Balfour Beatty Communities Solar Power Project** – Balfour Beatty administers privatized residential housing developments at Fort Bliss. Balfour Beatty intends to install approximately 13.2 MW of solar PV on the roofs of individual homes within their communities to provide energy directly into the electric grid.

**Construction and Operation of a Sewage Treatment Plant on Fort Bliss** –The City of El Paso and Fort Bliss are exploring the feasibility of building and operating a treatment plant on the Installation to generate reclaimed water from sewage generated from on-post activities. This project would augment the purple pipe water distribution plans under Alternative 3. Plans for an on-post sewage treatment plant are reasonably foreseeable under NEPA guidelines although details are not yet known regarding site location, plant layout, or plant operator. Additional NEPA analysis would be required, at least at the environmental assessment level, if a decision were made to proceed with this project.

**Sale, Development, and Exchange of Army Owned Land** – Fort Bliss is pursuing the sale of Army-owned land to pay for additional military housing on the Installation. Included in this action is the sale of approximately 1,653 acres of undeveloped land located within East Bliss and 91 acres of previously developed land within lower Beaumont. Additionally a 683-acre parcel within East Bliss will be conveyed to the Texas General Land Office in exchange for 2,880 acres located adjacent to the STA near Training Areas 1B and 2E.

**El Paso Electric Company's Power Plant near Montana Avenue** – EPEC is proposing to construct a state-of-the-art 176-MW natural gas powered electrical generation plant located just south of the STA, north of Montana Avenue and East of Zaragoza Avenue on the east side of El Paso. EPEC is currently in the process of filing for the necessary regulatory approvals. The first unit is scheduled to become operational in 2014.

**El Paso Electric Company's Pursuit of Additional Generating Capacity** – Through 2020, EPEC plans to bring 1 gigawatt of new natural gas-fired power into the El Paso area electrical grid. While bringing this new capacity online, EPEC plans to decommission outdated production capacity elsewhere.

**Construction and Operation of a U.S. Immigration and Customs Administration Facility** – The U.S. Immigration and Customs Enforcement (U.S. ICE) is proposing to consolidate seven separate facilities located throughout El Paso into one administration facility. The new facility will be approximately 90,000 square feet in size and located on 19 acres in East Bliss north of Montana Avenue west of the Armed Forces Reserve Center in East El Paso.

## 4.3 Cumulative Impacts by Resource

This section describes potential cumulative impacts related to the actions occurring and proposed at Fort Bliss by resource. For each resource, the following subsections first identify the geographic boundary considered for the cumulative impacts analysis and describe the nature and magnitude of the cumulative impacts for each alternative evaluated, to the extent feasible considering uncertainties inherent in the analysis. In general, this EIS assumes a 20-year horizon for estimating future impacts; actions beyond that time frame become increasingly more speculative and difficult to assess. Impacts are characterized using the same definitions used for direct and indirect impacts (Section 3.1).

### 4.3.1 Air Quality

The study area considered in the cumulative analysis for the criteria pollutants includes areas in and near Fort Bliss. It is noteworthy that individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Because the potential effects of proposed GHG emissions on climate change are by nature global, the study area for this aspect is not defined, but they are addressed in this analysis.

The important air quality cumulative impact issues considered in this analysis were:

- Potential for increased emissions of criteria pollutants by Fort Bliss activities, in combination with increased emissions due to the population growth that could result in non-attainment of NAAQS for CO and $O_3$, or the expansion of the nonattainment area for $PM_{10}$
- Impact of increase in ground disturbance and exposure from construction activities, off-road vehicle traffic, landfill operations, and other activities that affect vegetative cover and soils on fugitive dust generation and particulate matter emissions
- Cumulative effects of increased human-caused dust generation in combination with natural wind-blown dust events on ambient air quality in El Paso and Doña Ana counties.

While individual sources of GHG emissions are not large enough to have an appreciable effect on climate change, all of these sources incrementally increase concentrations. Consequently, cumulative impacts of GHG emissions occur when proposed GHG emissions combine with other GHG emissions from other natural and human-made activities on a global scale. Currently, there are no formally adopted or published NEPA thresholds of significance for GHG emissions stemming from the Proposed Action. Formulating such thresholds is problematic because it is difficult to determine what level of proposed emissions would substantially contribute to global climate change.

In addition to assessing the GHG emissions impacts that would result from implementation of the alternatives and the potential impact on climate change, the effect of climate change on the Proposed Action and the adaptation strategies that would be developed in response also are assessed. The effects of climate change are a global issue for the DoD. As is clearly outlined in the 2010 QDR, the DoD will need to adjust to the impacts of climate change on facilities and military capabilities (DoD 2010). The DoD already provides environmental stewardship at hundreds of DoD installations throughout the U.S. and around the world, working diligently to meet resource efficiency and sustainability goals set by relevant laws and executive orders. Although the U.S. has significant capacity to adapt to climate change, it poses challenges for civil society and DoD alike. DoD operational readiness hinges on continued access to land, air, and sea training and test space. Consequently, DoD must complete a comprehensive assessment of all installations to assess the potential impacts of climate change on its missions and adapt as required (DoD 2010).

The 2010 QDR goes on to illustrate that DoD will work to foster efforts to assess, adapt to, and mitigate the impacts of climate change (DoD 2010). Domestically, DoD will leverage the Strategic Environmental Research and Development Program, a joint effort among DoD, the Department of Energy, and the USEPA, to develop climate change assessment tools.

The U.S. Global Climate Research Program report, *Global Climate Change Impacts in the U.S.*, reviewed the unique impacts of climate change on the U.S. (Karl et al. 2009). The Southwest region of the United States has already experienced a 1.5°F rise in average temperature since 1979, and temperatures are projected to rise approximately 4 to 10 degrees above the historical baseline by the end of the century, averaged over the Southwest region. Water supplies are projected to become increasingly scarce, and droughts and wildfires are projected to increase, although local changes in temperatures and precipitation, as well as fire fuel availability, all play a role in the degree of projected change.

As climate science advances, the Army will regularly re-evaluate climate change risks and opportunities to develop policies and plans to manage effects on its operating environment, missions, and facilities. The following sections describe the anticipated cumulative impacts associated with each alternative.

#### 4.3.1.1 Alternative 1 – No Action

The No Action Alternative would have no direct or indirect adverse impacts to air quality; therefore, no cumulative impacts would occur. Some beneficial impacts to air quality or GHG reductions would occur under this alternative due to existing policies and programs. The forecasted baseline population growth, in combination with proposed Fort Bliss-induced population changes, is projected to result in a 28 percent increase in the population of El Paso County by 2035 (El Paso MPO 2010). This population increase could ultimately result in exceedances of the NAAQS, especially of CO and $PM_{10}$ (for which the city of El Paso is in moderate non-attainment). $PM_{10}$ levels in El Paso and Doña Ana counties are further aggravated by windblown dust, especially during dust storms. Additional ground disturbance due to construction associated with other actions both on and off Fort Bliss, in combination with other fugitive dust sources in the region, would contribute to increases in $PM_{10}$ emissions in the ROI.

#### 4.3.1.2 Alternative 2 – Conservation Policies and Procedures

Alternative 2 would result in beneficial impacts to air quality through reduced air emissions, including GHG emissions associated with Fort Bliss operations in both the short and long term. Other actions described in Section 4.2 could contribute short-term, construction-related air emissions within the ROI. These construction projects include local projects planned by private developers, Texas DOT, U.S. ICE, EPEC, and Fort Bliss. In addition, new operation-related emissions would occur from projects, such as the proposed EPEC power plant, and increased mobile source emissions due to increased training activities at Fort Bliss. Potential population growth discussed for Alterative 1 also would contribute to future increases in emissions from increased mobile sources and energy demand for the population. Although these other actions would have potential for significant cumulative impacts, Alternative 2 would not contribute to these adverse impacts. Other actions, such as Fort Bliss solar energy development and the Balfour Beatty solar panel installation project, would also contribute to lower air emissions and GHG emissions due to the displacement of fossil fuel usage by renewable energy sources. As previously stated, Alternative 2 is anticipated to contribute beneficial impacts from reduced energy consumption through implementation of conservation policies and procedures and would therefore help minimize short- and long-term, cumulative impacts to air quality.

#### 4.3.1.3 Alternative 3 – Water Reclamation Pipeline

Implementation of conservation policies and procedures under Alternative 3 would result in beneficial impacts to air quality through reduced air emissions, including GHG emissions associated with Fort Bliss operations in both the short and long term. Construction impacts to air quality resulting from the purple pipe would be less than significant. Other past, present, or reasonably foreseeable actions as described under Alternatives 1 and 2 have the potential to increase construction-related emissions over the short term. Long-term increases in emissions could occur from other actions, such as the proposed EPEC power plant, EPEC's pursuit of additional generating capacity through natural gas, and increased training levels at Fort Bliss. These actions, including population growth-related increases, would have the potential for significant cumulative air quality impacts if they result in exceedances of the NAAQS within the ROI; however, air quality impacts resulting from Alternative 3 would be small and less than significant in the short term and beneficial in the long term due to reduced emissions from the implementation of conservation policies and procedures. Therefore, Alternative 3 would contribute minimally to short-term, cumulative impacts and would contribute beneficial impacts in the long term, potentially minimizing cumulative impacts to air quality.

#### 4.3.1.4 Alternative 4 – Waste-to-Energy Plant

Alternative 4 would contribute short-term, less than significant to significant but mitigable impacts from construction and operation of the WTE plant and associated infrastructure. More extensive information on plant design and operation, as well as analysis of emissions transport, would need to be known to determine if air pollutant emissions from WTE plant operations would significantly affect visibility in Class I areas, such as Guadalupe National Park. Cumulatively, increased emissions in the ROI, including the WTE plant, can be expected to contribute to increasing haze in those areas.

Using MSW as feedstock for the WTE plant rather than landfilling would have indirect impacts on GHGs. According to the City of El Paso's *Carbon Footprint Report*, nearly 95 percent of the GHGs for the city stem from the two primary landfills. Diversion of the MSW to the WTE is a more efficient way to reduce GHG emissions because waste is combusted shortly after its generation, producing carbon dioxide ($CO_2$), whereas landfilling results in the long-term biodegradation of the MSW, which produces methane, a more damaging GHG that has an atmospheric lifetime 21 times that of $CO_2$.

Although emission levels are not known at this time, it is anticipated that emissions of GHGs from implementing Alternative 4 alone would not cause appreciable global warming that would lead to climate changes. These emissions would incrementally increase the atmosphere's concentration of GHGs and, in combination with past and reasonably foreseeable future emissions from all other sources, contribute to the adverse effects of climate change. At present, no methodology exists that would enable estimating the specific impacts (if any) that this increment of climate change would produce locally or globally.

The less than significant to significant but mitigable impacts associated with Alternative 4 when combined with the potentially significant impacts of other actions within the ROI, as discussed previously for Alternatives 1 through 3, would result in potentially significant cumulative impacts to air quality. The identification of additional mitigation measures through the PSD and Title V permitting process may minimize these adverse impacts. Beneficial impacts associated with Alternative 4, such as the implementation of conservation policies and procedures and the transition to a renewable energy source at Fort Bliss, would contribute to minimization of these cumulative impacts.

Projects planned within the ROI for the air quality analysis include the U.S. ICE administrative facility, proposed private residential development on land Fort Bliss is selling adjacent to Montana Avenue, the proposed EPEC power plant, and EPEC's plans to pursue additional generating capacity. The construction and operation of the U.S. ICE El Paso city administrative facility would produce temporary emissions during construction that would be less than significant. The operation of the facility would require approximately 500 employees, and while there would be resulting increases in mobile source emissions, these emissions are not expected to be significant.

The proposed private residential development would result in temporary emissions during construction that would be less than significant. It is unknown how many residents would be new to the region; however, if all residents were new residents, then presumably there would be increased emissions from the associated mobile sources. It is most likely that there will be a combination of existing and new residents, so some increase in mobile source emissions is expected; however, it is unlikely these emissions alone would be significant.

The proposed EPEC power plant will be a new facility consisting of two state-of-the art 88-MW natural gas-fueled combustion turbines. The technology used in the turbines would be more efficient and allow for quick starts. The new turbines will be designed to meet or exceed all local, state, and federal environmental requirements. The generators will be equipped with state-of-the-art APCDs to minimize any pollution to the air (EPEC 2012c).

EPEC's plan to pursue additional generating capacity of 1 gigawatt through natural gas-fired power would create temporary emissions during construction and continued emissions during operation of the facility. The additional capacity generated by this facility would allow EPEC to decommission outdated production capacity elsewhere. While the combustion of natural gas-generated energy would cause emissions, the operation of the natural gas-fired power facility would likely lead to beneficial impacts to air quality because the combustion of natural gas is cleaner than other fossil fuels.

The combination of the U.S. ICE administrative facility, the private residential development on land Fort Bliss is selling adjacent to Montana Avenue, the proposed EPEC power plant, EPEC's plans to pursue additional generating capacity, and Alternative 4 would be considered a significant but mitigable impact because the WTE plant has potential to cause significant but mitigable impacts.

#### 4.3.1.5 Alternative 5 – Geothermal Energy Facility

Construction and operation impacts to air quality resulting from the geothermal energy facility would be less than significant. Other past, present, and reasonably foreseeable actions as described under Alternatives 1 and 2 have the potential to increase construction-related emissions over the short term. Long-term increases in emissions could occur from other actions such as the proposed EPEC power plant and increased training levels at Fort Bliss. These actions, including population growth-related increases, would have the potential for significant cumulative air quality impacts if they resulted in exceedances of the NAAQS within the ROI. Air quality impacts resulting from Alternative 5 would be small and less than significant in the short term as well as beneficial in the long term due to reduced emissions from the implementation of conservation policies and procedures. Therefore, Alternative 5 would contribute minimally to short-term cumulative impacts and would contribute beneficial impacts in the long term, potentially minimizing cumulative impacts to air quality.

#### 4.3.1.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Construction and operation impacts to air quality resulting from the CSP array would be less than significant. Other past, present, or reasonably foreseeable actions as described under Alternatives 1 and 2 have the potential to increase construction-related emissions over the short term. A long-term increase in emissions could occur from other actions such as the proposed EPEC power plant and increased training levels at Fort Bliss. These actions, including population growth-related increases, would have the potential for significant cumulative air quality impacts if they resulted in exceedances of the NAAQS within the ROI. Air quality impacts resulting from Alternative 6 would be small and less than significant in the short term and beneficial in the long term due to reduced emissions from the implementation of conservation policies and procedures. The use of CSP technology would ultimately replace electricity generated through fossil-fuel combustion methods and would help offset any increases in emissions from other activities occurring in the region. Therefore, Alternative 6 would contribute minimally to short-term, cumulative impacts and would contribute beneficial impacts in the long term, potentially minimizing cumulative impacts to air quality.

#### 4.3.1.7 Alternative 7 – Implement Other Renewable Energy Technologies

Alternative 7 proposes the construction and operation of renewable energy resources to produce electricity on Fort Bliss. The impacts of Alternative 7 are anticipated to be the same as those described for Alternatives 5 and 6. These impacts are less than significant and beneficial to air quality from the replacement of fossil-fuel energy sources with renewable energy sources. Alternative 7 would contribute minimally to the adverse cumulative impacts from other identified actions, as described previously, and would contribute beneficial impacts to air quality and GHG emissions by increasing the use of renewable energy sources on Fort Bliss.

#### 4.3.1.8 Alternatives Combined

Section 3.2 presents projected construction emissions for facilities and infrastructure and operational emissions on Fort Bliss, including combustion emissions from heavy-duty diesel equipment and private vehicles, stationary sources, and fugitive dust from construction. While these emission sources are analyzed separately, air quality in the ROI would be affected by the cumulative total of any combination of these sources if multiple alternatives were to be selected for the Proposed Action, in addition to other off-Installation sources.

In terms of short-term cumulative impacts, the infrastructure improvement projects associated with the Proposed Action and other regional construction projects could produce a short-term, additive amount of emissions if they are concurrent. Local construction projects planned by the private developers, Texas DOT, U.S. ICE, EPEC, possible growth actions and potential increases in range operations by the Army at Fort Bliss are relevant if they occur during the same time frame as the implementation of the Net Zero action, which is presumed to occur by 2020. These actions would produce emissions that would be additive to those of the Proposed Action, but because the proposed construction under each of the Proposed Action alternatives is expected to produce emissions well below significance thresholds, it is not anticipated that air emissions from other past, present, and reasonably foreseeable future actions, when considered incrementally with any of the alternatives would exceed any regulatory standards.

Construction and operation emissions impacts associated with the WTE plant are anticipated to range from less than significant to significant but mitigable. As a result, when added to the potentially significant impacts of other actions as discussed previously, cumulative impacts would be significant but mitigable. Implementing all alternatives would, however, greatly increase the amount of renewable energy sources on Fort Bliss and would therefore minimize these adverse, cumulative impacts.

### 4.3.2 Airspace

The study area considered in the cumulative analysis for airspace includes air traffic and airspace classifications in and near Fort Bliss.

#### 4.3.2.1 Alternative 1 – No Action

Because no impacts to airspace are expected as a result of implementing Alternative 1, no cumulative impacts would occur.

#### 4.3.2.2 Alternative 2 – Conservation Policies and Procedures

Because no impacts to airspace are expected as a result of implementing Alternative 2, no cumulative impacts would occur.

#### 4.3.2.3 Alternative 3 – Water Reclamation Pipeline

Because no impacts to airspace are expected as a result of implementing Alternative 3, no cumulative impacts would occur.

#### 4.3.2.4 Alternative 4 – Waste-to-Energy Plant

The past, present, and reasonably foreseeable future actions that could affect airspace include the 2005 BRAC and the modification of SUA at Fort Bliss. The 2005 BRAC realigned aviation units to Fort Bliss, thereby increasing the amount of flight activity through Fort Bliss and adjacent airspace and increasing air traffic. Based on the existing airspace classifications and air traffic control and also that traffic would continue to be controlled to comply with current regulations, actions would result in less than significant impacts to airspace. The modification of SUA at Fort Bliss would potentially modify SUA over the STA in Training Areas 8 and 9 and in McGregor Range and some adjacent land to separate military and civilian aircraft operating in these areas. The alteration of airspace would provide greater protection to military and civilian air traffic and while civilian airspace would be reduced; there is ample useable civilian airspace in adjacent areas. The EA documenting this modification determined that impacts to air space would not be significant.

The less than significant impacts from the above actions when combined with the anticipated negligible impacts from implementation of Alternative 4 would result in less than significant cumulative impacts to airspace.

#### 4.3.2.5 Alternative 5 – Geothermal Energy Facility

The same past, present, and reasonably foreseeable future actions described under Alternative 4 would also occur under Alternative 5, with less than significant impacts occurring to airspace, airport, and airfield. These impacts, when combined with the less than significant impacts to the airport and airfield as a result of Alternative 5, would result in less than significant cumulative impacts to the airport and airfield with Alternative 5 having a slight contribution. No impacts to airspace classifications would occur as a result of Alternative 5, and no cumulative impacts would occur.

#### 4.3.2.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

The same past, present, and reasonably foreseeable future actions described under Alternative 4 would also occur under Alternative 6—less than significant impacts to airspace, airport, and airfield. These impacts, when combined with the less than significant impacts to the airport and airfield as a result of Alternative 6, would result in less than significant cumulative impacts to the airport and airfield with Alternative 6 having a slight contribution. No impacts to airspace classifications would occur under Alternative 6, and no cumulative impacts would occur.

#### 4.3.2.7 Alternative 7 – Implement Other Renewable Energy Technologies

The same past, present, and reasonably foreseeable future actions described under Alternatives 5 and 6 would also occur under Alternative 7—less than significant impacts to airspace, airport, and airfield. It is assumed that additional renewable energy development facilities associated with Alternative 7 would be of similar size and magnitude to those presented under Alternatives 5 and 6, and these facilities would have to adhere to all FAA regulations, resulting in less than significant impacts to the airspace, airport, and airfield. These impacts, when combined with the impacts of the cumulative projects, would result in less than significant cumulative impacts to the airport, airfield, and airspace.

#### 4.3.2.8 Alternatives Combined

Fort Bliss would consult with and adhere to all FAA regulations in implementation of any of the proposed alternatives and therefore impacts associated with the combined alternatives to the airport and airfield would be less than significant. When combined with the past, present, and reasonably foreseeable future actions, as described under Alternative 4, the alternatives combined would result in less than significant impacts to the airspace classifications, airport, and airfield.

### 4.3.3 Biological Resources

#### 4.3.3.1 Alternative 1 – No Action

Under the No Action Alternative, there would be no impacts to vegetation, wildlife, or sensitive species; therefore, there would be no cumulative impacts to these biological resources.

#### 4.3.3.2 Alternative 2 – Conservation Policies and Procedures

Under Alternative 2, cumulative impacts to vegetation, wildlife, or sensitive species would result from projects on or within the vicinity of Fort Bliss that contribute to the disturbance and removal of vegetation and habitat. More than 1,612 additional acres of vegetation would be removed on the Installation as a result of present and future projects identified in Section 4.2. In addition, approximately 150 additional acres of vegetation would be removed off-Installation. Projects on the Installation that could contribute to cumulative impacts to vegetation include construction projects identified in the Fort Bliss Mission and Master Plan (including 1,600 acres of additional impermeable surface on East and West Bliss and 352,000 acres of additional off-road vehicle maneuver areas), construction of AOBs at McGregor Range Camp (approximately 12 acres), and construction of solar projects. An off-Installation project includes construction of the proposed EPEC power plant (150 acres). In addition, impacts could result from the potential introduction and spread of invasive species.

Cumulative impacts to wildlife and sensitive species would also include additional noise from construction and operation. Projects on and off the Installation that could contribute to cumulative impacts to wildlife are the same as those projects described previously. Construction-related noise may temporarily displace wildlife or sensitive species from suitable habitat in the immediate vicinity of project areas; however, quality wildlife habitat is limited in areas where these projects would occur because of the developed nature of the areas. Additionally, wildlife species in proximity of these projects are adapted to the existing urban/industrial environment. Cumulative impacts to wildlife would be less than significant as a result of implementation of the construction activities.

Cumulative impacts are expected to be less than significant because the majority of these areas, such as East and West Bliss, have been previously disturbed and the percent of each vegetation type that would be removed within the project areas would represent a small percentage of those vegetation types on Fort Bliss or within the vicinity of Fort Bliss. In addition, BMPs to decrease erosion and sedimentation and to control invasive species spread and introduction would be implemented.

#### 4.3.3.3 Alternative 3 – Water Reclamation Pipeline

Cumulative impacts to vegetation, wildlife, and sensitive species would be similar to those described for Alternative 2. Alternative 3 is anticipated to result in less than significant impacts. Projects on the Installation that could contribute to cumulative impacts to vegetation include construction projects identified in the Fort Bliss Mission and Master Plan (including 1,600 acres of additional impermeable surface on East and West Bliss and 352,000 acres of additional off-road vehicle maneuver areas), construction of AOBs at McGregor Range Camp (approximately 12 acres), and construction of solar projects. A project off Fort Bliss includes construction of the proposed EPEC power plant (150 acres). In addition, impacts could result from the potential introduction and spread of invasive species. Cumulative impacts are anticipated to be less than significant.

#### 4.3.3.4 Alternative 4 – Waste-to-Energy Plant

Cumulative impacts to vegetation, wildlife, and sensitive species would be similar to those described for Alternative 2. Alternative 4 is anticipated to result in less than significant impacts. Cumulative impacts are anticipated to be less than significant.

#### 4.3.3.5 Alternative 5 – Geothermal Energy Facility

Cumulative impacts to vegetation, wildlife, and sensitive species would be similar to those described for Alternatives 2 and 3. Projects planned near the proposed geothermal energy facility include the construction of AOBs at McGregor Range Camp.

#### 4.3.3.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Cumulative impacts to vegetation, wildlife, and sensitive species would be similar to those described for Alternatives 2 and 3. Projects planned near the proposed dry-cooled CSP include the construction of AOBs at McGregor Range Camp, the U.S. ICE administrative facility, the private residential development on land Fort Bliss is selling adjacent to Montana Avenue, and the EPEC power plant.

#### 4.3.3.7 Alternative 7 – Implement Other Renewable Energy Technologies

Cumulative impacts would be anticipated to be similar to Alternatives 5 and 6; however, site-specific NEPA analysis would be conducted, as appropriate, to determine the impacts. Cumulative impacts to vegetation, wildlife, and sensitive species are anticipated to be less than significant given compliance with identified screening and environmental criteria.

#### 4.3.3.8 Alternatives Combined

As discussed previously, numerous projects are planned near the proposed alternatives; however, vegetation and habitat loss due to construction is anticipated to be less than significant because the percent of each vegetation type that would be removed within the combined project areas would still represent a small percentage of those vegetation types on Fort Bliss. Construction-related noise may temporarily displace wildlife during operation and maintenance of the facilities, including noise and increased traffic and human presence, and could displace wildlife from suitable habitat in the immediate vicinity of the project areas. Therefore, the cumulative impacts of all alternatives combined are anticipated to be less than significant.

### 4.3.4 Cultural Resources

Most of the alternatives proposed for the implementation of the Proposed Action at Fort Bliss when taken together with past, present, and reasonably foreseeable future actions may have cumulative adverse effects on cultural resources on the Installation. Each alternative is discussed in the following sections. For the purposes of the cumulative impacts assessment, the ROI for cultural resources includes the entirety of Fort Bliss.

#### 4.3.4.1 Alternative 1 – No Action

Because the No Action Alternative is not anticipated to impact cultural resources, there would be no cumulative impacts associated with Alternative 1.

#### 4.3.4.2 Alternative 2 – Conservation Policies and Procedures

The implementation of conservation policies and procedures, primarily associated with replacement of building features such as windows in historic buildings, are anticipated to result in less than significant impacts to cultural resources. Other actions identified in Section 4.2 have the potential to adversely affect cultural resources within the ROI on Fort Bliss. These actions include those with associated ground disturbance, such as additional training activities and ground disturbance under the Army 2020 force structure realignment and the Fort Bliss Mission and Master Plan, range construction and operations, as well as other smaller-scale construction projects, such as the U.S. ICE administrative facility. As a result, archaeological sites may be lost over time not only due to maneuvers but also construction on previously undeveloped land within the ROI. TCPs and sacred sites may also be threatened or lost during this expansion.

At Fort Bliss, implementation of the PA and its associated procedures would ensure that a process is in place to avoid, reduce, or mitigate adverse effects on historic properties. Tribes are not party to the Fort Bliss PA. Fort Bliss is in consultation with interested tribes in preparation of an agreement similar to the PA in addressing impacts to cultural resources of interest to the tribes. Additionally, Fort Bliss would work with trainers to open up areas with the least impacts to cultural resources but that still meet the requirements to adequately train Soldiers. The less than significant impacts resulting under Alternative 2 when combined with the potential adverse impacts associated with other past, present, and reasonably foreseeable future actions are anticipated to result in less than significant cumulative impacts to cultural resources.

#### 4.3.4.3 Alternative 3 – Water Reclamation Pipeline

Alternative 3 is anticipated to result in significant but mitigable impacts to cultural resources due to irrigation of parade ground vegetation with reclaimed water. Impacts from other past, present, and reasonably foreseeable future actions are anticipated to be the same as described for Alternative 2. As a result, cumulative impacts would be significant but mitigable.

#### 4.3.4.4 Alternative 4 – Waste-to-Energy Plant

Construction of a WTE plant and associated access roads and transmission lines when taken together with increased training and the construction of additional facilities and infrastructure may have cumulative impacts to cultural resources on Fort Bliss. Impacts to cultural resources from other past, present, and reasonably foreseeable future actions would be similar to those described under Alternative 2. Archaeological sites have been and likely will be lost during past, present, and future construction activities. Ground-disturbing activities associated with Installation expansion and continued facility and infrastructure developments can result in a loss of archaeological sites. An overall reduction in the number and diversity of archaeological sites has the potential of resulting in a significant cumulative impact to cultural resources. At Fort Bliss, the procedures outlined in the PA and ICRMP would ensure that processes are in place to avoid, reduce, or mitigate adverse effects on historic properties. It is anticipated that cumulative impacts to cultural resources under Alternative 4 would be less than significant.

#### 4.3.4.5 Alternative 5 – Geothermal Energy Facility

Potential cumulative impacts to cultural resources from construction and operation of a geothermal energy facility at the Davis Dome site would be similar as those described for Alternative 4; however, impacts would be less than significant.

#### 4.3.4.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Potential cumulative impacts to cultural resources from construction and operation of a dry-cooled CSP technology would be the same as those described for Alternative 5.

#### 4.3.4.7 Alternative 7 – Implement Other Renewable Energy Technologies

The development of additional geothermal, wind, or solar resources taken with increased training activities and construction of facilities and infrastructure may cumulatively affect cultural resources. The locations and designs of additional potential energy developments and consultation with the appropriate state SHPO, interested tribal governments, or other interested parties will determine whether the actions would result in significant effects on historic properties, TCPs, and sacred sites. Potential cumulative impacts would be assessed after such determinations are made; however, impacts are anticipated to be similar to those described for Alternatives 5 and 6 and would therefore be less than significant.

#### 4.3.4.8 Alternatives Combined

Cumulative impacts for the alternatives combined would result from the implementation of Alternatives 2 through 7, in addition to increased training activities and construction of facilities and infrastructure. Modifications to architectural historic properties and historic districts are possible, and the destruction of archaeological sites is possible. At Fort Bliss, compliance with the PA and ICRMP would ensure that processes and procedures are in place to avoid, reduce, or mitigate adverse effects on historic properties. Consultation with the New Mexico and Texas SHPOs would be necessary to determine whether the Proposed Action would result in adverse effects on significant architectural and archaeological resources. Fort Bliss would continue consultation with interested tribes to determine whether cultural resources of interest to the tribes would be impacted by the Proposed Action. It is anticipated that cumulative impacts to cultural resources for all alternatives combined would be less than significant.

### 4.3.5 Energy Demand and Generation

The study area for cumulative impacts under energy demand and generation includes all projects located within Fort Bliss boundaries.

#### 4.3.5.1 Alternative 1 – No Action

Under the No Action Alternative, Fort Bliss would not implement any actions to construct renewable energy sources or implement conservation policies and procedures. Alternative 1 would have no impacts on energy demand and generation and, therefore, would result in no cumulative impacts. It is anticipated, however, that additional growth would result from the actions described in Section 4.2. No beneficial impacts would be realized under this alternative from the transition of Fort Bliss to renewable energy sources and decreases in energy consumption. As a result, the cumulative impact projects that increase the electrical and natural gas demands would be adequately met within the existing capacity of EPEC and the El Paso Natural Gas Company. The construction of solar renewable energy sources and geothermal energy production on Installation would provide a negligible amount of energy compared to the demand but would result in a beneficial, cumulative impact to energy generation.

#### 4.3.5.2 Alternative 2 – Conservation Policies and Procedures

Cumulative actions impacting energy demand and generation under Alternative 2 would be the same as those described in detail under Alternative 4. Construction and growth projects would increase the overall energy demand, contributing to adverse, cumulative impacts. Alternative 2 would contribute beneficial impacts resulting from short- and long-term reductions in energy demand on Fort Bliss. EPEC and El Paso Natural Gas Company would continue to meet energy demands through their existing and planned additional capacity. Adverse cumulative impacts under Alternative 2 would be less than significant.

#### 4.3.5.3 Alternative 3 – Water Reclamation Pipeline

Cumulative actions impacting energy demand and generation under Alternative 3 would be negligible; therefore, there would be no cumulative impacts.

#### 4.3.5.4 Alternative 4 – Waste-to-Energy Plant

Cumulative actions that impact energy demand and generation can be split into three categories: increased energy demand, decreased energy demand, and energy generation. The cumulative actions that would increase energy demand include all projects that would increase the number of personnel on Fort Bliss or include construction of new buildings. Other actions that would increase energy demand include implementation of the 2005 BRAC, 2010 Grow the Army, Fort Bliss Mission and Master Plan, the expansion of U.S. Air Force student training, construction and operation of the U.S. ICE administrative facility, and the use of AOBs at McGregor Range Camp. While some projects, like 2005 BRAC, are fully complete, each of these projects would increase the energy demand at Fort Bliss. The addition of electrical generating capacity under Alternative 4 would contribute to meeting current and future energy demand at Fort Bliss.

Additional cumulative actions would decrease the overall energy demand through energy generation or a reduction of personnel. The Army 2020 force structure realignment could potentially reduce the number of personnel on the Installation, although this reduction would likely not result in a significant reduction of energy demand.

Two projects on Fort Bliss include small-scale energy generation using solar renewable technologies. The Balfour Beatty solar panel installation project and solar renewable energy projects would generate energy. Implementation of these projects would help offset the increased energy demand under the cumulative actions listed previously (increased energy demand projects) and would result in beneficial cumulative impacts and would help Fort Bliss meet Net Zero goals.

#### 4.3.5.5 Alternative 5 – Geothermal Energy Facility

Cumulative actions impacting energy demand and generation under Alternative 5 would be the same as those described in detail under Alternative 4. Construction and growth projects would increase the overall energy demand, contributing to adverse cumulative impacts. Alternative 5 would contribute beneficial impacts resulting from short- and long-term reductions in energy demand on Fort Bliss and addition of a renewable energy source. EPEC and El Paso Natural Gas Company would continue to meet energy demands through their existing and planned additional capacity. Adverse cumulative impacts under Alternative 5 would be less than significant.

#### 4.3.5.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Cumulative actions impacting energy demand and generation under Alternative 6 would be the same as those described in detail for Alternative 4. Construction and growth projects would increase the overall energy demand, contributing to adverse cumulative impacts. Alternative 6 would contribute beneficial impacts resulting from short- and long-term reductions in energy demand on Fort Bliss and addition of a renewable energy source. EPEC and El Paso Natural Gas Company would continue to meet energy demands through their existing and planned additional capacity. Adverse cumulative impacts under Alternative 6 would be less than significant.

#### 4.3.5.7 Alternative 7 – Implement Other Renewable Energy Technologies

Cumulative actions impacting energy demand and generation under Alternative 7 would be the same as those described for Alternatives 5 and 6. Construction and growth projects would increase the overall energy demand, contributing to adverse cumulative impacts. Alternative 7 would contribute beneficial impacts resulting from long-term additions of renewable energy sources. EPEC and El Paso Natural Gas Company would continue to meet energy demands through their existing and planned additional capacity. Adverse cumulative impacts under Alternative 2 would be less than significant.

#### 4.3.5.8 Alternatives Combined

Cumulative projects impacting energy demand and generation under the combination of alternatives would be the same as those described for Alternative 4. Combined with the cumulative projects that would also generate energy, cumulative impacts to energy generation would be beneficial. Conservation policies implemented under Alternative 2 would help offset the increased energy demand under the cumulative impact construction projects. Cumulative impacts to energy demand and generation under the combination of alternatives would be beneficial and less than significant.

### 4.3.6 Geology and Soils

The study area considered in the cumulative analysis for geology and soils includes areas in and near Fort Bliss.

#### 4.3.6.1 Alternative 1 – No Action

Because no impacts to geology and soils are expected under Alternative 1, no cumulative impacts would occur.

#### 4.3.6.2 Alternative 2 – Conservation Policies and Procedures

Because negligible impacts to geology and soils are expected under Alternative 2, cumulative impacts would not occur.

#### 4.3.6.3 Alternative 3 – Water Reclamation Pipeline

The past, present, and reasonably foreseeable future actions that could affect geology and soils include the 2005 BRAC; Grow the Army stationing and training; implementation of the Fort Bliss Mission and Master Plan; construction and operation of AOBs at McGregor Range Camp; the contingency operating location of Contingency Operating Location Westbrook and Doña Ana Range Camp; construction, operation, and maintenance of solar renewable energy sources on Fort Bliss; and construction and operation of the U.S. ICE administrative facility. The effects of foreseeable construction activities, completed construction, and operations associated with the 2005 BRAC, Grow the Army stationing and training, Fort Bliss Mission and Master Plan Supplemental EIS, the AOBs, the solar renewable energy projects, and the U.S. ICE administrative facility would require some soil disturbance, including localized erosion and compaction, and would remove the soil productivity in the footprint of the constructed and the potentially constructed structures. All previously constructed and potentially constructed structures already have or would include mitigation to reduce soil loss and erosion and would follow all storm water management protocols. While soil would be disturbed and some soil would be lost, the amount of soil that would be affected is relatively small compared to the amount of soil present at Fort Bliss, and these cumulative projects would have a less than significant impact to soils. The actions identified above, along with those from Alternative 3, would have no significant impacts on geologic resources on Fort Bliss.

The less than significant impacts of the above actions, when combined with the less than significant impacts of Alternative 3, would result in less than significant cumulative impacts to geology and soils.

#### 4.3.6.4 Alternative 4 – Waste-to-Energy Plant

The same past, present, and reasonably foreseeable future actions described under Alternative 3 would also occur under Alternative 4, with less than significant impacts to geology and soils. These impacts, when combined with the less than significant impacts to geology and soils as a result of Alternative 4, would result in less than significant cumulative impacts to geology and soils.

#### 4.3.6.5 Alternative 5 – Geothermal Energy Facility

The same past, present, and reasonably foreseeable future actions described under Alternative 3 would also occur under Alternative 5, with less than significant impacts to geology and soils. These impacts, when combined with the less than significant impacts to geology and soils as a result of Alternative 5, would result in less than significant cumulative impacts to geology and soils.

#### 4.3.6.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

The same past, present, and reasonably foreseeable future actions described under Alternative 3 would also occur under Alternative 6and would result in less than significant impacts to geology and soils. These impacts, when combined with the less than significant impacts to geology and soils as a result of Alternative 6, would result in less than significant cumulative impacts to geology and soils.

#### 4.3.6.7 Alternative 7 – Implement Other Renewable Energy Technologies

The same past, present, and reasonably foreseeable future actions described under Alternative 3 would also occur under Alternative 7, with less than significant impacts to geology and soils. The development of additional renewable energy generation facilities are expected to be of a similar magnitude as those facilities presented under Alternatives 5 and 6; however, the exact impacts to geology and soils as a result of Alternative 7 would depend on the amount of area disturbed and the nature of the disturbance. Impacts are anticipated to be less than significant, and when combined with past, present, and reasonably foreseeable actions impacting geology and soils, cumulative impacts are expected to be less than significant.

#### 4.3.6.8 Alternatives Combined

Impacts associated with the combined alternatives would likely result in significant impacts to geology and soils. When combined with the past, present, and reasonably foreseeable future actions, as described under Alternative 3, significant impacts to geology and soils would occur.

### 4.3.7 Hazardous Materials, Hazardous Waste, and Safety

The discussion of the cumulative effects of hazardous materials, hazardous waste, and safety addresses the properties in the ROI in which the cumulative projects occur. The effects of hazardous materials and hazardous waste are commonly localized and limited to the boundaries of the project ROI.

#### 4.3.7.1 Alternative 1 – No Action

Under the No Action Alternative, the cumulative actions would be implemented and there could potentially be an increase in the amount of hazardous materials used and stored and hazardous waste generated and managed. Existing policies, procedures, and regulatory requirements would be followed to manage these materials and ensure there are no adverse human or environmental impacts. Because Alternative 1 would result in no impacts to hazardous materials, hazardous waste, or safety; there would be no cumulative impacts.

#### 4.3.7.2 Alternative 2 – Conservation Policies and Procedures

Policies and procedures developed and implemented under this alternative would be beneficial related to the implementation of cumulative impact projects. Cumulative projects located on Fort Bliss would be required to comply with all applicable policies and procedures regarding hazardous materials, hazardous waste, and safety and comply with all applicable regulatory requirements. These actions are described in more detail under Alternative 4. Cumulative impacts would be less than significant.

#### 4.3.7.3 Alternative 3 – Water Reclamation Pipeline

The increase in construction activities related to implementing cumulative projects could result in an increase in the use of hazardous materials and a potential increase in petroleum leaks or releases when combined with the purple pipe. Implementation of established policies and procedures and use of BMPs would minimize any such incidents. These actions are described in more detail under Alternative 4. Cumulative impacts would be less than significant.

#### 4.3.7.4 Alternative 4 – Waste-to-Energy Plant

The amount of hazardous materials used and hazardous waste generated is expected to increase when combined with implementation of cumulative actions. Construction of new facilities on East and West Bliss would generate small amounts of hazardous waste and require controlled amounts of hazardous materials. If demolition of existing structures were required, building materials such as asbestos and LBP found during previous surveys of East and West Bliss would be disposed of properly by licensed personnel. No asbestos or LBP would be used in the construction of new facilities. Controlled amounts of POLs would be required to fuel and maintain construction equipment working on East and West Bliss. The implementation of BMPs and continued implementation of the IHWMP would minimize POL and hazardous waste contamination during construction. Less than significant adverse impacts are expected if BMPs are implemented. Cumulative impacts are anticipated to be less than significant.

#### 4.3.7.5 Alternative 5 – Geothermal Energy Facility

The amount of hazardous materials used and hazardous waste generated is expected to increase when combined with implementation of cumulative projects. The potential for additional leaks and spill of chemicals and petroleum products related to the construction and operation is expected to increase. The construction and operation of the new facilities would add to the current hazardous materials used and hazardous waste generation and storage. The implementation of BMPs and continued implementation of the IHWMP would minimize the impacts from hazardous material and waste generation, storage, handling, and disposal. Cumulative impacts would be less than significant.

#### 4.3.7.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Cumulative impacts to hazardous materials, hazardous waste, and safety would be less than significant and similar to those described for Alternative 4.

#### 4.3.7.7 Alternative 7 – Implement Other Renewable Energy Technologies

Cumulative impacts to hazardous materials, hazardous waste, and safety would be less than significant and similar to those described for Alternatives 4 through 6.

#### 4.3.7.8 Alternatives Combined

The potential for hazardous materials usage and hazardous waste generation is expected to increase from the implementation of all alternatives combined in conjunction with the implementation of cumulative projects. As with other alternatives, there would be the potential for additional leaks and spill of chemicals and petroleum products related to construction and operation activities. The construction and operation of the newly constructed facilities would add to the current hazardous materials used and hazardous waste generation and storage. The implementation of BMPs and continued implementation of the IHWMP would minimize the impacts from hazardous material usage and waste generation, storage, handling, and disposal. Less than significant adverse impacts are expected if BMPs are implemented and established policies and procedures are followed.

### 4.3.8 Land Use

The study area considered in the cumulative analysis for the land use includes land in the immediate vicinity of the proposed alternatives both in Fort Bliss and outside of the Fort Bliss boundaries as well as land use within Fort Bliss as a whole.

#### 4.3.8.1 Alternative 1 – No Action

Because no impacts to land use are expected as a result of Alternative 1, no cumulative impacts would occur.

#### 4.3.8.2 Alternative 2 – Conservation Policies and Procedures

The past, present, and reasonably foreseeable future actions that could affect land use include the 2005 BRAC, Grow the Army stationing and training, construction of the Kay Bailey Hutchinson desalination plant, the private residential development on land Fort Bliss is selling adjacent to Montana Avenue, implementation of the Fort Bliss Mission and Master Plan, construction and operation of the U.S. ICE administrative facility, EPEC's plans to pursue additional generating capacity, the construction and operation of AOBs at McGregor Range Camp, Texas DOT Route Location Project, Fort Bliss Solar Renewable Energy projects, and the proposed EPEC power plant near Montana Avenue. The effects of construction and use associated with the above projects and plans alter land use typically from open space to a developed area. In some instances, developed land use is simply altered from a particular use to another developed use. Each of these projects has or will have to fit existing development plans and zoning and have been or will be screened for compatibility to adjacent land uses. The impacts to land use of these past, present, and reasonably foreseeable future actions would be less than significant.

The less than significant impacts of the above actions, when combined with the less than significant impacts of Alternative 2, would result in less than significant cumulative impacts to land use.

#### 4.3.8.3 Alternative 3 – Water Reclamation Pipeline

The same past, present, and reasonably foreseeable future actions described under Alternative 2 would also occur under Alternative 3. These impacts, when combined with the less than significant impacts to land use under Alternative 3, would result in less than significant cumulative impacts to land use.

#### 4.3.8.4 Alternative 4 – Waste-to-Energy Plant

The same past, present, and reasonably foreseeable future actions described under Alternative 2 would also occur under Alternative 4. These impacts, when combined with the less than significant impacts to land use as a result of Alternative 4, would result in less than significant cumulative impacts to land use.

#### 4.3.8.5 Alternative 5 – Geothermal Energy Facility

The same past, present, and reasonably foreseeable future actions described under Alternative 2 would also occur under Alternative 5. These impacts, when combined with the less than significant impacts to land use as a result of Alternative 5, would result in less than significant cumulative impacts to land use.

#### 4.3.8.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

The same past, present, and reasonably foreseeable future actions described under Alternative 2 would also occur under Alternative 6. These impacts, when combined with the significant impacts to land use as a result of Alternative 6, would result in significant cumulative impacts to land use.

#### 4.3.8.7 Alternative 7 – Implement Other Renewable Energy Technologies

The same past, present, and reasonably foreseeable future actions described under Alternative 2 would also occur under Alternative 7. The development of additional renewable energy facilities are expected to be of a similar magnitude as those presented under Alternatives 5 and 6; however, the exact impacts to land use as a result of Alternative 7 would depend on the amount of area disturbed and the nature of the disturbance. Impacts are expected to be less than significant, and when combined with past, present, and reasonably foreseeable actions impacting land use, cumulative impacts are expected to be less than significant.

#### 4.3.8.8 Alternatives Combined

Impacts associated with the combined alternatives would result in significant impacts due to conversion of training land under Alternative 6; however, the amount of overall land altered would be relatively small in comparison to existing land uses and land use changes would need to adhere to all zoning codes and be compatible with existing land uses. In combination with the past, present, and reasonably foreseeable future actions described under Alternative 2, impacts of the alternatives combined would result in significant impacts to land use.

### 4.3.9 Noise

Cumulative noise impacts are time, location, duration, and magnitude dependent. In order for one noise event to have a cumulative impact with another noise event, the events need to occur during the same averaging period, i.e., during the same day for Leq (24 hour) or DNL. Multiple noise events would need to occur within earshot of a specific location in order to have a cumulative impact. The duration of an impact is important cumulatively because occasional short and very loud impulse noise may cause a startle, but this type of noise is not necessarily as intrusive as a long, drawn-out, medium-loud noise event. On the other hand, many short, loud noises can be extremely intrusive. The magnitude of the two events needs to be similar to have a cumulative impact. If one event is 10 dBA or louder than the other event, the loudest event dominates the noise environment. The geographic ROI for noise would be the same ROIs described in Section 3.10 for each alternative.

The geographic area, timing, and nature of the action for each of the projects with the potential to cause cumulative impacts listed in Sections 4.2.1 and 4.2.2 were compared to the various alternatives to determine whether there would be a cumulative impact.

#### 4.3.9.1 Alternative 1 – No Action

Under the No Action Alternative, there would be no noise impacts; therefore, there would be no cumulative noise impacts.

#### 4.3.9.2 Alternative 2 – Conservation Policies and Procedures

Under Alternative 2, there would be negligible noise impacts; therefore, there would be negligible cumulative noise impacts.

#### 4.3.9.3 Alternative 3 – Water Reclamation Pipeline

Construction noise impacts would be the only noise impacts due to this alternative. Cumulatively, only those projects listed in Sections 4.2.1 and 4.2.2 that generate noise near housing areas on East and West Bliss have the potential for cumulative noise impacts. The Balfour Beatty project to lease rooftop space for solar PV units for individual homes in the housing areas could have potential for cumulative noise impacts when combined with this alternative. It is unlikely that leasing and installation of rooftop solar units would occur at exactly the same time as the pipeline construction. Even if they were to occur at the same residence on the same day, the cumulative impact would be for only about 3 hours total while the excavation occurs adjacent to the residence. Cumulative impacts to the acoustic environment would be less than significant.

#### 4.3.9.4 Alternative 4 – Waste-to-Energy Plant

Cumulative noise impacts under Alternative 4 would depend on a location for the WTE plant. At this time, a size and location for the WTE plant have not been identified. It cannot be determined at this time which of the projects listed in Sections 4.2.1 and 4.2.2 would intersect the impacts under this alternative. Noise impacts from Alternative 4 are anticipated to be less than significant, depending on the location of the plant. In the event that the location of the WTE plant intersected with other projects, it is expected that any significant cumulative impacts could be mitigated through the sequencing of construction activities or other measures. Therefore, it is anticipated that cumulative impacts to the acoustic environment under Alternative 4 would be less than significant. Furthermore, any future WTE plant would undergo additional NEPA, including analysis of the potential location of the WTE plant and the proposed technology.

#### 4.3.9.5 Alternative 5 – Geothermal Energy Facility

Projects with the potential to have a cumulative noise effect under this alternative would be noise impacts associated construction and use of AOBs at McGregor Range Camp. Construction impacts by both actions could have a cumulative impact at McGregor Range Camp but would be short term and would be dominated by the large caliber weapons Noise Zone II of 62 to 67 dBC. Operational noise levels under this alternative would be in the low 50-dBA range, and once construction of the AOB is completed, the noise levels at the AOB should similar to a billeting facility, and 50 dBA would be somewhat normal. Again, the large caliber noise impacts would greatly dominate the noise environment and cumulative impacts associated with the two projects would be less than significant.

#### 4.3.9.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

As discussed in Section 4.3.9.4, only the growth and force structure realignment project, the proposed EPEC power plant, EPEC’s plans to pursue additional generating capacity, and the construction of a U.S. ICE administrative facility would have noise impacts that would intersect the impacts associated with this alternative. Cumulative impacts to the residents at Homestead Meadows would be approximately the same as described for Alternative 4 with the large caliber noise dominating the noise environment.

#### 4.3.9.7 Alternative 7 – Implement Other Renewable Energy Technologies

Cumulative impacts would be anticipated to be similar to Alternatives 5 and 6 and less than significant; however, site-specific NEPA analysis would be conducted, as appropriate, to analyze the impacts.

#### 4.3.9.8 Alternatives Combined

Based on known project areas, none of the alternatives would affect the same receptors. Cumulative noise levels are expected to remain below the City of El Paso noise standards, resulting in less than significant impacts.

### 4.3.10 Socioeconomics and Environmental Justice

Socioeconomic impacts of past, present, and reasonably foreseeable future actions would contribute to the ROI primarily through impacts from construction spending and population growth.

Past actions are considered in the baseline analysis of this document. Several of these past actions include the relocation of military units, divisions, and brigades to Fort Bliss and the construction of their supporting facilities. The total number of previously relocated persons is already accounted for in the analysis of the Installation’s current population levels in Chapter 3.

Many of the present and reasonably foreseeable future actions would cause increases in the local population, new construction-related spending, and movement of new equipment and supporting materials into the ROI. Population growth, regardless of the source, would have an impact on the local housing supply, sales, educational services, and government and emergency services. The movement of materials, such as aircraft and vehicles, is not expected to have a socioeconomic impact on the ROI. Furthermore, it is likely that purchases of supplies for these materials would come from outside the ROI. Some additional local economic impacts could occur as a result of additional transportation of goods and services to the Installation to support this new equipment. Construction of new facilities at Fort Bliss would have an impact on local sales, income, and employment in the area. EPEC is considering constructing a new power plant and is seeking additional generating capacity. It is possible that the construction of this plant and future generating capacity could affect electrical rates both positively and negatively. The associated generating capacity could have a positive impact on rates because the power plant would provide EPEC with its own source of power production and would reduce EPEC’s need to purchase power from other power producers, which could subsequently reduce costs and rates. On the other hand, the construction of this plant also could increase rates because the cost of the facility places a debt on EPEC that it would then pass on to its customers.

The impacts resulting from the construction of present and reasonably foreseeable future projects would be positive, providing additional employment, income, and sales to the local economy. Additionally, impacts to income, employment, and sales would likely be phased over the construction periods for each of the present and reasonably future foreseeable actions with construction-related projects. It is therefore likely that, during any one time, impacts to income, employment, and sales would be positive but less than significant. Present and reasonably foreseeable future projects impacts on population levels would be phased over a number of years as well. It is expected that the local housing supply would be able to support this population increase.

#### 4.3.10.1 Alternative 1 – No Action

Under the No Action Alternative, the baseline population growth would continue and no construction of renewable energy or waste and water reduction projects would occur. Therefore, present socioeconomic conditions are expected to remain as they exist under the baseline conditions, and no cumulative effects are expected to occur.

Under this alternative, Fort Bliss would not incrementally reduce the amount of electricity it consumes from the electric grid. Therefore, the action alternatives would not have an impact on utility rates. While it is not expected that Fort Bliss’ remaining on the grid would have a significant cumulative impact, it would, depending on how the electricity on the grid is produced, represent one more entity on the grid consuming non-renewable energy. Cumulatively, no beneficial impacts would be realized from increased on-Installation renewable energy sources.

Under this alternative, Fort Bliss would not incrementally reduce the amount of potable water it consumes nor would it reduce the amount of waste that it sends to landfills. Therefore, the cumulative impact of the No Action Alternative would be the continued reliance on potable water for irrigation, potentially causing a cumulative impact to water supplies and further constraining this resource, which, in turn, could cause rates to continue to increase in order to curb demand to sustain the resource.

Because implementation of this alternative is not expected to have a disproportionately high and adverse human health or environmental effect on minority, low-income, or younger segments of the local population, it would not cause cumulative impacts for purposes of environmental justice when considered with any other actions in the area.

#### 4.3.10.2 Alternative 2 – Conservation Policies and Procedures

As shown above, past actions have, and present and future actions will contribute to impacts on socioeconomic resources in the ROI. Some portions of Alternative 2, such as new energy, waste, or water conservation and sustainability awareness programs, would have little or no socioeconomic effect; however, others, such as the installation of new energy efficient systems, would have construction costs associated with them and these could have both local and non-local socioeconomic impacts. Therefore, impacts from construction-related spending associated with the development of past, present, and reasonably foreseeable future actions, when combined with the impacts from Alternative 2, would have a positive but less than significant impact on socioeconomic resources; however, Alternative 2 would have a negligible contribution to these impacts. Impacts from population growth related to the implementation of past, present, and reasonably foreseeable future actions, when combined with the impacts from Alternative 2, would have a positive impact on socioeconomic resources; however, Alternative 2 would not contribute to this impact because no anticipated population growth is projected to occur under Alternative 2. Because implementation of this alternative is not expected to have a disproportionately high and adverse human health or environmental effect on minority, low-income, or younger segments of the local population, it would not cause cumulative impacts for purposes of environmental justice when considered with any other actions in the area.

#### 4.3.10.3 Alternative 3 – Water Reclamation Pipeline

The effects on socioeconomic resources from past, present, and reasonably foreseeable future actions would be similar to those identified at the beginning of Section 4.3.10. Alternative 3 would have a minimal impact to socioeconomic resources in the ROI. Construction-related spending would be the primary economic impact under this alternative. Impacts from construction-related spending related to the development of past, present, and reasonably foreseeable future actions, when combined with the impacts from Alternative 3, would have a positive impact on socioeconomic resources; however, Alternative 3 would have a negligible contribution to these impacts. Because implementation of this alternative is not expected to have a disproportionately high and adverse human health or environmental effect on minority, low-income, or younger segments of the local population, it would not cause cumulative impacts for purposes of environmental justice when considered with any other actions in the area.

#### 4.3.10.4 Alternative 4 – Waste-to-Energy Plant

The effects on socioeconomic resources from past, present, and reasonably foreseeable future actions are identified at the beginning of Section 4.3.10. Alternative 4 is anticipated to have a less than significant impact on socioeconomic resources. Construction-related spending and changes to local population levels would provide the primary economic impacts to the local community under this alternative. Impacts from construction-related spending related to the development of past, present, and reasonably foreseeable future actions, when combined with the impacts from Alternative 4, would result in a beneficial impact to socioeconomic resources; Alternative 4 would have a less than significant contribution to these impacts. Cumulative impacts to local sales, income, and employment would be confined to the period of construction under Alternative 4. Therefore, cumulative impacts resulting from construction-related spending would occur only during the period of construction under Alternative 4. Impacts to population levels related to the implementation of past, present, and reasonably foreseeable future actions, when combined with the impacts from Alternative 4, would result in a positive impact on socioeconomic resources; however, Alternative 4 would have a negligible contribution to these impacts.

#### 4.3.10.5 Alternative 5 – Geothermal Energy Facility

The effects on socioeconomic resources from past, present, and reasonably foreseeable future actions are identified at the beginning of Section 4.3.2. Although the construction-related spending of this alternative would be approximately four times greater than Alternative 3, impacts to socioeconomics resources as a result of this spending would be similar to Alternative 3. Therefore, Alternative 5 would have cumulative impacts similar to those described under Alternative 3.

#### 4.3.10.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

The effects on socioeconomic resources from past, present, and reasonably foreseeable future actions are identified at the beginning of Section 4.3.2. Alternative 6 would have a great but less than significant impact on socioeconomic resources in the ROI. This alternative would primarily have an impact on the local economy resulting from its construction-related spending. Impacts from construction-related spending related to the development of past, present, and reasonably foreseeable future actions, when combined with the impacts from Alternative 6, would result in a positive impact to socioeconomic resources; however, Alternative 6 would have a great but less-than-significant contribution to these impacts. Cumulative impacts to local sales, income, and employment would be confined to the period of construction of Alternative 6. Alternative 6 is anticipated to have a small, minor impact on local population levels. Impacts to population levels related to the implementation of past, present, and reasonably foreseeable future actions, when combined with the impacts from Alternative 6, would result in a positive impact on socioeconomic resources; however, Alternative 6 would have a negligible contribution to these impacts. Since implementation of this alternative is not expected to have a disproportionately high and adverse human health or environmental effect on minority, low-income, or younger segments of the local population, it would not cause cumulative impacts for purposes of environmental justice when considered with any other actions in the area.

#### 4.3.10.7 Alternative 7 – Implement Other Renewable Energy Technologies

The effects on socioeconomic resources from past, present, and reasonably foreseeable future actions are identified at the beginning of Section 4.3.2. Socioeconomic impacts resulting from the implementation of Alternative 7 would depend on the renewable energy project chosen and its location. It is likely, however, that additional renewable energy development under this alternative would have a positive impact on socioeconomic resources in the ROI as a result of construction-related project spending. Impacts from construction- related spending related to the development of past, present, and reasonably foreseeable future actions, when combined with the impacts from Alternative 7, would result in a positive impact to socioeconomic resources; however, Alternative 7 would likely have a positive, but less than significant contribution to these impacts. Cumulative impacts to local sales, income and employment would be confined to the period of construction of Alternative 7. Renewable energy development projects that are pursued under this alternative have the potential to increase the population in the ROI as a result of creating jobs that create a demand for workers to migrate into the ROI to fill these jobs. Therefore, there is some possibility that this alternative, when combined with impacts from the implementation of past, present, and reasonably foreseeable future actions would result in an increase in population levels; however, Alternative 7 would have a positive, but negligible contribution to these impacts.

Because implementation of this alternative is not expected to have a disproportionately high and adverse human health or environmental effect on minority, low-income, or younger segments of the local population, it would not cause cumulative impacts for purposes of environmental justice when considered with any other actions in the area.

#### 4.3.10.8 Alternatives Combined

The effects on socioeconomic resources from past, present, and reasonably foreseeable future actions are identified at the beginning of Section 4.3.2. In combination, all of the alternatives combined would have a great, but less than significant impact on socioeconomic resources. These alternatives would primarily have an impact on the local economy through associated construction-related spending and impacts to the local population. Impacts from construction- related spending related to the development of past, present, and reasonably foreseeable future actions, when combined with the impacts from all of the alternatives combined, would result in a positive impact to socioeconomic resources; however, the alternatives combined would have a great, but less-than-significant contribution to these impacts. Cumulative impacts to local sales, income, and employment would be confined to the period of construction of each of the alternatives. In combination, the alternatives are anticipated to have a small, minor impact on local population levels, primarily during the period of construction. Impacts from population levels related to the implementation of past, present, and reasonably foreseeable future actions, when combined with the impacts from each of the alternatives, would result in a positive impact on socioeconomic resources; however, the combination of each of the alternatives impacts to population would have a negligible contribution to these impacts. Implementation of these alternatives is not expected to have a disproportionately high and adverse human health or environmental effect on minority, low-income, or younger segments of the local population; therefore, it would not cause cumulative impacts for purposes of environmental justice when considered with any other actions in the area.

### 4.3.11 Water Resources

In considering the impacts of each alternative in the context of past, present, and reasonably foreseeable future project, the geographic boundary is the extent of the aquifers that serve Fort Bliss and would be impacted by the alternatives and the cumulative actions. Historical drawdown of the Hueco Bolson and Mesilla Bolson aquifers has decreased amounts of available water and has increased salinity in the aquifers.

#### 4.3.11.1 Alternative 1 – No Action Alternative

All past, present, and reasonably foreseeable future actions that increase population on Fort Bliss and in the neighboring city of El Paso would add or have already placed additional demand on these water resources from the aquifers that serve the Installation, the city of El Paso, and Ciudad Juarez. Development of new energy sources, such as the new El Paso power plant and new solar facilities, would also contribute to increased water demand in the area. Depletions of the aquifer could cause further issues with salinity, although EPWU has constructed a desalination plant that is using groundwater with higher salt content. The plant can treat 27.5 million gallons per day, increasing EPWU’s water production by 25 percent, and has capacity for 50 years, creating additional water resources for Fort Bliss (EPWU 2012b).

Although the population and overall water demand at Fort Bliss is relatively small in comparison to the surrounding metropolitan area, by not implementing any additional water conservation measures per the No Action Alternative, water demand at Fort Bliss would continue to contribute to water supply issues in the region more rapidly than would occur with implementation of the action alternatives, and development and growth outside the Installation would also continue to increase demand on water resources.

Water quality issues associated with past, present, and reasonably foreseeable projects would be associated mostly with increased impermeable surfaces and short-term impacts from construction. The No Action Alternative would not contribute noticeable water quality impacts.

#### 4.3.11.2 Alternative 2 – Conservation Policies and Procedures

Past, present, and reasonably foreseeable future actions with the potential to impact water supply and water quality would be the same as under Alternative 1. Additional demand for water supply would continue as the result of an increased population at Fort Bliss and other projects in the area. Implementation of Alternative 2, putting aggressive water conservation policies and procedures in place and addressing water loss from existing water pipes, would contribute beneficially by lessening the increase in demand for water on the Installation and helping to offset the rate of increase in demand for water supply.

Implementation of Alternative 2 would not contribute any noticeable adverse water quality impacts to past, present, or reasonably foreseeable future projects.

#### 4.3.11.3 Alternative 3 – Water Reclamation Pipeline

Past, present, and reasonably foreseeable future actions with the potential to impact water supply and water quality would be the same as with Alternative 1. Extension of the water reclamation pipeline onto Fort Bliss would contribute long-term benefits to water demand by addressing two of the largest sources of water demand on the Installation. The alternative would contribute short-term adverse impacts to water quality from construction activities that would be mitigated with the use of appropriate sediment and erosion control practices.

#### 4.3.11.4 Alternative 4 – Waste-to-Energy Plant

Past, present, and reasonably foreseeable future actions with the potential to impact water supply and water quality would be the same as under Alternative 1. A WTE plant would contribute additional demand for water, although it would use less water per power unit than a comparable fossil fuel plant (assuming a dry-cooled, self-contained facility) and would also create a large area of impermeable surface and increase the volume of stormwater runoff. . The contribution of Alternative 4 on impacts to water quantity and quality from other past, present, and reasonably foreseeable projects would be relatively small by using accepted management practices to protect water resources and maximizing reuse of water in the cooling cycle.

#### 4.3.11.5 Alternative 5 – Geothermal Energy Facility

Past, present, and reasonably foreseeable future actions with the potential to impact water supply and water quality would be the same as under Alternative 1. The geothermal energy facility would contribute to additional aquifer withdrawals that could be comparable to water demand for a fossil fuel plant, although most withdrawals and reinjection would be deeper than the Hueco Bolson Aquifer, the water supply source for Fort Bliss and much of the surrounding area. There is a limited risk that the act of drilling the geothermal wells could contribute water quality impacts to the Hueco Bolson Aquifer, and the construction activities at the site would contribute short-term impacts to water quality and increase impermeable surface over the longer term, which would reduce groundwater recharge and increase stormwater impacts, although stormwater management practices would be put in place.

#### 4.3.11.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Past, present, and reasonably foreseeable future actions with the potential to impact water supply and water quality would be the same as under Alternative 1. The development of the solar technology would contribute short-term impacts from soil disturbance during construction, and these impacts would be mitigated through the implementation of sediment and erosion control practices. There would be increased impermeable surfaces associated with the CSP fields that would reduce groundwater recharge and increase stormwater runoff and runoff of pollutants similar to other alternatives. The CSP technology would require some water demand for cleaning the solar mirrors on a regular basis, although those impacts would be less noticeable than those associated with the development of other more traditional energy technologies.

#### 4.3.11.7 Alternative 7 – Implement Other Renewable Energy Technologies

Past, present, and reasonably foreseeable future actions with the potential to impact water supply and water quality would be the same as under Alternative 1. Contributions of impacts to the cumulative scenario would vary with the energy technology developed, and the number and size of the facilities. All of the new facilities would contribute short-term impacts related to stormwater runoff during construction, and these impacts would be mitigated through sediment and erosion control practices. All facilities would result in new impermeable surface that also would affect stormwater runoff volume and quality over the long term. Stormwater management practices would be required, however, and would mitigate impacts associated with both stormwater quality and quantity. Groundwater quality could be potentially affected by the drilling of the geothermal wells and the increased water demand associated with all of the energy technologies. All of these contributions would be relatively insignificant compared to the size of the Installation and the water demand of the surrounding area, however, and the energy technologies are mostly more water efficient than the gas-fired plant that currently serves Fort Bliss.

#### 4.3.11.8 Alternatives Combined

Past, present, and reasonably foreseeable future actions with the potential to impact water supply and water quality would be the same as under Alternative 1. Development of all the alternatives would result in contribution of several benefits to water demand by using reclaimed water, implementing aggressive conservation measures, and addressing evaporative water loss in the pipes. All of these combined actions would noticeably reduce demand for water from the Hueco Bolson Aquifer. Implementation of non-fossil fuel-based energy alternatives would also mostly compare favorably in terms of water demand when compared with natural gas facilities from which Fort Bliss currently obtains its energy, although these facilities would introduce new sources of water demand. All of the new facilities and road and pipe construction would contribute short-term water quality impacts from sediment runoff during construction. The new impermeable surfaces also would contribute water quality impacts, although they would be relatively insignificant when compared to the overall size of the Installation. The geothermal facilities (with the potential for groundwater contamination during the drilling of the well and the possibility of pollution related to geothermal brines) and a WTE plant would contribute the most noticeable water quality impacts, although they would be limited and mitigated with proper management practices.

### 4.3.12 Transportation and Traffic

In considering the impacts of each alternative in the context of past, present, and reasonably foreseeable future projects, the geographic boundary for traffic and transportation is the immediate and nearby area of the project areas, as well as overall traffic patterns.

#### 4.3.12.1 Alternative 1 – No Action

Traffic impacts associated with an increase in traffic generated by construction workers and delivery trucks and road closures and/or detours during construction periods of projects identified in the cumulative impact study area would be less than significant and short term. These impacts would end when the construction phase at each project or site ends.

Projects identified in the cumulative impact study area and the population increase in and around El Paso and smaller communities would increase traffic volumes on regional and local roadways; however, transportation improvement plans developed as part of these projects and the Texas DOT route location study would maintain traffic conditions on these roadways under capacity with the exception of some key roadways. The LOS on some segments of U.S. Route 54 would decline to an unacceptable level as a result of the Fort Bliss Mission and Master Plan and the increased trans-border traffic on U.S. Route 54. The Montana Avenue and Loop 375 and Liberty Expressway intersections would decline to an unacceptable LOS as a result of the potential sale and/or exchange of land at Parcel A and B at the southeastern portion of East Bliss north of Montana Avenue and east of the El Paso International Airport. Additional roadway connections, other planned infrastructure, and alternative transportation modes (i.e., public transportation) are being planned or discussed to accommodate future traffic demand in El Paso. Therefore, the effects of these past, present, and reasonably foreseeable future actions would be significant but mitigated to less than significant through road improvements and construction and traffic management.

This alternative would not contribute to increases in traffic volumes or alter traffic patterns in El Paso because Fort Bliss would not implement any actions beyond those policies and procedures that are currently in place. There would be no cumulative impact because Alternative 1 would have no impact on traffic and transportation.

#### 4.3.12.2 Alternative 2 – Conservation Policies and Procedures

The implementation of policies and procedures under this alternative would have no effect on increased traffic volumes and would not alter traffic patterns in El Paso. Therefore, there would be no cumulative impact as described under Alternative 1.

#### 4.3.12.3 Alternative 3 – Water Reclamation Pipeline

The cumulative construction impacts associated with increased traffic generated by construction workers and delivery trucks and road closures and detours under Alternative 3 in addition to the other planned projects identified in the cumulative impact study area would be less than significant and short term. These impacts would end when the construction phase at each project or site ends.

Because no new employees or staff would be added to East and West Bliss as a result of implementing the purple pipe under Alternative 3, no traffic impacts are expected under this alternative. Cumulative impacts from implementation of this alternative and other area transportation studies or projects would be less than significant in both the short term and long term.

#### 4.3.12.4 Alternative 4 – Waste-to-Energy Plant

Cumulative traffic impacts under Alternative 4 would depend on the size and location of the WTE plant, and these details have not been determined at this time. Traffic impacts under Alternative 4 are anticipated to range from less than significant to significant but mitigable. Although it cannot be determined at this time which of the past, present, or reasonably foreseeable future actions would fall within the ROI under Alternative 4, it is anticipated that cumulative action impacts would range from less than significant to significant but mitigable. Any future WTE project would undergo additional NEPA analysis relative to the potential location and the proposed technology.

Thus, cumulative impacts from implementation of this alternative and other area transportation studies or projects would be significant and short term during construction and less than significant in the long term.

#### 4.3.12.5 Alternative 5 – Geothermal Energy Facility

The cumulative construction impacts would result in increased traffic generated by construction workers and delivery trucks and road closures and detours under Alternative 5 in addition to the other planned projects identified in the cumulative impact study area. These impacts would be less than significant and short term and would end when the construction phase at each project or site ends.

No new employees or staff would be added for the geothermal energy facility under Alternative 5. Therefore, no traffic impacts are expected under this alternative. Cumulative impacts from implementation of this alternative and other area transportation studies or projects would be less than significant in both the short term and long term.

#### 4.3.12.6 Alternative 6 – Dry-cooled Concentrating Solar Power Technology

Construction traffic impacts to public roadways would be less than significant and short term under Alternative 6. The cumulative construction impacts associated with increased traffic generated by construction workers and delivery trucks under this alternative and other planned projects identified in the cumulative impact study area would be less than significant and short term. These impacts would end when the construction phase at each project or site ends.

The effects of the additional 56 daily employee trips and other vehicle trips on public and internal roadways within the Installation would be a less than significant impact. Cumulative impacts from implementation of this alternative and other area transportation studies or projects would be less than significant impacts in both the short term and long term.

#### 4.3.12.7 Alternative 7 – Implement Other Renewable Energy Technologies

The implementations of additional geothermal, wind, or solar resources under this alternative would have impacts similar to those described for Alternatives 5 and 6. Therefore, cumulative impacts from the past, present, and reasonably foreseeable projects under Alternative 7 would be similar to Alternatives 5 and 6. Cumulative impacts from implementation of this alternative and other area transportation studies or projects would be less than significant in both the short term and long term.

#### 4.3.12.8 Alternatives Combined

Traffic impacts projected for each of the above seven alternatives would be less significant in both the short and long term. Cumulative impacts for the alternatives combined are expected to be similar or slightly more severe than those under Alternative 4. Cumulative impacts from implementation of this alternative and other area transportation studies or projects would range from less than significant to significant but mitigable.

# 5.0 POTENTIAL MITIGATION AND MONITORING

This chapter presents a summary of potential mitigation measures that could reduce adverse environmental impacts from the alternatives analyzed in this EIS. Consideration for avoidance and minimization of impacts to resources was incorporated into the alternatives screening criteria described in Section 2.2 and also included in the environmental screening criteria for future renewable energy project included in Appendix C. Mitigation and monitoring measures to be considered by the Army and other entities are described by resource in this chapter. The ROD for this EIS will identify those mitigation measures that the Army will implement.

## 5.1 Air Quality

### Construction Emissions Mitigation Plan

The following Construction Emissions Mitigation Plan would be implemented during the construction phases of Alternatives 3 through 7:

The mitigation measures address reduction of NOx, SOx, VOCs, CO, and diesel particulate matter emissions from heavy duty diesel equipment, as well as $PM_{10}$ and $PM_{2.5}$ emissions from fugitive dust.

Fort Bliss would include the following measures in contract terms as construction contractor requirements:

1. During construction, all construction contractors and subcontractors will comply with applicable TCEQ regulations in Title 30 of the TAC, Division 4, *Materials Handling, Construction, Roads, Streets, Alleys, and Parking Lots*.
2. Control measures for fugitive dust
    a. Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate at active and inactive sites during workdays, weekends, holidays, and windy conditions
    b. Install wind fencing and phase grading operations where appropriate and operate water trucks for stabilization of surfaces under windy conditions
    c. Prevent spillage when hauling material and operating non-earthmoving equipment; limit speeds to 15 mph and limit speeds of earth-moving equipment to 10 mph
    d. Install erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1 percent

e. For all operations, limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are underway (Note: The use of blower devices is expressly forbidden, while the use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit visible dust emissions.)

3. Mobile and Stationary Source Controls

   a. Plan construction scheduling to minimize vehicle trips
   b. Limit idling of heavy equipment to less than 5 minutes and verify compliance with this requirement through unscheduled inspections
   c. Ensure that construction equipment is properly tuned and maintained
   d. Consider use of construction equipment meeting the USEPA's Tier 4 engine standards, and lacking availability of such nonroad construction equipment, consider use of :
      - USEPA-verified particulate traps, which control approximately 80 percent of diesel particulate matter
      - Oxidation catalysts, which control approximately 20 percent of diesel particulate matter, 40 percent of CO emissions, and 50 percent of hydrocarbon emissions
      - Other appropriate controls where suitable to reduce emissions of diesel particulate matter and other pollutants at the construction site
   e. Consider alternative fuels and energy sources such as natural gas and electricity (plug in or battery)

4. Administrative controls

   a. Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before breaking ground

   b. Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips.

   c. Identify sensitive receptors in the project area, such as children, elderly, and infirmed, and specify the means by which impacts to these populations will be minimized (e.g., locate construction equipment and staging zones away from sensitive receptors and building air intakes).

### Operations Phase

To minimize the potential for fugitive dust, hazard dust control provisions would be used as BMPs and would include but not be limited to the use of chemical dust suppressants when water is insufficient, use of regular water truck passes to keep the dirt roads moist, restriction of activities during wind events, and building of wind breaks and shelters for fill piles as necessary during the operation of the WTE plant.

For all of the operational activities, commuting staff are a source of air emissions. Encouraging carpooling or shuttle service to the WTE plant to shorten staff commutes would reduce air emissions from mobile sources.

Additional mitigation measures could be implemented under Alternative 4. For example, regarding the WTE plant, the use of more efficient APCDs that are above and beyond existing regulatory requirements could be established. This mitigation measure would have the benefit of reducing emissions but would come at an increased cost.

## 5.2 Airspace

The implementation of Alternative 4 would require consultation and coordination with the FAA for placement of the WTE plant and solar panels, and Fort Bliss would adhere to all applicable FAA airspace regulations.

## 5.3 Biological Resources

### 5.3.1 Vegetation

To minimize potential impacts to vegetation from construction under Alternatives 2, 3, 4, 5, and 6, BMPs would be employed during construction activities to minimize soil movement, stabilize runoff, and generally control sedimentation. These BMPs would include, but not be limited to: the development of a project-specific SWPPP, regular and documented site inspections, the installation of silt fencing and sediment traps, minimization of disturbed surficial area at any given moment, stabilization of cut/fill slopes, minimization of earth-moving activities during wet weather, use of temporary detention ponds, application of water sprays to keep soil from becoming airborne, and revegetation of disturbed areas as soon as possible, as appropriate.

Preventive and control measures presented in the Fort Bliss INRMP would be followed in order to reduce the possibility of exotic species invasions and further spreading of existing populations. In addition, these areas would be monitored following construction to determine whether project activities are causing an increase of exotic or undesirable plant species. If monitoring shows that invasive species are increasing, a strategy for control would be implemented. Re-vegetation of disturbed sites would use locally adapted native plants, selected with the help of reference sources provided by Texas Parks and Wildlife Department.

In areas that would be irrigated with reclaimed water, Fort Bliss would incorporate management techniques for reducing impacts to vegetation from reclaimed water, such as increasing drainage potential through soil aeration, incorporating salt tolerant species into existing and new landscapes, applying water in excess of plants' water needs to maintain salt balance in root zone, blending more saline water with less-saline water, adding soil amendments to correct sodium and alkalinity problems, and avoiding spraying reclaimed water on the foliage of plants that are salt sensitive.

### 5.3.2 Wildlife and Sensitive Species

To minimize potential injury and entrapment of wildlife in open trenches and ditches during construction under Alternatives 2, 3, 4, 5, and 6, the following strategies would be implemented: 1) crews trenching and backfilling would be kept close together to minimize the amount of open trenches at any given time, 2) trenching would occur during cooler months when possible, and 3) trenches would not be left overnight when possible or an escape ramp would be constructed every 90 meters.

During the construction of transmission lines, guidelines from the2006 Suggested Practices for Avian Projection on Power Lines (APLIC 2006) would be implemented and followed. If wind energy were to be developed as a part of Alternative 7, impacts to birds and bats would be reduced by following the 2012 USFWS Land-Based Wind Energy Guidelines during installation and operation of wind energy facilities (USFWS 2012).

Under Alternative 7, surveys would be conducted prior to construction to determine the presence of any listed or sensitive plant or animal species determined to have potential habitat in the area of impact for future renewable energy projects. Fort Bliss would obtain the necessary permits for all projects, as appropriate.

## 5.4 Cultural Resources

Fort Bliss has a PA and ICRMP that establish processes and procedures to address adverse effects on cultural resources. The processes and procedures in the PA and ICRMP would ensure that processes and procedures are in place to avoid, reduce, or mitigate adverse effects on historic properties or cultural resources of interest to the tribes. Adherence to the applicable processes, procedures, laws, and regulations would provide adequate protection for Fort Bliss cultural resources potentially impacted by the implementation of the Proposed Action. Specific measures to avoid or mitigate adverse effects on NRHP-eligible historic properties and cultural resources of interest to the tribes would be identified through consultation with the New Mexico and Texas SHPOs, tribal governments, and other interested parties. Identified avoidance or mitigation measures would be implemented as necessary. No additional mitigation measures for cultural resources have been identified at this time.

## 5.5 Energy Demand and Generation

The implementation of any of the Proposed Action alternatives would not require any mitigation measures.

## 5.6 Geology and Soils

The following management strategies and tools would be used to help minimize and mitigate adverse impacts to geology and soils resulting from implementation of the all action alternatives that propose construction. Prior to construction, all necessary construction permits would be obtained, and all construction would adhere to sediment and erosion control measures at Fort Bliss. Site-specific BMPs would be developed based on the proper design, run-off calculations, slope factors, soil type, topography, and construction activities involved. Examples of BMPs that could be used at Fort Bliss include, but are not limited to:

- Erosion control matting
- Silt fencing
- Storm drain outlet protection
- Stone check dams
- Construction exits
- Temporary and permanent seeding

The application of any or all of these BMPs depends upon precise, specific ground conditions in the areas disturbed by construction.

## 5.7 Hazardous Materials, Hazardous Waste, and Safety

The implementation of BMPs, procedures, and implementation of the IHWMP would minimize potential impacts from hazardous materials and hazardous waste generation, storage, handling, and disposal and POL and hazardous waste contamination during construction and operation under Alternatives 2, 3, 4, 5, and 6.

Site workers and Installation personnel in the range areas would be trained on how to identify munitions and explosives of concern/UXO and the proper protocol to be followed if munitions and explosives of concern/UXO are found.

## 5.8 Land Use

Fort Bliss would adhere to all existing land use management requirements and ensure that the implementation of all action alternatives that propose construction would be compatible with all adjacent or nearby land uses as well as the military mission at the Installation. To ensure the compatibility of the Proposed Action, coordination within Fort Bliss and with applicable parties would be required.

## 5.9 Noise

The impacts associated with the construction activities under the action alternatives would be less than significant; however, that does not mean that receptors would not hear any noise from these actions. To further reduce noise levels, several steps could be implemented, including:

- Performing construction work during business hours only
- Sequencing work to minimize the number of loud construction equipment when working near residences
- Ensuring all noise muffling equipment is installed and working properly
- Using noise protection for workers, as directed by the Hearing Protection Program (U.S. Army 1998)
- Shutting off idling equipment when not in use
- Sequencing the use of the loudest pieces of heavy equipment (e.g., graders and excavators) such that only a few pieces of equipment would be used in areas nearest the residential areas at any one time
- Using sound mufflers on heavy equipment and sound enclosure walls between work areas and residential areas

## 5.10 Socioeconomics and Environmental Justice

During the operational period of Alternative 4, dust and odor emissions from the WTE plant can be minimized if the WTE plant has an indoor tipping area, and negative pressure is maintained inside the building to pull air from the refuse pit into the combustion chamber. Furthermore, BMPs would be followed by WTE hauling trucks to prevent, to the extent possible, odors from escaping trucks.

TCEQ has established general requirements for the use of reclaimed water. These requirements include stipulations requiring that vegetative cover be maintained and application times for reclaimed water avoid time frames when wet vegetation would be contacted by people. Fort Bliss would ensure that the application of reclaimed water would avoid time frames during which human exposure would be likely. In addition, potential mitigation would include appropriate signage identifying areas where reclaimed water is applied.

## 5.11 Water Resources

Several mitigation measures would be used to protect water resources, including water quality and water supply:

- Under all alternatives, sediment and erosion control measures would be applied during construction, in accordance with the CWA:
  - Construction contract terms and conditions would include the following BMPs: dredging, filling, or grading in or adjacent to streams and riparian areas would be scheduled to occur during low-flow periods and would be in compliance with the CWA.
  - Application of dust-suppressing materials would occur according to industry standards.
  - Turbidity and siltation from project-related work would be minimized and contained to the site through the appropriate use of effective silt containment devices and the curtailment of work during adverse weather conditions.
- Trash or debris would be collected and disposed of properly.
- Per industry standards, appropriate measures, such as secondary containment, would be installed in industrial areas where materials that could pollute surface or groundwater is stored or used, so that spills would be contained and managed easily.

## 5.12 Transportation and Traffic

No traffic mitigation measures have been identified at this time. Any future WTE project would undergo appropriate, additional NEPA analysis, including analysis of the potential location of the WTE plant and the proposed technology, prior to making any decision on whether to construct the project. Additional NEPA analysis would include the identification of potential mitigation measures.

This page intentionally left blank.

# 6.0 REFERENCES CITED

Abbott, J.T., R. Mauldin, P.E. Patterson, W.N. Trierweiler, R.J. Hard, C.R. Lintz, and C.L. Tennis. 1996. Significance Standards for Prehistoric Archaeological Sites at Fort Bliss: A design for Further Research and the Management of Cultural Resources. TRC Mariah Associates, Inc., Austin, TX.

APLIC. 2006. Suggested Practices for Avian Protection on Lines: the State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission, Washington, D.C. and Sacramento, CA.

BLM and DOE (Bureau of Land Management and Department of Energy). 2012. Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States. Website: http://solareis.anl.gov/documents/fpeis/Solar_FPEIS_Volume_1.pdf.

Cabe, J. 2012. Personal communication between Mike Ackerman, U.S. Army Environmental Command and James Cabe, Pacific Northwest National Laboratory regarding purple pipe water estimates.

Carmichael, D.L. 1986. Archaeological Survey in the Southern Tularosa Basin of New Mexico. Publications in Anthropology No. 10, El Paso Centennial Museum, The University of Texas at El Paso, TX.

CEQ (Council on Environmental Quality). 1997a. Environmental Justice Guidance under the National Environmental Policy Act. Executive Office of the President. Washington, D.C.

CEQ. 1997b. Effects Under the National Environmental Policy Act. Executive Office of the President. Washington, D.C. January 1997.

Chacon, R. 2012. Letter from Roger Chacon, Manager, Environment Department, El Paso Electric Company, to Vicki Hamilton, Chief, Environmental Division, U.S. Army Installation Management Command, Department of the Army. 10 May 2012.

Cieslik, R. 2012. Personal Communication between Chris Dixon, LBG, and Robert Cieslik, El Paso Water Utilities. Phone Conversation. 16 May 2012.

City of El Paso. Undated,a. Code of Ordinances. Title 9 – Health and Safety, Chapter 9.40 – Noise. Website: http://library.municode.com/index.aspx?clientId=16180. Accessed 24 May 2012.

City of El Paso. Undated,b. Greater El Paso Landfill – Fact Sheet. Environmental Services Department, City of El Paso, TX.

Clark, C.E., C.B. Harlo, J.L. Sullivan, and M.Q. Wang. 2011. Water Use in the Development and Operation of Geothermal Power Plants. ANL/EVS/R-10/5. Environmental Science Division, Argonne National Laboratory, Lemont, IL. January 2011.

Collins, E.W. and J.A. Rainy. 1994. Tertiary and Quaternary tectonics of the Hueco Bolson, Trans-Pecos Texas and Chihuahua, Mexico. In: Keller, G.R. and Cather, S.M. (eds.). Basins of the Rio Grande Rift: Structure, Stratigraphy, and Tectonic Setting. Geological Society of America Special Paper 291:265-282.

Condon, P., C.W. Hermann, L.M. Ponce, and P.D. Lukowski. 2007. Examining Late Archaic and Early Formative Period Social Dynamics in the Hueco Bolson: A Data Recovery of Six Prehistoric Sites in the Hueco Bolson, Maneuver Areas 1B and 2C, Fort Bliss Military Installation, El Paso County, Texas. Prepared by TRC Environmental, Inc., El Paso, Texas.

Dahle, D. 2013. Personal Communication on 15 October between Douglas Dahle, NREL, and John Kipp, Fort Bliss DPW-E, Regarding Municipal Solid Waste Required per Megawatt.

Dahle, D. 2012. Personal Communication from Douglas Dahle, NREL, to David Plakorus, LBG and Mike Ackerman, AEC. National Renewable Energy Laboratories. Sent on 16 May 2012. Regarding: Costs for Alternative 5, 6, and 7.

Davis, J. 2013. Personal Communication from Jerry Davis, NREL, to Michael Snyder, LBG. National Renewable Energy Laboratories. Sent on 18 January 2013. Regarding Alternative 4 water use.

Davis, J. 2012. Personal Communication from Jerry Davis, NREL, to David Plakorus, LBG. National Renewable Energy Laboratories. Sent on 2 May 2012. Regarding: Alternative 4 operations period salaries.

DoD (Department of Defense). 2010. Quadrennial Defense Review Report. Website: http://www.defense.gov/qdr/images/QDR_as_of_12Feb10_1000.pdf. 128pp. Accessed 8 June 2012.

DoD. 2009. Department of Defense Instruction 4170.11, Installation Energy Management. Website: http://www.dtic.mil/whs/directives/corres/pdf/417011p.pdf. Accessed 8 June 2012.

DoD. 1997. Directive 5030.19: DoD Responsibilities on Federal Aviation and National Airspace System Matters. 15 June 1997. Website: http://www.dtic.mil/whs/directives/corres/pdf/503019p.pdf. Accessed 26 April 2012.

DOE (U.S. Department of Energy). 2003. Commercial Buildings Energy Consumption Survey, 2003. Website: http://www.eia.gov/consumption/commercial/. Accessed May 2012.

DOE. 2001. Concentrating Solar Power Commercial Application Study: Reduce Water Consumption of Concentrating Solar Power Electricity Generation. Report to Congress.

Ecomaine. 2011. Waste-to Energy-Plant. Website: http://www.ecomaine.org/electricgen/index.shtm. Accessed 31 May 2012.

El Paso ISD (El Paso Independent School District). 2012. School Map. Website: http://www.episd.org/_schools/hs_maps.php. Accessed 16 April 2012.

El Paso MPO (El Paso Metropolitan Planning Organization). 2010. Mission 2035 Metropolitan Transportation Plan.

EPEC (El Paso Electric Company). 2012a. Personal Communication. Letter from Roger Chacon, Manager, Environmental Department, to Vicki Hamilton, Chief, Environmental Division, Directorate of Public Works, Fort Bliss, Dated 10 May 2012.

EPEC. 2012b. Personal Communication from El Paso Electric to Vicki Hamilton, Chief, Environmental Division, Directorate of Public Works, U.S. Army, Forwarded in Email from John Barrera to David Plakorus, The Louis Berger Group, Dated 10 May 2012.

EPEC. 2012c. Montana Power Station. Website: http://www.epelectric.com/about-el-paso-electric/montana-power-station. Accessed May 2012.

EPWU (El Paso Water Utilities). 2012a. Reclaimed Water Page. Website: http://www.epwu.org/reclaimed_water/rwater.html. Accessed 21 May 2012.

EPWU. 2012b. Water Page (desalination). Website: http://www.epwu.org/water/desal_info.html. Accessed 22 August 2012.

EPWU. 2012c. Water Rates Page. Website: http://www.epwu.org/water/water_rates.html#set_up_fee. Accessed 20 May 2012.FAA (Federal Aviation Administration). 2008. The National Airspace System. U.S. Department of Transportation, FAA, Washington, DC.

FAA. 1992. Guidelines for the Sound Insulation of Residences Exposed to Aircraft Operations. U.S. Department of Transportation, FAA, Washington, DC.

Favela, R. 2012. Personal Communication, Phone Call between Roberto Favela and B.J. Tomlinson. Regarding: Percentage of Total Energy Purchased Annually by Fort Bliss from El Paso Electric, on 15 May 2012.

Federal Interagency Committee on Noise. 1992. Federal Agency Review of Selected Airport Noise Analysis Issues. August 1992.

Federal Transit Administration. 2006. Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. Federal Transit Administration, Washington, DC.

Finegold, L.S., C.S. Harris, and H.E. von Gierke. 1994. Community Annoyance and Sleep Disturbance: Updated Criteria for Assessing the Impacts of General Transportation Noise on People. Noise Control Engineering Journal 42(1):25–30. January–February.

FLAG (Federal Land Managers' Air Quality Related Values Work Group). 2010. Phase I Report – Revised. October 2010. Website: http://www.nature.nps.gov/air/Pubs/pdf/flag/FLAG_RtC_2010.pdf.

Fort Bliss. 2011. Fort Bliss, TX, Fact Sheet. 8 August 2011.

Fort Bliss DPW-Environmental. 2013. Fort Bliss Directorate of Public Works, Environmental Division - Guidance for Construction Storm water Pollution Prevention Plans (SWP3's) & Permits. Revised April 2013.

Fort Bliss Family, Morale, and Welfare & Recreation. 2012. Website: http://www.blissmwr.com/map/. Accessed 16 April 2012.

Gabe Mendez Excavation, Inc. 2012. Personal Communication. 17 May 2012.

Hall, L.S., P.R. Krausman, and M.L. Morrison. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25:173–182.

Heath, M.J. 2002. Environmental Aspects of Geothermal Energy Resources *Utilization*. In: Geothermal Energy (Resources) for Developing Countries. D. Chandrasekharam, and J. Bundschuh (eds.). A.A. Balkema, Rotterdam. Website: http://geoscience.web.officelive.com/geothermal.aspx. Accessed 14 March 2012.

Hillesheim, M. 2013. Personal communication. Email from Doug Dahle, NREL, to Multiple Recipients, Regarding Geothermal Energy Facility Construction and Operation Estimates, dated 11 March 2013.

Jacobs/Huitt-Zollars. 2011. Fort Bliss, Texas, Army Transformation Land Development Engineering; Main Cantonment, CAB/Biggs, & East Fort Bliss Transportation Infrastructure Study, Existing Conditions Assessment and Recommendations.

Jenicek, E., N. Myers, D. Fournier, K. Miller, M. Hessel, R. Carroll, and R. Holmes. 2009. Case Study: Fort Bliss, TX in Army Installations Water Sustainability Assessment: an Evaluation of Vulnerability to Water Supply, 94-122; 127-129. ERDC/CERL TR-09-38. Engineer Research and Development Center, U.S. Army Corps of Engineers. September 2009.

Kagel, A., D. Bates, and K Gawell. 2007. A Guide to Geothermal Energy and the Environment. Geothermal Energy Association, Washington, D.C.

Karl, T.R., Melillo, J.M., and Peterson, T.C. (eds.). 2009. Global Climate Change Impacts in the United States. Cambridge University Press.

Kozma, J.M. 1995. Neotropical Migrant and Chihuahuan Desert Bird Community Use of Arroyo-riparian Habitat and Adjacent Upland. M.S. Thesis. Texas Tech University, Lubbock, TX.

Kozman, J.M., and N.E. Mathews. 1997. Breeding Bird Communities and Nest Plant Selection in Chihuahuan Desert Habitats in South-Central New Mexico. Wilson Bulletin 109:424–436.

Long, C.V., J.A. Flint, and P.A. Lepper. 2010. Wind Turbines and Bat Mortality: Doppler Shift Profiles and Ultrasonic Bat-Like Pulse Reflection from Moving Turbine Blades. Journal of Acoustical Society of America 128(4):2,238–2,245.

Miller, M.R., N.A. Kenmotsu, and M. Landreth. 2009. Significance and Research Standards for Prehistoric Archaeological Sites at Fort Bliss: A Design for the Evaluation, Management, and Treatment of Cultural Resources. Geo-Marine, Inc., El Paso, TX.

Massachusetts Institute of Technology. 2006. The Future of Geothermal Energy. Prepared for the Idaho National Laboratory, Department of Energy.

National Park Service. 2000. Fort Bliss Main Post Historic District National Register of Historic Places Nomination Form. Second edition. Website: http://www.denix.osd.mil/cr/upload/fort-bliss_main-post-historic-district-nomination.pdf.

NREL (National Renewable Energy Laboratory). 2012. Targeting Net Zero Energy, Water, and Waste at Fort Bliss: Assessment and Recommendations. NREL/TP-7A40-55989.

New Mexico Bureau of Business and Economic Research. 2012. Population Projections for New Mexico and Counties. Website: http://bber.unm.edu/demo/table1.htm. Accessed 16 April 2012.

New Mexico Department of Workforce Solutions. 2012. 2018 Employment Projections. Las Cruces MSA. Occupations and Industries in Demand. Website: http://www.dws.state.nm.us/LMI/pdf/PRJLasCrucesMSA.pdf. Accessed 16 April 2012.

ODUSD (Office of Deputy Under Secretary of Defense). 2005a. The US Army Energy Strategy for Installations. 8 July 2005. Website: http://dodfuelcell.cecer.army.mil/library_items/Army_Energy_Strategy.pdf. Accessed 31 May 2005.

ODUSD. 2005b. Department of Defense Energy Manager's Handbook. Prepared by Intuitive Research and Technology Corporation, Huntsville, Alabama. Website: http://www.acq.osd.mil/ie/energy/mgr_support.shtml

Office of Texas Comptroller. 2012a.Window on State Government: Texas Tax Information. Website: http://www.window.state.tx.us/. Accessed 20 May 2012.

Office of Texas Comptroller. 2012b. Window on State Government: Municipal Solid Waste. Website: http://www.window.state.tx.us/specialrpt/energy/exec/municipal.html. Accessed May 2012.

Partners in Flight. 2012. Chihuahuan Desert. Priority Bird Populations and Habitats. Website: http://www.partnersinflight.org/bcps/pl_56sum.htm. Accessed 18 January 2013.

PNNL (Pacific Northwest National Laboratory). 2012. Fort Bliss Net Zero Water Balance. Draft Report. Prepared for U.S Department of Energy. Prepared by the Pacific Northwest National Laboratory, Richland, WA (operated by Battelle). May 2012.

R.W. Beck 2011. Fort Bliss Military Reservation Waste Characterization Study Final Report. 28pp.

Schmidt, R.H. 1979. A Climatic Delineation of the ‘Real’ Chihuahuan Desert. Journal of Arid Environments Volume 2:243-250.

Schultz, T.J. 1978. Synthesis of Social Surveys on Noise Annoyance. Journal of Acoustics Society of America, 64, 377405. August.

Seager, W. 1981. Geology of the Organ Mountains and southern San Andres Mountains, New Mexico. New Mexico Bureau of Mines and Mineral Resources. Memoir 36.

Strickland, M.D., E.B. Arnett, W.P. Erickson, D.H. Johnson, G.D. Johnson, M.L., Morrison, J.A. Shaffer, and W. Warren-Hicks. 2011. Comprehensive Guide to Studying Wind Energy/Wildlife Interactions. Prepared for the National Wind Coordinating Collaborative, Washington, D.C., USA.

SVT Engineering Consultants. 2006. Noise Assessment for the Alinta Wagerup Power Proposal. 18 May 2006.

Texas Labor Market & Career Information Department. 2012a. Texas County Workforce. Website: http://www.tracer2.com/admin/uploadedpublications/1976_WDA_County_list.pdf. Accessed 16 April 2012.

Texas Labor Market & Career Information Department. 2012b. Upper Rio Grande WDA Long-term Occupation Projections. Website: http://www.tracer2.com/publication.asp?PUBLICATIONID=853. Accessed 16 April 2012.

Texas Labor Market & Career Information Department. 2012c. Employment Projections. Website: http://www.tracer2.com/?PAGEID=3&SUBID=114. Accessed 16 April 2012.

Texas State Data Center. 2012. Population Projections for the State of Texas and Counties in one file. Website: http://txsdc.utsa.edu/Resources/TPEPP/Projections/2008/table2/agegrp/2008allcntyagegrp.zip. Accessed 16 April 2012.

The Watercourse. 2001. Discover a Watershed: Rio Grande/Rio Bravo. The Watercourse, Bozeman, MT.

TNRCC (Texas Natural Resources Conservation Commission). 1997. Chapter 21: Use of Reclaimed Water; Subchapter C: Quality Criteria and Specific Uses for Reclaimed Water, §§210.31–201.36. Adopted 22 January 1997.

Turchi, C. 2012. Personal Communication from Craig Turchi, NREL, to Doug Dahle, NREL. National Renewable Energy Laboratories. Sent on 23 May 2012. Regarding Alternative 5.

University Medical Center of El Paso. 2012. Homepage. Website: http://www.umcelpaso.org/WebShell/umcep.nsf/DefaultFrameset/Site+Defaults?OpenDocument &DocID=8E164B0DDE46203887256D85006DAA51. Accessed 16 April 2012.

USACE (U.S. Army Corps of Engineers). 2012. Economic Impact Forecast System. Mobile District. Website: http://www.sam.usace.army.mil/eifs/. Accessed on May 2012.

USACHPPM (U.S. Army Center for Health Promotion and Preventative Medicine). Undated. Technical Guidance TG250, Readiness through Hearing Conservation.

USAEC (U.S. Army Environmental Command). 2007. NEPA Analysis Guidance Manual. May 2007. Website: http://aec.army.mil/usaec/nepa/nepa-agm.pdf. Accessed 4 February 2013.

U.S. Army. 2012a. Final Programmatic Environmental Assessment: Army Net Zero Installations. July 2012.

U.S. Army. 2012b. Final Environmental Assessment for the Modification of Special Use Airspace Fort Bliss, Texas and New Mexico.

U.S. Army. 2010a. Army Energy Program: Army Vision for Net Zero. Website: http://army-energy.hqda.pentagon.mil/netzero/. Accessed 8 June 2012.

U.S. Army. 2010b. Fort Bliss Army Growth and Force Structure Realignment Environmental Impact Statement. March 2010.

U.S. Army. 2009a. Army Regulation 420-1: Facilities Engineering, Army Facilities Management. Rapid Action Revision Issue Date: 28 March 2009. Website: http://www.apd.army.mil/pdffiles/r420_1.pdf. Accessed 31 May 2005.

U.S. Army. 2009b. GIS of Vegetation Communities on Fort Bliss. Provided by the USDA Jornada ARS Station.

U.S. Army. 2008a. Army Regulation 95-2, Airspace, Airfields/Heliports, Flight Activities, Air Traffic Control, and Navigation Aids. Website: http://www.apd.army.mil/jw2/xmldemo/r95_2/main.asp. Accessed 12, June 2012.

U.S. Army. 2008b. ICRMP: Fort Bliss Integrated Cultural Resources Management Plan. Fort Bliss, TX.

U.S. Army. 2007a. Army Energy and Water Campaign Plan. Available at: http://army-energy.hqda.pentagon.mil/programs/plan.asp. Accessed 18 June 2012.

U.S. Army. 2007b. Fort Bliss Mission and Master Plan, Final Supplemental Programmatic Environmental Impact Statement. March 2007.

U.S. Army. 2007c. Fort Bliss Herptofauna Surveys. March.

U.S. Army. 2007d. Army Regulation 200-1, Environmental Protection and Enhancement. Website: http://www.apd.army.mil/pdffiles/R200_1.pdf. Accessed 20 August 2012.

U.S. Army. 2001. Integrated Natural Resources Management Plan, Fort Bliss, Texas. November 2001.

U.S. Army. 2000. Fort Bliss Mission and Master Plan – Final Programmatic Environmental Impact Statement.

U.S. Army. 1998. Army Pamphlet 40-501, Hearing Conservation Program. Headquarters, Department of the Army, Washington, DC. 16 December 2005.

USDA. 2004. Fort Bliss Military Training Area Soil Survey. U.S. Department of Agriculture.

U.S. Department of Commerce. 2012a. U.S. Census. OnTheMap Product. Geographies: Dona Ana County, NM; Otero County, NM; El Paso County, TX. Website: http://onthemap.ces.census.gov/. Accessed on 16 April 2012.

U.S. Department of Commerce. 2012b. Bureau of Economic Analysis. Regional Economic Accounts: Local Area Personal Income Statistics. Table CA25N. Years: 2001–2010. For the geographies: State of New Mexico; State of Texas; Dona Ana County, NM; Otero County, NM; El Paso County, TX. Website: http://www.bea.gov/regional/reis/default.cfm?selTable=CA25. Accessed 16 April 2012.

U.S. Department of Commerce. 2010a. Table DP-03 Selected Economic Characteristics. 2008–2010 American Community Survey 3-Year Estimates. For Geographies: New Mexico; Texas; Dona Ana County, NM; Otero County, NM; and El Paso County, TX. Website: http://factfinder2.census.gov. Accessed 16 April 2012.

U.S. Department of Commerce. 2010b. Table DP-01 Profile of General Population and Housing Characteristics: 2010. For Geographies: New Mexico; Texas; Dona Ana County, NM; Otero County, NM; and El Paso County, TX. Website: http://factfinder2.census.gov. Accessed on 16 April 2012.

U.S. Department of Commerce. 2010c. Table DP-05 ACS Demographic and Housing Estimates. 2006-2010 American Community Survey 5-Year Estimates. For Geographies: New Mexico; Texas; Dona Ana County, NM; Otero County, NM; and El Paso County, TX. Website: http://factfinder2.census.gov. Accessed 16 April 2012.

U.S. Department of Commerce. 2010d. Table DP-03 ACS Selected Economic Characteristics. 2006-2010 American Community Survey 5-Year Estimates. For Geographies: New Mexico; Texas; Dona Ana County, NM; Otero County, NM; and El Paso County, TX. Website: http://factfinder2.census.gov. Accessed 16 April 2012.

U.S. Department of Commerce. 2000a. Profile of General Demographics – Demographic Profile 1. Texas: State of Texas and EI Paso County, New Mexico: State of New Mexico and Dona Ana and Otero Counties, Data User Services Division. U.S. Bureau of the Census. http://factfinder.census.gov/.

U.S. Department of Commerce. 2000b. Census Tracts and Block Numbering Areas. Accessed on May 25, 2012. Available at: http://www.census.gov/geo/www/cen_tract.html.

U.S. Department of Commerce. 1990a. Texas - Population of Counties by Decennial Census: 1900 to 1990. Website: www.census.gov/population/cencounts/tx190090.txt. Accessed 16 April 2012.

U.S. Department of Commerce. 1990b. New Mexico - Population of Counties by Decennial Census: 1900 to 1990. Accessed on 16 April 2012. Available at: www.census.gov/population/cencounts/nm190090.txt.

U.S. Department of Labor. 2012a. Bureau of Labor Statistics. Local Area Unemployment Statistics. Unemployment and Labor Force Data – not seasonally adjusted for the years 2001 through 2011 for the geographies: State of New Mexico; State of Texas; Dona Ana County, NM; Otero County, NM; El Paso County, TX. Website: http://www.bls.gov/lau/. Accessed 16 April 2012.

U.S. Department of Labor. 2012b. Bureau of Labor Statistics. Local Area Unemployment Statistics. Unemployment and Labor Force Data – not seasonally adjusted for the years 2001 through 2011 for the geographies: State of New Mexico; State of Texas; Dona Ana County, NM; Otero County, NM; El Paso County, TX. Website: http://data.bls.gov/cgi-bin/dsrv. Accessed 16 April 2012.

USDOT (U.S. Department of Transportation). 2006. FWHA Highway Construction Noise Handbook. Website: http://www.fhwa.dot.gov/environment/noise/handbook/index.htm. Last updated 5 July 2011. Accessed 13 March 2012.

USEPA (U.S. Environmental Protection Agency). 2012. Compilation of Air Pollution Emission Factors, AP-42, Volume 1. Accessed at: http://www.epa.gov/ttnchie1/ap42/ on 20 May 2012.

USEPA. 2010. Compilation of Air Pollution Emission Factors, AP-42, Volume I (1995-2011).Website: http://www.epa.gov/ttnchie1/ap42/. Accessed 12 March 2012.

USEPA. 2004. Guidelines for Water Reuse. September.

USEPA. 2000. AP-42: Compilation of Stationary Source Emission Factors, Section 3.1, Stationary Gas Turbines. Website: http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s01.pdf. Accessed May 2012.

USEPA. 1979. Noise Effects Handbook, A Desk Reference to Health and Welfare Effects of Noise. October 1979. Revised July 1981. Website: http://www.nonoise.org/library/handbook/handbook.htm. Accessed 17 May 2012.

USEPA. 1974. Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety. U.S. Environmental Protection Agency Report 550/9-74-004. March 1974.

USFWS (U.S. Fish and Wildlife Service). 2012. Land-based Wind Energy Guidelines. U.S. Fish and Wildlife Service. 82pp.

Zekert, J., and M. Gillem. 2012. Planning for Energy Efficient Installations. Presentation of Net Zero strategies to Fort Bliss, DPW Housing Division Building 1741, August 17, 2012.

This page intentionally left blank.

# 7.0 LIST OF PREPARERS

United States Army Environmental Command

| Name | Title | Education | Experience/Role |
|---|---|---|---|
| Michael Ackerman | NEPA Project Manager | M.S., Conservation Biology | 8 years/ Responsible for Project Management through February 2013 |
| Pamela M. Klinger | NEPA Project Manager | Master of Planning; B.S., Geology | 23 years/ Responsible for Project Management as of March 2013 |

United States Army – Fort Bliss Directorate of Public Works-Environmental Division

| Name | Title | Education | Experience/Role |
|---|---|---|---|
| John Barrera | NEPA Manager | B.A., Biology | 25 years/Alternate Project Manager |
| Kelly Blough | Storm Water Program Manager | B.A., Geology | 24 years/Water Resources SME |
| Chad Burt | Archaeologist (Contractor) | M.A., Anthropology/Southwest Archaeology | 17 years/Cultural Resources SME |
| Rafael Corral | Botanist/Pest Management Coordinator | Ph.D., Environmental Science | 31 years/Plant Ecology SME |
| Martin Goetz | Archaeologist/GIS Specialist (Contractor) | M.A., Anthropology/Southwest Archaeology | 18 years/Cultural Resources SME |
| John Kipp | NEPA Planner | Ph.D., Soil Science | 25 years/Primary Project Manager |
| Brian Knight | DPW-E Conservation Branch Chief | M.A., Anthropology/Southwest Archaeology | 20 years/Cultural Resources SME |
| Lilia Lenhart | Solid Waste/Recycling Program Manager | B.S., Civil Engineering | 28 years/Solid Waste SME |
| Robert Lenhart | Petroleum Storage Tank Program Manager | Ph.D., Geology | 34 years/ Petroleum Storage SME |
| Brian Locke | Wildlife Biologist | Ph.D., Biology | 32 years/Wildlife, Natural Resources Management SME |
| Chris Lowry | Archaeologist | B.A., Anthropology | 23 years/Cultural Resources SME |
| Jesse Moncada | Air Quality Program Manager | B.S., Civil Engineering | 19 years/Air Quality SME |
| Stephen Sanchez | GIS Specialist | B.S., Geology | 8 years/GIS SME |

| Name | Title | Education | Experience/Role |
|---|---|---|---|
| Sue Sitton | Archaeologist | M.A., Anthropology | 24 years/Cultural Resources SME |
| Mark Walker | NEPA Energy Specialist; (Contractor) | B.S., Forest Management | 30 years/NEPA and Energy SME |
| Yvette Waychus | GIS Manager | M.S., Geology | 13 years/GIS SME |
| Eric Wolters | Environmental Specialist (Contractor) | MPA | 35 years/NEPA and Noise SME |

Note: SME = Subject Matter Expert

National Renewable Energy Laboratory

| Name | Title | Education | Experience/Role |
|---|---|---|---|
| Douglas Dahle | Senior Engineer | B.S., Mechanical Engineering | 34 years/ Responsible for review of technical descriptions and input on renewable energy alternatives |
| Jerry Davis | Senior Engineer | M.S., Engineering Management<br>MBA<br>B.S., Economics | 12 years/ Responsible for technical information on WTE technologies |

The Louis Berger Group, Inc.

| Name | Title | Education | Experience/Role |
|---|---|---|---|
| Mark Berger, AICP | Senior Transportation Planner | M.S., Transportation | 18 years/ Responsible for the traffic and transportation section |
| Megan Blue-Sky | Environmental Scientist | B.A., Geography/GIS | 3 years/ Responsible for GIS analysis and mapping |
| Rebecca Byron, AICP | Environmental Planner | M.U.R.P., Urban and Region Planning<br>B.S., Environmental Science and Policy | 7 years/ Responsible for the energy demand and generation section |
| Timothy Canan, AICP | Senior Project Manager | M.U.R.P., Urban and Regional Planning<br>B.S., Public Administration | 23 years//Responsible for Project Management and all sections authored by Louis Berger staff. |

| Name | Title | Education | Experience/Role |
|---|---|---|---|
| Chris Dixon | Environmental Planner | M.U.R.P., Urban and Regional Planning<br>M.B.A.<br>B.S., Environmental Economics and Management | 2 years/ Responsible for the socioeconomic and environmental justice section. |
| Denise Huang | Principal Transportation Engineer | B.S., Electrical Engineering | 15 years/ Responsible for the traffic and transportation section |
| Coreen Johnson | Senior Technical Editor | B.A., English Education | 21 years/ Responsible for technical editing of the EIS chapters and document review |
| Gregory LaBudde | Archaeologist | M.A., Anthropology | 4 years/ Responsible for the cultural resources section |
| David Plakorus, LEED Green Associate | Environmental Planner | M.U.R.P., Urban and Regional Planning<br>M.B.A.<br>B.A., History | 3 years/ Responsible for the airspace, geology and soils, and land use sections and Deputy Project Manager |
| Catherine Price | Senior Environmental Engineer | B.S., Chemistry<br>B.S., Chemical Engineering | 34 years/ Responsible for the hazardous materials and waste section |
| Suni Shrestha | Senior Environmental Planner | B.S., Environmental Analysis and Planning | 15 years/ Responsible for EIS document review. |
| Mike Snyder | Environmental Scientist | M.S., Biological Sciences<br>B.A., Biology | 13 years/ Responsible for coordination and compilation of all EIS chapters. |
| Margaret Stewart | Senior Planner | A.B., Growth and Structure of Cities Program<br>M.R.P., Land Use and Environmental Planning, with Coastal Management specialty | 18 years/ Responsible for the water resources section |

Cardno TEC, Inc.

| Name | Title | Education | Experience/Role |
|---|---|---|---|
| Kate Bartz | Principal | M.S., Landscape Architecture and Environmental Planning<br>B.S., Environmental Studies | 26 years/ Responsible for all sections prepared by Cardno TEC staff. |
| James Campe | Environmental Scientist | B.S., Naval Architecture and Offshore Engineering | 23 years/ Responsible for the noise section |
| Lesley Hamilton | Senior Environmental Scientist | B.A., Chemistry | 24 years/ Responsible for the air quality section |
| Jason Harshman | GIS Specialist | B.A., Geography | 7 years/ Responsible for GIS mapping and analysis |
| Amanda Stevens | Biologist | M.S., Fire Ecology<br>B.S., Wildlife Ecology | 10 years/ Responsible for the biological resources section |

# 8.0 DISTRIBUTION LIST

## FEDERAL OFFICIALS AND AGENCIES

### *Senators*

**The Hon. Carl Levin**
U.S. Senator, Michigan
Chairman, Committee on Armed Services
269 Russell Senate Office Building
Washington, DC 20510-2202

**The Hon. John McCain**
U.S. Senator, Arizona
Ranking Member, Armed Services Committee
241 Russell Senate Office Building
Washington, DC 20510-4601

**The Hon. John Cornyn**
U.S. Senator, Texas
Chase Tower
221 West Sixth Street
Suite 1530
Austin, TX 78701

**The Hon. Ted Cruz**
U.S. Senator, Texas
961 Federal Building
300 East 8th Street
Austin, Texas 78701

**The Hon. Martin Heinrich**
U.S. Senator, New Mexico
Las Cruces Office
505 S. Main St., Suite 148
Las Cruces, NM 88001

**The Hon. Tom Udall**
U.S. Senator, New Mexico
Las Cruces Office
505 S. Main St., Suite 118
Las Cruces, NM 88001

### *Representatives*

**The Hon. Howard P. "Buck" McKeon**
U.S. Representative, California
Chairman, House Armed Services Committee
2184 Rayburn House Office Building
Washington, DC 20515-2504

**The Hon. Adam Smith**
U.S. Representative, Washington
Ranking Member, Armed Services Committee
2402 Rayburn House Office Building
Washington, DC 20515

**The Hon. Beto O'Rouke**
U.S. Representative, Texas 16th District
303 N. Oregon St., Suite 210
El Paso, Texas 79901

**The Hon. Pete Gallego**
U.S. Representative, Texas 23rd District
431 Cannon House Office Building
Washington, D.C. 20515

**The Hon. Steve Pearce**
U.S. Representative, New Mexico 2nd District
Las Cruces Office
570 S. Telshor
Las Cruces, NM 88011

### *Federal Agencies*

**Bill Childress,** District Manager
Bureau of Land Management
1800 Marquess
Las Cruces, NM 88005-3371

**James Christensen**
Bureau of Land Management
28 Derbyshire Road
Tularosa, NM 88352

**J.R. Gomolak, Archaeologist**
49th CES/CEAO
550 Tabosa Avenue, Building 55
Holloman AFB, NM 88330

**Deborah Hartell**
DPW-E-C
Environmental Division, Bldg 163
White Sands Missile Range, NM 88002

**Jim Iken**
49th Mission Support Group
490 First Street, Suite 2650
Holloman AFB, NM 88330

**Michael P. Jansky, PE**
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Suite 1200
Dallas, TX 75202-2733

**William McCormick**
Air Traffic and Airspace Officer
HQ, IMCOM, G-3, Airfield Operations Division
US Army Installation Management Command
2405 Gun Shed Road
Fort Sam Houston, TX 78234-1223

**John L. Merino, P.E.**
International Boundary and Water Commission
United States and Mexico
The Commons Building, Suite 310
4171 N. Mesa Street
El Paso, TX 79902

**Jennifer Montoya,** NEPA Coordinator
Bureau of Land Management
1800 Marquess
Las Cruces, NM 88005-3371

**Wally Murphy**
Field Supervisor
U.S. Fish and Wildlife Service
NM Ecological Services Field Office
2105 Osuna NE
Albuquerque, NM 87113

**Reid Nelson**
Director
Office of Federal Agency Programs
Advisory Council on Historic Preservation
1100 Pennsylvania Ave NW, Ste. 809
Washington, DC 20004

**Stephen R. Spencer**
Regional Environmental Officer
U.S. Department of the Interior
Office of Environmental Policy & Compliance
1001 Indian School road, NW, Suite 348
Albuquerque, NM 87104

**Benjamin N. Tuggle**
Regional Director
U.S. Fish and Wildlife Service
P.O. Box 1306
Albuquerque, NM 87103-1306

**Robert Trujillo**
Supervisor
Lincoln National Forest
3463 Las Palomas
Alamogordo, NM 88310

**Jeff Watts**
U.S. Army Corps of Engineers
Fort Worth District
Federal Bldg, Room 3A28
819 Taylor
Fort Worth, Texas 76102

**Adam Zerrenner**
Field Supervisor
U.S. Fish and Wildlife Service
Austin Ecological Services Field Office
10711 Burnet Road, Suite 200
Austin, TX 78758-4460

## STATE OFFICIALS AND AGENCIES

### *Texas*

**The Hon. Rick Perry**
Governor of Texas
Capitol Station
P.O. Box 12428
Austin, TX 78711

**The Hon. David Dewhurst**
Office of the Lt. Governor
Capitol Station
P.O. Box 12068
Austin, TX 78711

**The Hon. Carlos I. Uresti**
Texas State Senator, District 19
P.O. Box 12068
Capitol Station
Austin, Texas 78711

**The Hon. Jose Rodriguez**
Texas State Senator, District 29
100 N. Ochoa, Suite A
El Paso, Texas 79901

**The Hon. Mary Gonzalez**
Texas State Representative, District 75
Room E1. 218, Capitol Extension
P.O. Box 2910
Austin, TX 78768

**The Hon. Naomi Gonzalez**
Texas State Representative, District 76
Room E2. 416, Capitol Extension
P.O. Box 2910
Austin, TX 78768

**The Hon. Marisa Marques**
Texas State Representative, District 77
Room E2. 414, Capital Extension
P.O. Box 2910
Austin, TX 78768

**The Hon. Joe Moody**
Texas State Representative, District 78
Room E1.316 Capital Extension
P.O. Box 2910
Austin, TX 78768

**The Hon. Joe Pickett**
Texas State Representative, District 79
Room 1W.05, Capital Building
P.O. Box 78768
Austin, TX 78768

***New Mexico***

**The Hon. Susana Martinez**
Governor of New Mexico
State Capital, 4th Floor
Santa Fe, NM 87501

**The Hon. Joseph Cervantes**
New Mexico State Senator, District 31
2610 South Espina
Las Cruces, NM 88001

**The Hon. William P. Soules**
New Mexico State Senator, District 37
5054 Silver King
Las Cruces, NM 88011

**The Hon. Mary Kay Papen**
New Mexico State Senator, District 38
904 Conway Ave.
Las Cruces, NM 88005

**The Hon. Craig W. Brandt**
New Mexico State Senator, District 40
7247 Milan Hills Road NE
Rio Rancho, NM 87144

**The Hon. Bill McCamley**
New Mexico State Representative, District 33
PO Box 458
Mesilla Park, NM 88048

**The Hon. Mary Helen Garcia**
New Mexico State Representative, District 34
5271 State Highway 28
Las Cruces NM 88005

**The Hon. Yvette Herrell**
New Mexico State Representative, District 51
P.O. Box 4338
Alamogordo, NM 88310

**The Hon. Doreen Y. Gallegos**
New Mexico State Representative, District 52
3011 Broadmoor
Las Cruces, NM 88001

**The Hon. Nathan “Nate” Cote**
New Mexico State Representative, District 53
PO Box 537
Organ, NM 88052

***Texas State Agencies***

**Lorinda Gardner**
Regional Director
Texas Commission of Environmental Quality
401 E. Franklin Ave Ste 560
El Paso, TX 79901-1206

**Mark A. Marek, P.E.**
Interim Director, Environmental Affairs Division
Texas Department of Transportation
125 East 11th Street
Austin, TX 78701-2483

**Jerry Patterson**
Commissioner
Texas General Land Office
1700 N. Congress Ave, Ste 840
Austin, TX 78701-1495

**Carter Smith**
Executive Director
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744

**Mark Wolfe**
Executive Director
Texas Historical Commission
P.O. Box 12276
Austin, TX 78711-2276

***New Mexico State Agencies***

**Ray Aaltonen**
Chief
New Mexico Department of Game and Fish, SW Area
2715 Northrise Drive
Las Cruces, NM 88011

**Jan V. Biella, RPA**
Interim State Historic Preservation Officer
State of New Mexico Office of Cultural Affairs
Historic Preservation Division
Bataan Memorial Building
407 Galisteo Street, Suite 236
Santa Fe, NM 87501

**Tony Delfin**
State Forester
New Mexico Energy, Minerals & Natural Resources
Forestry Division
1220 S. St. Francis Dr.
Santa Fe, New Mexico 87505

**Michael Kesler**
Acting District Manager
New Mexico Environment Department
Las Cruces District Office
1170 North Solano Drive, Suite M
Las Cruces, NM 88001

**James Lane**
Director
New Mexico Department of Game and Fish
P.O Box 25112
Santa Fe, NM 87504

**Leon Redman**
Chief
New Mexico Department of Game and Fish, SE Area
1912 West 2nd Street
Roswell, NM 88201

**Mark L. Watson**
Conservation Services Division
New Mexico Department of Game and Fish
P.O. Box 25112
Santa Fe, NM 87504

**LOCAL OFFICIALS AND AGENCIES**

***City of El Paso***

**The Hon. Oscar Leeser**
Mayor
City of El Paso
300 N. Campbell
El Paso, Texas 79901

**Joyce A. Wilson**
City Manager
City of El Paso
300 N. Campbell
El Paso, Texas 79901

**Ann Morgan Lilly**
El Paso City Representative, District 1
300 N. Campbell
El Paso, Texas 79901

**Larry Romero**
El Paso City Representative, District 2
300 N. Cambell
El Paso, Texas 79901

**Emma Acosta**
El Paso City Representative, District 3
300 N. Campbell
El Paso, Texas 79901

**Carl. L. Robinson**
El Paso City Representative, District 4
300 N. Campbell
El Paso, Texas 79901

**Dr. Michiel Noe**
El Paso City Representative, District 5
300 N. Campbell
El Paso, Texas 79901

**Eddie Holguin Jr.**
El Paso City Representative, District 6
300 N. Campbell
El Paso, Texas 79901

**Lily Limòn**
El Paso City Representative, District 7
300 N. Campbell
El Paso, Texas 79901

**Cortney Niland**
El Paso City Representative, District 8
300 N. Campbell
El Paso, Texas 79901

**Providencia Velazquez**
Historic Preservation Officer,
Planning and Development Office
300 N. Campbell
El Paso, Texas 79901

***El Paso County***

**The Hon. Veronica Escobar**
County Judge, County of El Paso, TX
500 E. San Antonio, Suite 301
El Paso, Texas 79901

**Carlos Leon**
Commissioner, Precinct 1, El Paso County
500 E. San Antonio, Suite 301
El Paso, Texas 79901

**Sergio Lewis**
Commissioner, Precinct 2, El Paso County
500 E. San Antonio, Suite 301
El Paso, Texas 79901

**Vincent Perez**
Commissioner, Precinct 3, El Paso County
500 E. San Antonio, Suite 301
El Paso, Texas 79901

**Patrick Abeln**
Commissioner, Precinct 4, El Paso County
500 E. San Antonio, Suite 301
El Paso, Texas 79901

***City of Las Cruces***

**The Hon. Ken Miyagishima**
Mayor
Las Cruces, New Mexico
P.O. Box 20000
Las Cruces, NM 88001

**Robert Garza**
City Manager
Las Cruces, New Mexico
P.O. Box 20000
Las Cruces, NM 88001

**Nathan P. Small**
Councilor, City of Las Cruces, District 4
P.O. Box 20000
Las Cruces, NM 88001

***Doña Ana County***

**Julia Brown**
County Manager
Doña Ana County
845 N Motel Blvd
Las Cruces, NM 88007

**Billy G. Garrett**
Commissioner District 1, Doña Ana County
845 N Motel Blvd
Las Cruces, NM 88007

**Dr. David J. Garcia**
Commissioner District 2, Doña Ana County
845 N Motel Blvd
Las Cruces, NM 88007

**Benjamin L. Rawson**
Commissioner District 3, Doña Ana County
845 N Motel Blvd
Las Cruces, NM 88007

**Wayne D. Hancock**
Commissioner District 4, Doña Ana County
845 N Motel Blvd
Las Cruces, NM 88007

***City of Alamogordo***

**The Hon. Susie Galea,** Mayor
City of Alamogordo
252 Burnage Ln
Alamogordo, NM 88310

***Otero County***

**Pamela Heltner,** County Manager
Otero County
1101 New York Ave., Rm. 106
Alamogordo, NM 88310

**Tommie Herrell**
Commissioner, District #1
1101 New York Ave., Rm. 101
Alamogordo, NM 88310

**NATIVE AMERICAN TRIBES**

**COMANCHE NATION**
Jimmy Arterberry
Tribal Historic Preservation Officer
Comanche Nation
6 SW D Avenue, Suite A
Lawton, OK 73507

**Fort Sill Apache**
Jeff Houser, Tribal Chairman
43187 US Highway 281
RR2, Box 121
Apache, OK 73006-9644

**Kiowa Tribe of Oklahoma**
Jame Lyn Eskew
Kiowa Culture Preservation Authority
Kiowa Tribe of Oklahoma
P.O. Box 885
Carnegie, OK 73015

**Mescalero Apache Tribe**
Holly Houghten
Tribal Historic Preservation Officer
P.O. Box 227
Mescalero, NM 88340

**Ysleta Del Sur Pueblo**
Javier Loera, War Captain
Ysleta Del Sur Pueblo Council
P.O. Box 17579
El Paso, TX 79917-7579

**NON-GOVERNMENTAL AGENCIES**

**Bill Addington**
Sierra Club, El Paso Group Representative
P.O. Box 9191
El Paso, TX 79925

**John E. Balliew**
El Paso Water Utilities
1154 Hawkins Boulevard
P.O. Box 511
El Paso, Texas 79961-0001

**Roger Chacon**
El Paso Electric Company
Environmental Regulatory Specialist
100 N. Stanton
El Paso, Texas 79901

**Janae Reneaud Field**
Executive Director
Frontera Land Alliance
3800 N. Mesa, Suite A2-258
El Paso, Texas 79902

**Jane Fowler**
El Paso/Trans-Pecos Audubon Society
P.O. Box 972441
El Paso, TX 79997

**Jorge Garcia**
Director
Las Cruces Utilities
P.O. Box 20000
Las Cruces, NM 88004

**Adam Green**
Senior Development Manager
SolarReserve
2425 Olympic Boulevard, Suite 500E
Santa Monica, CA 90404

**Annette Gutierrez**
Executive Director
Rio Grande Council of Governments
1100 North Stanton, Suite 610
El Paso, Texas 79902

**Tom McCarthy**
Wheelabrator Technologies, Inc.
Business Development
4 Liberty Lane West
Hampton, NH 03842

**Otero County Grazing Board**
Stephanie Hale, Recording Secretary
1101 New York Avenue, Room 201
Alamogordo, NM 88310

**Eric Reisenauer**
Lockheed Martin MS2
1801 State Route 17C
Owego, NY 13827

**John Robbins**
Director, North American Sales
AREVA Solar Inc.
303 Ravendale Drive
Mountain View, CA 94043

**Sierra Club, Southern New Mexico Group Representative**
P.O. Box 735
Mesilla, NM 88046

**Mario Solano**
Vice President
Triple “S” Enterprises, Inc.
4196 Flager Street
El Paso, Texas 79938

**James A. Titmas, P.E.**
GeneSyst International, Inc.
1737 Georgetown Road, Suite J
Hudson, OH 44236

**Michael Titmas**
Texas Ethanol, LLC
P.O. Box 670873
Dallas, TX 75367

**PRIVATE CITIZENS**
**[Note: Specific mailing addresses not included for privacy reasons.]**

**Judy Ackerman**
El Paso, TX

**Jay Carruth**
El Paso, TX

**Bill Connor**
Las Cruces, NM

**Marvin H. Gomez**
El Paso, TX

**J.A. Groff, LWV, CDWR**
El Paso, TX

**Jimmy and Francis Gross**
Weed, NM

**Larry Kehoe**
Santa Fe, NM

**Bebo Lee**
Alamogordo, NM

**Innis Lewis**
Alamogordo, NM

**Dory Schuster**
Alamogordo, NM

**Hanson Scott**
Brigadier General USAF (ret.)
Santa Fe, NM

**Hildy Reiser**
Alamogordo, NM

**LIBRARIES**
**El Paso Main Library**
501 N. Oregon St.
El Paso, TX 79901
**Irving Schwartz Branch Library**
1865 Dean Martin Dr.
El Paso, TX 79936

**Richard Burges Branch Library**
9600 Dyer
El Paso, TX 79924

**UTEP Library**
500 West University
El Paso, TX 79968

**Alamogordo Public Library**
920 Oregon Ave.
Alamogordo, NM 88310

**NMSU Zuhl Library**
2999 McFie Circle
Las Cruces, NM 88003

**Thomas Branigan Memorial Library**
200 E. Picacho Ave
Las Cruces, NM 88001

# 9.0 ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AAF | Army Airfield |
| ACHP | Advisory Council on Historic Preservation |
| ACM | asbestos containing material |
| ADNL | day-night average sound level for A-weighted noise |
| AGL | above ground level |
| AFB | Air Force Base |
| amsl | above mean sea level |
| AOB | Advanced Operations Base |
| APC | air pollution control |
| APCD | air pollution control devices |
| APLIC | Avian Power Line Interaction Committee |
| AQCR | Air Quality Control Region |
| Army | U.S. Department of the Army |
| AST | aboveground storage tanks |
| Balfour Beatty | Balfour Beatty Communities |
| BCT | Brigade Combat Team |
| BLM | U.S. Bureau of Land Management |
| BMP | best management practice |
| BRAC | Base Realignment and Closure |
| Btu | British thermal unit |
| °C | degrees Celsius |
| CAA | Clean Air Act |
| CEQ | Council on Environmental Quality |
| CERCLA | Comprehensive, Environmental Response, Compensation, and Liability Act |
| CFH | cubic feet per hour |

| | |
|---|---|
| CFR | Code of Federal Regulations |
| CFU | colony-forming unit |
| CO | carbon monoxide |
| $CO_2$ | carbon dioxide |
| $CO_2e$ | carbon dioxide equivalent |
| CRM | Cultural Resource Manager |
| CSP | concentrating solar power |
| CST | concentrating solar thermal |
| CWA | Clean Water Act |
| | |
| dB | decibel |
| dBA | A-weighted decibel |
| dBC | C-weighted decibel |
| DNL | day-night average sound level |
| DoD | Department of Defense |
| DOT | Department of Transportation |
| DPW | Directorate of Public Works |
| DPW-E | Directorate of Public Works-Environment Division |
| | |
| EA | environmental assessment |
| EIFS | Economic Impact Forecast System |
| EIS | environmental impact statement |
| EISA | Energy Independence and Security Act of 2007 |
| EPEC | El Paso Electric Company |
| EPWU | El Paso Water Utilities |
| | |
| °F | degrees Fahrenheit |
| FAA | Federal Aviation Administration |
| FBTC | Fort Bliss Training Center |

| | |
|---|---|
| FLAG | Federal Land Manager's Air Working Group |
| FPPA | Farmland Protection Policy Act of 1981 |
| FTX | field training exercise |
| FY | fiscal year |
| | |
| G | gallons |
| GHG | greenhouse gas |
| GIS | Geographic Information System |
| | |
| $H_2SO_4$ | sulfuric acid |
| HAP | hazardous air pollutant |
| HVAC | heating, ventilation, and air conditioning |
| | |
| IBCT | Infantry Brigade Combat Team |
| ICRMP | Integrated Cultural Resources Management Plan |
| IHWMP | Installation Hazardous Waste Management Plan |
| INRMP | Integrated Natural Resources Management Plan |
| IPM | integrated pest management |
| IPMP | Integrated Pest Management Plan |
| IRP | Installation Restoration Program |
| ISD | Independent School Districts |
| | |
| kcf | thousand cubic feet |
| kgal | thousand gallons |
| kW | kilowatt |
| kWh | kilowatt hours |
| | |
| LBP | lead-based paint |
| Leq | equivalent noise level |

| | |
|---|---|
| Lmax | maximum A-weighted sound level |
| LUPZ | Land Use Planning Zone |
| | |
| mg/l | milligrams per liter |
| ml | milliliter |
| MMBtu | million British thermal units |
| mph | miles per hour |
| MSAT | Mobile Source Air Toxic |
| MSW | municipal solid waste |
| MW | megawatt |
| MWh | megawatt-hour |
| | |
| NAAQS | National Ambient Air Quality Standards |
| NAGPRA | Native American Graves Protection and Repatriation Act |
| NEPA | National Environmental Policy Act of 1969 |
| NHPA | National Historic Preservation Act of 1966 |
| $NO_2$ | nitrogen dioxide |
| NOA | Notice of Availability |
| NOI | Notice of Intent |
| NOx | nitrogen oxide |
| NRHP | National Register of Historic Places |
| NTA | North Training Areas |
| NTU | nephelometric turbidity unit |
| | |
| $O_3$ | ozone |
| ODUSD | Office of Deputy Under Secretary of Defense |
| ORC | Organic Rankine Cycle |
| OSHA | Occupational Health and Safety Administration |

| | |
|---|---|
| P2 | Pollution Prevention |
| PA | Programmatic Agreement |
| Pb | lead |
| PCB | polychlorinated biphenyls |
| $PM_{2.5}$ | fine particulate matter, less than or equal to 2.5 microns in diameter |
| $PM_{10}$ | coarse particulate matter, less than or equal to 10 microns in diameter |
| POLs | petroleum, oils, and lubricants |
| ppb | parts per billion |
| ppm | parts per million |
| PSD | Prevention of Significant Deterioration |
| PV | photovoltaic |
| | |
| QDR | Quadrennial Defense Review |
| | |
| R- | Restricted |
| RCNM | Roadway Construction Noise Model |
| RCRA | Resource Conservation and Recovery Act |
| ROD | Record of Decision |
| ROI | region of influence |
| RTV | rational threshold value |
| | |
| SHPO | State Historic Preservation Officer |
| $SO_2$ | sulfur dioxide |
| SOP | Standard Operating Procedure |
| SOx | sulfur oxides |
| STA | Southern Training Areas |
| STG | steam turbine generator |
| SUA | special use airspace |
| SWPPP | Stormwater Pollution Prevention Plan |

| | |
|---|---|
| TAC | Texas Administrative Code |
| TCEQ | Texas Commission on Environmental Quality |
| TCP | traditional cultural property |
| TSDF | Treatment Storage Disposal Facility |
| | |
| U.S. | United States |
| USACE | U.S. Army Corps of Engineers |
| USAEC | U.S. Army Environmental Command |
| USC | United States Code |
| USDOT | U.S. Department of Transportation |
| USEPA | U.S. Environmental Protection Agency |
| USFWS | U.S. Fish and Wildlife Service |
| U.S. ICE | U.S. Immigration and Customs Enforcement |
| UST | underground storage tank |
| UXO | unexploded ordnance |
| | |
| VEC | valued environmental component |
| VOC | volatile organic compound |
| | |
| WBAMC | William Beaumont Army Medical Center |
| WTE | waste-to-energy |
| WWTP | wastewater treatment plant |

# 10.0 GLOSSARY

**Air defense.** All defensive measures designed to destroy attacking enemy aircraft or missiles in the earth's envelope of atmosphere, or to nullify or reduce the effectiveness of such attack.

**Airspace management.** The coordination, integration, and regulation of the use of airspace of defined dimensions.

**Alluvial fan.** A pattern of sediment deposit caused by running water. Fan- or cone-shaped mass of sediment deposited at a point along a stream at which there is a sharp decrease in gradient, such as between a mountain front and a plane. Two or more adjacent alluvial fans that are growing or have grown together are **coalescing alluvial fans**.

**Alluvium.** Any stream-laid sediment deposit.

**Ambient.** Surrounding or background conditions in the absence of an identifiable source.

**Ambient air.** That portion of the atmosphere, outside of buildings, to which the general public has access.

**Aquifer.** A body of rock that contains enough saturated permeable material to transmit groundwater and to yield significant quantities of groundwater to wells and springs.

**Archaeological and Historic Preservation Act.** Law that declares all federal agencies managing construction programs are responsible for any damages to scientific, prehistoric, and historic resources and are authorized to fund recovery, protection, and preservation of significant archaeological data and materials (enacted 1974).

**Archaeological Resource Protection Act (ARPA).** Law that strengthens preservation and protection laws through civil and criminal felony-level penalties for the destruction of resources and sites (enacted 1979).

**Aridisol.** A soil, formed under conditions of low moisture, that has been in place long enough to have developed distinct layers.

**Asbestos.** Any of several minerals (e.g., chrysotile) that readily separate into long flexible fibers suitable for use as a noncombustible, non-conducting, or chemically-resistant material. Asbestos has been used in the construction of floor tile, wall panels, brake pads in vehicles, ceiling tile, pipe material, and as insulating material around pipes and buildings. Inhalation of asbestos fibers can cause lung cancer.

**Attainment area.** A region that meets the NAAQS for a criteria pollutant under the Clean Air Act (CAA).

**Attenuation of sound.** Any noise level is diminished with distance from the source in a mathematically predictable manner. Under normal conditions, distance alone reduces the noise level by 6 decibels (dB) for each doubling of the distance from the source. For example, a noise source that produces an 80 dB noise level at a distance of 50 meters would produce 74 dB at 100 meters. Absorption of sound energy by the atmosphere reduces noise levels even further.

**Average annual daily traffic (AADT).** For a 1-year period, the total volume passing a point or segment of a highway facility in both directions divided by the number of days in the year.

**Baseline.** The initial environmental conditions against which the environmental consequences of various alternatives are evaluated.

**Basin.** A drainage or catchment area of a stream or lake.

**Biodiversity.** Different life forms or species within a defined area.

**Bolson.** An intermontane basin extending from the divide of one block-faulted mountain to the divide of the adjacent mountain, generally with no external drainage, but may be transected by regional streams.

**Candidate species.** Species for which the U.S. Fish and Wildlife Service (USFWS) has on file sufficient information on biological vulnerability and threat(s) to support the issuance of a proposed rule to list, but issuance of the proposed rule is precluded.

**Cantonment.** Housing quarters for personnel.

**Capacity (traffic).** The maximum rate of flow at which vehicles can be reasonably expected to traverse a point or uniform segment of a lane or roadway during a specified time period under prevailing roadway, traffic, and control conditions.

**Census block.** Cluster of blocks within the same census tract. Census blocks do not cross county or census tract boundaries and generally contain between 250 and 550 housing units.

**Concentrating Solar Power.** Solar panels using mirrors or lenses to concentrate a large area of sunlight, onto a small area and converting the sunlight into heat and ultimately electricity.

**Concentrating Solar Thermal.** Solar panels using mirrors or lenses to concentrate sunlight, into thermal energy.

**Confined aquifer.** An aquifer sealed above and below by impermeable material resulting in the water in the aquifer being under hydraulic pressure—also known as an artesian aquifer.

**Controlled access field training exercise (FTX) sites.** FTX sites where military access is subject to increased control and restricted to activities with limited ground-disturbing effects. Examples include training involving wheeled vehicle movement off-road limited to entering and exiting the site, no site improvements, no clearing of vegetation on the site, and no digging on the site.

**Coppice dunes.** Coppice dunes are sand dunes characterized by a thicket of woody vegetation.

**Criteria pollutants.** The CAA required the USEPA to set air quality standards for common and widespread pollutants after preparing criteria documents summarizing scientific knowledge on their health effects.

**Cultural.** The system of behavior, beliefs, institutions, and objects human beings use to relate to each other and to the environment.

**Cultural resources surveys.** The archaeological exploration of areas to collect data on observed cultural materials. These surveys are conducted under various field techniques.

**Cumulative impact.** Cumulative impact is the environmental impact resulting from the incremental impact from a particular activity when added to other past, present, or future activities. Cumulative impacts may be individually insignificant, but collectively, the individually insignificant activities may become significant.

**Decibel, A-weighted (dBA).** Adjusted unit of sound measurement that corresponds to the relative sensitivity of the human ear at specified frequency levels. This represents the loudness as perceived by humans.

**Decibel (dB).** A standard unit of measuring sound-pressure levels based on a reference sound pressure of 0.0002 dynes per square centimeter. This is the smallest sound a human can hear.

**Direct impact.** Effects resulting solely from the Proposed Action.

**Diversity.** A measure of the richness of species in a community relative to the number of individuals of each species.

**Effluent.** A gas or fluid discharge into the environment.

**Endangered Species Act.** An act of the U.S. Congress of 1972; 16 USC §§1531–1543. The Act requires federal agencies to ensure that their actions do not jeopardize the existence of endangered or threatened species.

**Endangered species.** A plant or animal species that is threatened with extinction or serious depletion in its range and is formally listed as such by the USFWS.

**Entisol.** A young soil with little or no development of distinct layers located in areas where the soil is either actively eroded (by wind or water) or receiving new deposits of soil maters (as occurs with alluvial fans, floodplains or windblown sand dunes).

**Environmental impact statement (EIS).** A detailed written statement that helps public officials make decisions that are based on understanding of environmental consequences and to take actions that protect, restore, and enhance the environment.

**Equivalent noise level ($L_{eq}$).** A single number representing the fluctuating sound level in decibels over a specified period of time; the average of a fluctuating level of sound energy.

**Erosion.** The set of all processes by which soil and rock are loosened and moved downhill or downwind.

**Escarpment.** A long, usually continuous cliff or steep slope facing in one general direction, separating two level or gently sloping surfaces, and produced by erosion or faulting.

**Explosive ordnance.** All munitions containing explosives, nuclear fission, or fusion materials and biological and chemical agents. This includes bombs and warheads; guided and ballistic missiles; artillery, mortar, rocket, and small arms ammunition; all mines, torpedoes, and depth charges; pyrotechnics; clusters and dispensers; cartridge-and propellant-actuated devices; electro-explosive devices; clandestine and improvised explosive devices; and all similar or related items or components explosive in nature.

**Field training areas.** Areas with appropriate terrain characteristics used for assembly, training, communication, command, and control exercises, that are designed to maintain combat readiness for military deployment and air defense operations.

**Fill.** A sediment deposited so as to fill or partly fill a valley or other low place.

**Floodplain.** The relatively flat land lying adjacent to a river channel that is covered by water when the river overflows.

**Fugitive dust.** Particulate matter composed of soil. Fugitive dust may include emissions from haul roads, wind erosion of exposed soil surfaces, and other activities in which soil is either removed or redistributed.

**Geologic.** Any natural process acting as a dynamic physical force on the earth; i.e., faulting, erosion, and mountain-building resulting in rock formations.

**Greenhouse gas.** A gas in an atmosphere that absorbs and emits radiation

**Groundwater recharge.** Water that infiltrates the land surface and is not lost to evaporation or consumed by plants can percolate downward and replenish the groundwater aquifers. This deep percolation is called recharge.

**Groundwater.** Subsurface water within the zone of saturation.

**Habitat type.** A land area capable of supporting a given plant association at climax. It represents a mature vegetation association and is usually characterized by two indicator species.

**Hazardous material.** Any substance or material in a quantity or form that may be harmful to humans, animals, crops, water systems, or other elements of the environment if accidentally released. Hazardous materials include explosives, gases (compressed, liquefied, or dissolved), flammable and combustible liquids, flammable solids or substances, oxidizing substances, poisonous and infectious substances, radioactive materials, and corrosives.

**Hazardous waste.** Wastes that are designated as hazardous by the USEPA or state regulations. Hazardous waste, defined under RCRA is waste from production or operation activities that poses a potential hazard to human health or the environment when improperly treated, stored, or disposed; hazardous wastes that appear on special USEPA lists or possess at least one of the four following characteristics: ignitability, corrosivity, reactivity, and toxicity.

**Herbicide.** A chemical used to kill or inhibit the growth of plants.

**Historic properties.** Included in or eligible for inclusion in the NRHP.

**Hydrology.** A science dealing with the properties, distribution, and circulation of water on and below the earth's surface and in the atmosphere.

**Impact.** The terms "impacts" and "effects" are synonymous as used in the NEPA. Impacts may be beneficial or adverse, and may apply to the natural, aesthetic, historic, cultural, and socioeconomic resources of the Installation and the surrounding communities. Where applicable, impacts may be classified as direct or indirect.

**Indirect impact.** An indirect impact is caused by a proposed activity but is later in time or farther removed in distance, but still reasonably foreseeable. Indirect impacts may include land use changes or population density changes and the related effects these changes will have on air, water, and other natural or social systems.

**Infiltration.** Water that falls on the land surface that does not run off but percolates into the ground. Some of this water evaporates, some is used by plants, and some percolates downward to the groundwater.

**Infrastructure.** Utilities and other physical support systems needed to operate a laboratory or test facility. Included are electric distribution systems, water supply systems, sewage disposal systems, roads, and so on.

**Long-term impacts.** Long-term impacts are neither temporary nor reversible. They may occur either during the construction or operational phases of an activity. For example, the construction of a new building may create long-term impacts during both the construction and operational phases. Draining of a wetland for the construction of a new building will create long-term and permanent impacts on biological resources. Likewise, once operational, the new building may create additional long-term impacts such as increased population density, waste generation, etc.

**Mitigation.** Mitigation generally includes: avoiding the impact altogether by stopping or modifying the Proposed Action; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; compensating for the impact by replacing or providing substitute resources or environments.

**National Ambient Air Quality Standards (NAAQS).** Section 109 of the CAA requires the USEPA to set nationwide standards for widespread air pollutants. Currently, six pollutants are regulated: $NO_2$, $SO_2$, CO, $PM_{10}$, $O_3$, and Pb.

**National Historic Preservation Act (NHPA).** Law that states that the federal government will cooperate with other governments (including state and local), Indian tribes, and private organizations and individuals to ensure that prehistoric and historic resources are properly preserved for present and future generations (enacted 1966).

**National Register of Historic Places (NRHP).** Document containing those resources deemed to be important in American history, architecture, anthropology, engineering, or culture, and associated with significant past events or persons and/or representing distinctive construction or high artistic value.

**Native American Graves Protection and Repatriation Act (NAGPRA).** Law that states that any remains of American Indians (and associated objects) must be professionally curated and made available to any descendants for a traditional tribal burial (enacted 1990).

**Native American.** A generalized term referring collectively to individuals, tribes, bands, or organizations that trace their ancestry to indigenous populations of North America.

**Nitrogen dioxide ($NO_2$).** Gas formed primarily from atmospheric nitrogen and oxygen when combustion takes place at high temperature. Nitrogen dioxide emissions contribute to acid deposition and formation of atmospheric ozone (see Criteria pollutants).

**Nitrogen oxide ($NO_x$).** Gases formed primarily by fuel combustion, which contribute to the formation of acid rain. Hydrocarbons and nitrogen oxides combine in the presence of sunlight to form $O_3$, a major constituent of smog.

**No impact.** "No impact" implies that a particular activity creates neither a direct nor indirect impact, does not have long- or short-term implications, and is neither beneficial nor adverse.

**Noise.** Any sound that is undesirable because it interferes with speech and hearing or is intense enough to damage hearing.

**Nonattainment area.** An area that has been designated by the USEPA or the appropriate state air quality agency as exceeding one or more national or state AAQS.

**Nonpotable.** Water that is unsafe or unpalatable to drink because it contains pollutants, contaminants, minerals, or infective agents.

**Ordnance.** Explosives, chemicals, pyrotechnic and similar stores; for example, bombs, guns, ammunition, flares, and smoke.

**Ozone $O_3$ (ground level).** A major ingredient in smog. $O_3$ is produced from reactions of hydrocarbons and nitrogen oxides in the presence of sunlight and heat.

**Particulate.** Fine liquid or solid particles such as dust, smoke, mist, fumes, or smog, found in air or emissions.

**Peak hour (traffic).** The hour of highest traffic volume on a given section of roadway.

**Permeability.** The ability of rock, alluvium, or sediment to permit water to flow through it. Technically, it is the volume flow rate of water through a unit cross-sectional area of a porous medium under a unit hydraulic gradient.

**Pesticide.** Chemical used to kill or inhibit growth of undesirable species.

**Playa.** A dry, vegetation free, flat area at the lowest point of an undrained basin.

**Polychlorinated biphenyl (PCB).** A class of toxic, nonflammable, nonvolatile chlorinated oils used in transformers, capacitors, and fluorescent ballasts. PCBs are potential carcinogens and are regulated under the *Toxic Substances Control Act*.

**Recharge.** Percolation of rainwater and snowmelt through the soil unsaturated zone to the groundwater table.

**Record of Decision (ROD).** A public document that explains which alternative will be selected.

**Riparian.** Of or pertaining to the banks of a body of water.

**Scoping.** Process in the beginning stages of an EIS during which the public and federal and state agencies may voice concerns they wish the study to address.

**Short-term impacts.** Short-term impacts are temporary and either direct or indirect. Short-term impacts usually occur during the construction phase of the activity.

**Significance.** Significance requires consideration of the context and intensity of the impact or effect, under consideration. Significance can vary in relation to the context of the Proposed Action. At Fort Bliss, the significance of the Proposed Action may include consideration of the effects on a national, regional, and local basis. Both short- and long-term effects may be relevant. Impacts may also be evaluated in terms of their intensity or severity.

**Sound.** (1) A physical disturbance in a medium (e.g., air) that is capable of being detected by the human ear. (2) The hearing sensation excited by a physical disturbance in a medium.

**Stakeholders.** Interested and/or affected people or groups.

**Subsurface.** A zone below the surface of the earth whose geologic features are principally layers of rock that have been tilted or faulted and are interpreted on the basis of drill hole records and geophysical (seismic or rock vibration) evidence. Generally, it is all rock and solid materials lying beneath the earth's surface.

**Succession.** The process of gradual replacement of one community or ecosystem by another, involving a series of changes in the plant and animal life.

**Surveillance.** A systematic observation of airspace or surface areas by visual, aural, electronic, photographic, or other means.

**Tertiary.** A geologic time period extending from 65 million years ago to 2 million years ago.

**Threatened species.** A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

**Traditional cultural properties (TCP).** Properties, regions, or locales that are eligible for inclusion in the National Register because of association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community.

**Training complex.** Firing ranges and weapons training facilities designated for firing ammunition and explosives, heavy rockets, and guided missiles for training and target practice, and nonlive-fire sites for maneuver exercises and operations.

**Trip generation.** A determination of the quantity of trip ends associated with a parcel of land.

**Underground storage tank (UST).** Typically used to contain gasoline or other petroleum fuels; buried beneath the ground surface.

**Unemployment rate.** The number of civilians, as a percentage of the total civilian labor force, without jobs but actively seeking employment.

**Unexploded explosive ordnance (UXO).** Explosive ordnance that has been primed, fused, armed, or otherwise prepared for action and that has been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material, and remains unexploded either by malfunction or design or for any other cause.

**Waste-to-energy.** A facility that uses solid waste materials (processed or raw) that is incinerated to produce steam in order to generate electricity.

**Wastewater treatment plant.** A facility that receives waste waters (and sometimes runoff) from domestic and/or industrial sources, and by a combination of physical, chemical, and biological processes reduces (treats) the waste water to less harmful byproducts.

**Wetlands.** An area that is regularly saturated by surface water or groundwater and subsequently supports vegetation that is adopted for life in saturated soil conditions.

**Woodland.** Plant community characterized by a generally open growth of small trees.

This page intentionally left blank.

# 11.0 INDEX

## A



## B

## C



## D



## E

## *F*



## *G*



## *H*

## I



## L



## M



## N



## O

## P



## R



## S



## T



## U



## V

## W

# Appendix A: Notice of Intent

This page intentionally left blank.

6548 Federal Register / Vol. 77, No. 26 / Wednesday, February 8, 2012 / Notices

reexamination proceeding has been granted. Acceleration will proceed from that point forward. All submissions in the accelerated matter should be filed electronically, except in accelerated examinations where submissions must be filed electronically. Conducting more than one examiner interview during prosecution should be avoided. Responses to all Office actions should be submitted within one month of receiving the Office action. Petitions should be avoided as much as possible. Failure to meet these conditions may result in longer processing times by the USPTO than the goals given above, but the matter will continue to receive accelerated processing as described herein to the extent possible.

In all instances, certificate redemption is subject to available USPTO resources at the Director's discretion. If accelerating the matter would negatively impact other applicants, the USPTO may decline to redeem the certificate at that time.

Dated: February 6, 2012.

**David J. Kappos,**

*Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office.*

[FR Doc. 2012–3040 Filed 2–7–12; 8:45 am]

BILLING CODE 3510–16–P

## DEPARTMENT OF DEFENSE

### Department of the Army

### Notice of Availability of Ballistic Survivability, Lethality and Vulnerability Analyses

**AGENCY:** Department of the Army, DoD.

**ACTION:** Notice of availability.

**SUMMARY:** The US Army Research Laboratory's (ARL's), Survivability, Lethality Analysis Directorate (SLAD) is a leader in ballistic survivability, lethality and vulnerability (SLV) analyses. ARL/SLAD conducts SLV analyses, using the MUVES–S2 vulnerability model, to quantify system, subsystem and/or component level vulnerabilities of ground and air vehicles. These analyses are used to support production, design, trade and evaluation decisions. These capabilities are being made available to qualified interested parties. Collaborations will be governed by Cooperative Research and Development Agreements (15 U.S.C. 3710) and fee-based testing services will be governed by Test Service Agreements (10 U.S.C. 2539b).

**FOR FURTHER INFORMATION CONTACT:** Michael D. Rausa, telephone (410) 278–5028. For further technical information, please contact Denise Jordan, (410) 278–6322, *denise.a.jordan10.civ@mail.mil.*

**SUPPLEMENTARY INFORMATION:** None.

**Brenda S. Bowen,**

*Army* **Federal Register** *Liaison Officer.*

[FR Doc. 2012–2845 Filed 2–7–12; 8:45 am]

BILLING CODE 3710–08–P

## DEPARTMENT OF DEFENSE

### Department of the Army

### Environmental Impact Statement for the Implementation of Energy, Water, and Solid Waste Sustainability Initiatives at Fort Bliss, TX

**AGENCY:** Department of the Army, DoD.

**ACTION:** Notice of intent.

**SUMMARY:** The Department of the Army advises interested parties of its intent to conduct public scoping under the National Environmental Policy Act to gather information to prepare an Environmental Impact Statement (EIS) that will evaluate the environmental impacts associated with the implementation of the Energy, Water, and Solid Waste Initiatives at Fort Bliss. These initiatives will work to enhance the energy and water security of Fort Bliss, Texas, which is operationally necessary, financially prudent and essential to the installation's mission. Elements of the implementation of the initiative would occur in Texas and New Mexico. By implementing these initiatives at Fort Bliss, the installation can help ensure that it has access to energy from renewable sources and ample water supplies now and into the future.

The decision maker at Fort Bliss will use the analysis in the EIS to determine which alternative(s) to implement. Actions to be evaluated in the EIS include: (1) The aggressive implementation of waste reduction, and energy and water conservation policies and practices; (2) the construction of a new pipeline to transport reclaimed water for best uses on Fort Bliss; (3) the construction of a Waste-to-Energy plant with adjacent landfill in the Southern Training Area of Fort Bliss, or on land to be exchanged with the Texas General Land Office; (4) the development and construction of dry-cooled concentrating solar thermal arrays in Fort Bliss Southern Training Area; (5) the development of geothermal resources on Fort Bliss in New Mexico for power generation and heating; (6) the development of existing wind energy resources on the eastern central and northern portions of Fort Bliss in New Mexico; and (7) the development of up to 20 MW of natural gas powered turbines as a complementary source of back-up power to renewable energy facilities to provide for Fort Bliss energy security. The EIS will also analyze a long-term program that considers the implementation of energy technologies on previously disturbed land, existing infrastructure, or other Army owned lands that would be compatible with Army mission and sustainability criteria. Alternatives include implementation of a combination of these projects and the no action alternative that will allow for a comparison of each of the possible actions to existing baseline environmental conditions. Other reasonable alternatives that are raised during the scoping process and capable of meeting the project purpose and need and criteria will be considered and included for evaluation in the EIS.

Environmental impacts associated with the implementation of the proposed action at Fort Bliss could include significant impacts to airspace, biological resources and migratory birds, soils and vegetation, noise impacts, increased traffic impacts, cultural resources, air quality, and surface and ground water.

**ADDRESSES:** Written comments should be forwarded to Dr. John Kipp, Fort Bliss Directorate of Public Works, Attention: IMBL–PWE (Kipp), Building 624 Pleasonton Road, Fort Bliss, Texas 79916; email: *john.m.kipp6.civ@mail.mil;* fax: (915) 568–3548.

**FOR FURTHER INFORMATION CONTACT:** Please contact Ms. Jean Offutt, Fort Bliss Public Affairs Office, ATTN: IMBL–PA (Offutt), Building 15 Slater Road, Fort Bliss, Texas 79916; phone: (915) 568–4505; email: *thelma.g.offutt.civ@mail.mil.*

**SUPPLEMENTARY INFORMATION:** The decisions to be made by the installation and cooperating agencies will be to determine whether and how best to implement energy, water, and solid waste technologies at Fort Bliss in both Texas and New Mexico. The EIS would assess the direct, indirect, and cumulative environmental impacts associated with various proposed alternatives. Alternatives evaluated in the EIS include different sitings and technologies that will be evaluated.

*Cooperating Agencies:* Some of the proposed projects considered in the alternatives being evaluated could occur on Bureau of Land Management (BLM) military-withdrawn lands in New Mexico. The BLM Las Cruces District Office and the US Air Force Holloman

Federal Register / Vol. 77, No. 26 / Wednesday, February 8, 2012 / Notices 6549

Air Force Base will be invited as cooperating agencies for this proposal.

*Scoping And Public Comments:* Native Americans, federal, state, and local agencies, organizations, and the public are invited to be involved in the scoping process for the preparation of this EIS by participating in scoping meetings and/or submitting written comments. Written comments will be accepted within 30 days of publication of the NOI in the **Federal Register**. The scoping process will help identify possible alternatives, potential environmental impacts, and key issues of concern to be analyzed in the EIS. Scoping meetings will be held in El Paso, Texas, and Alamogordo and Las Cruces, New Mexico. Notification of the times and locations for the scoping meetings will be locally announced and published.

**Brenda S. Bowen,**

*Army Federal Register Liaison Officer.*

[FR Doc. 2012–2844 Filed 2–7–12; 8:45 am]

BILLING CODE 3710–08–P

## DEPARTMENT OF DEFENSE

### Defense Acquisition Regulations System

### Acquisition of Items for Which Federal Prison Industries Has a Significant Market Share

**AGENCY:** Department of Defense (DoD).

**ACTION:** Notice.

**SUMMARY:** DoD is issuing this notification to set forth an up-to-date list of product categories for which the Federal Prison Industries' share of the DoD market is greater than five percent.

**DATES:** *Effective Date:* February 8, 2012.

**FOR FURTHER INFORMATION CONTACT:** Director, Defense and Acquisition Policy, Attn: Susan Pollack, 3060 Defense Pentagon, Washington, DC 20301–3060; telephone (703) 697–8336.

**SUPPLEMENTARY INFORMATION:**

**I. Background**

Section 827 of the National Defense Authorization Act of Fiscal Year 2008, Public Law 110–181, amended DoD's competition requirements for acquisition of products from Federal Prison Industries (FPI). On November 19, 2009, a final rule was published at 74 FR 59914, which amended the Defense Federal Acquisition Regulation Supplement (DFARS) at subpart 208.6 to implement section 827.

Among other things, section 827 required DoD to publish a list of product categories for which FPI's share of the DoD market was greater than five percent, based on the most recent fiscal year data available. Section 827 also provides for modification of the published list if DoD subsequently determines that new data require adding or omitting a product category from the list.

This notification provides a modified list of FPI product categories exceeding five percent of the DoD market, based on Fiscal Year 2011 data obtained from the Federal Procurement Data System. An identical list is also found in the Director, Defense Procurement and Acquisition Policy (DPAP) memorandum dated January 12, 2012. (The DPAP memorandum with the updated list of product categories for which FPI has a significant market share is posted at: *http://www.acq.osd.mil/dpap/policy/policyvault/USA007288-11-DPAP.pdf.)*

Accordingly, the updated product categories for which FPI's share of the DOD market is greater than five percent are:

- 3625 (Textile Industries Machinery);
- 3990 (Miscellaneous Materials Handling Equipment);
- 6020 (Fiber Optic Cable Assemblies and Harnesses);
- 7110 (Office Furniture);
- 7230 (Draperies, Awnings, and Shades);
- 8420 (Underwear and Nightwear, Men's); and
- 8465 (Individual Equipment).

Product categories on the updated list, and the products within each identified product category, must be procured using competitive or fair opportunity procedures in accordance with DFARS 208.602–70(c)(1). FPI must be included in the solicitation process and will be considered in accordance with the policy set forth in 8.602(a)(4)(ii) through (v) of the Federal Acquisition Regulation.

**Mary Overstreet,**

*Editor, Defense Acquisition Regulations System.*

[FR Doc. 2012–2846 Filed 2–7–12; 8:45 am]

BILLING CODE 5001–06–P

## DEPARTMENT OF ENERGY

[OE Docket No. PP–334]

### Notice of Availability for Public Comment of Interconnection Facilities Studies Prepared for the Proposed Energia Sierra Juarez Transmission Project

**AGENCY:** Office of Electricity Delivery and Energy Reliability, DOE.

**ACTION:** Notice of availability for public comment of Interconnection Facilities Studies.

**SUMMARY:** Sempra Generation applied to the Department of Energy (DOE), on behalf of Energia Sierra Juarez U.S. Transmission, LLC, for a Presidential permit to construct, operate, maintain, and connect an electric transmission line across the U.S. border with Mexico, currently referred to as the Energia Sierra Juarez Transmission Project (ESJ Project). The ESJ Project would connect a wind energy project to be built in the vicinity of La Rumorosa, Baja California, Mexico, to San Diego Gas and Electric Company's (SDG&E) existing Southwest Powerlink (SWPL) 500-kV transmission line. DOE hereby announces the availability for public comment of the Interconnection Studies prepared for the ESJ Project.

**DATES:** Comments must be submitted on or before March 9, 2012.

**ADDRESSES:** Comments should be addressed to: Dr. Jerry Pell, Office of Electricity Delivery and Energy Reliability, OE–20, U.S. Department of Energy, 1000 Independence Avenue SW., Washington, DC 20585–0001. Because of delays in handling conventional mail, it is recommended that documents be transmitted by overnight mail, by electronic mail to *Jerry.Pell@hq.doe.gov* (preferred), or by facsimile to (202) 318–7761.

**FOR FURTHER INFORMATION CONTACT:** Dr. Jerry Pell (Program Office) at (202) 586–3362, or by email to *Jerry.Pell@hq.doe.gov*, or contact Brian Mills at 2(02) 586–8267, or by email to *Brian.Mills@hq.doe.gov*.

**SUPPLEMENTARY INFORMATION:** The construction, operation, maintenance, and connection of facilities at the international border of the United States for the transmission of electric energy between the United States and a foreign country is prohibited in the absence of a Presidential permit issued pursuant to Executive Order (EO) 10485, as amended by EO 12038.

On December 20, 2007, Sempra Generation, on behalf of Energia Sierra Juarez U.S. Transmission, LLC, filed an application with the Office of Electricity Delivery and Energy Reliability of DOE for a Presidential permit. That application was originally noticed in the **Federal Register** for public comment on February 22, 2008 (73 FR 9782). The proposed transmission line project would connect up to 1,250 megawatts of electric power produced from wind turbines to be located in the vicinity of La Rumorosa, Baja California, Mexico, to SDG&E's existing Southwest

# Appendix B: Responses to Public Comments on Draft EIS

This page intentionally left blank.

# Responses to Public Comments on Draft EIS

In accordance with the National Environmental Policy Act (NEPA), the United States (U.S.) Department of the Army (Army) published a Notice of Availability (NOA) for the release of the draft environmental impact statement (Draft EIS) in the *Federal Register* on 17 May 2013, announcing the commencement of a 45-day comment period to allow the public and agencies the opportunity to comment on the Proposed Action and potential environmental issues identified in the Draft EIS. This 45-day period concluded on 1 July 2013. In consideration of public comments received during the comment period, Fort Bliss extended the public comment period an additional month, ending 31 July 2013. As a result of this extension, the public comment period spanned a total of 76 days. A second NOA announcing the extension of the public comment period was published in the *Federal Register* on 5 July 2013.

During the comment period, Fort Bliss held three Draft EIS public meetings. These meeting were advertised on 5, 7, and 9 June 2013 in the *El Paso Times, El Diario de El Paso, Las Cruces Sun-News*, and *Alamogordo Daily News*. The meeting notice was also posted on the Fort Bliss public affairs website (https://www.bliss.army.mil/PAO/releases.html) and the Fort Bliss project website (https://www.ftblissnetzeroeis.net). Similarly, the notification announcing the extension of the comment period was advertised on 2 July 2013 in the *El Paso Times* and *El Diario de El Paso;* and 3 July 2013 in the *Las Cruces Sun-News, Alamogordo Daily News*, the Fort Bliss public affairs website, and the Fort Bliss project website.

A total of 77 comments were received from members of the public during the public comment period. Forty-seven of the comments were received via email, in addition to 13 oral comments and 17 written comments received at the Mountain View High School and Alamogordo, New Mexico, public meetings. A total of six comments were received from federal, state, and local agencies. The vast majority of the comments received were in opposition to Alternative 4A in the Draft EIS regarding a proposed waste-to-energy (WTE) plant in the southern margins of the South Training Areas. Following are all comments received and the Army's responses to each comment.

This page intentionally left blank.

| ID: 1 | Date: 6/2713 | Name: Edgar Rubio | Method: Email |
|---|---|---|---|
| **Comment** | | | **Response** |
| I am a resident in the Far East community and I strongly feel against the construction of this trash burning plant for reasons of fearing for my health and the extreme amounts of water that will be wasted in the use of this plant. Please think of all the families that will be affected and our environment! I say NO to this trash burning plant. | | | Thank you for your comment on this proposed project.<br><br>The Army has removed Alternative 4A, a proposed Waste-to-Energy (WTE) plant near the southern boundary of Fort Bliss north of Montana Avenue, from the Final EIS as a result of public and agency comments received during the Draft EIS comment period. A decision has also been made to remove Alternative 4B, an alternate site proposed adjacent to Railroad Drive. These alternatives are not being carried forward for consideration in the Final EIS. Alternative 4 will instead focus on a programmatic analysis of several technically feasible WTE technologies. Possible project areas within Fort Bliss and scale of operations of such a plant will not be analyzed. If Alternative 4 is selected in the Record of Decision, further NEPA analysis would be required before a WTE plant could be constructed. |
| **ID:** 2 | **Date:** 6/19/13 | **Name:** Andrew Aviles | **Method:** Email |
| **Comment** | | | **Response** |
| I strongly oppose the proposed power plant currently being considered at Ft. Bliss. The winds in this area blow in a north easterly direction and would put all exhaust emissions from this proposed power plant directly in our neighborhood. I realize these emissions are regulated by the federal and state agencies, but I think you will agree that we cannot always depend on the bureaucratic red tape of federal and state agencies to protect us and our families. For example look at the recent fertilizer explosion a couple months ago in east Texas that killed many people and entire families.<br><br>With the Ft. Bliss property covering thousands upon thousands of acres I believe there are other locations that would be better situated for this type of project? I strongly encourage you to take a drive in the Haciendas Del Norte and other affected subdivisions in order to see how the proposed power plant will affect the quality of life in our neighborhood. | | | Refer to Comment #1 response. |
| **ID:** 3 | **Date:** 6/19/13 | **Name:** Marie Martinez-Pantoja | **Method:** Email |
| **Comment** | | | **Response** |
| A simple question, “if you lived in our area and were being presented with such a pollutant proposal, would you want your family living next to it?” | | | Refer to Comment #1 response. |

| ID: 4 | Date: 6/20/13 | Name: Adrian Castillo | Method: Email |
|---|---|---|---|
| **Comment** | | | **Response** |
| I am writing to you to express my opposition to the proposed waste to energy plant in Montana Vista. In other words you are proposing to have an incinerator. Yes, one that will produce electricity and meanwhile it will release many pollutants. The pollution will start at the moment that the proposed 160 trucks per day start delivering the trash to the site. The trucks will contaminant our region because diesel run trucks release significant amounts of pollutants and the significant amount of trucks will create noise and other hazards.<br><br>Our homes are extremely near the site and these trucks will be coming to our neighborhood 24/7, 365 days of the year and our families will be traveling the same roads because unfortunately we have very few roads in other words we do not have the infrastructure. I am concerned that my family members will be traveling the same roads and may suffer an accident with one of these trucks. Mr. Kipp we are fighting the proposed power plant from El Paso Electric and no Ft. Bliss wants to come to our area. It is clear that this is social and environmental injustice. If your plans are so great why don't you build this plant near your military homes or buildings, the area in which the trash will be mostly generated? Do not come to our neighborhood. | | | Refer to Comment #1 response. |
| **ID:** 5 | **Date:** 6/20/13 | **Name:** Kaye Mullins | **Method:** Email |
| **Comment** | | | **Response** |
| Could I please have a copy of the study? | | | Email sent 6/21/13 in reply: Good morning Ms. Mullins,<br><br>The Draft EIS can be found on the project website http://www.ftblissnetzeroeis.net or on the Fort Bliss environmental webpage https://www.bliss.army.mil/DPW/Environmental/EIS Documents2.html<br>If you would like a CD instead, please provide your mailing address and I will have one mailed to you.<br><br>Thank you for your interest in the project and please let me know how I can be of further help |
| **ID:** 6 | **Date:** 6/21/13 | **Name:** Dory Schuster | **Method:** Email |
| **Comment** | | | **Response** |
| We remain unable to access the draft EIS for the Implementation of Energy, Water, and Solid Waste Sustainability Initiatives. Ft. Bliss Staff at the EIS draft meeting last week in Alamogordo, NM were informed of this problem. It is not a new problem and this has occurred previously with other EIS documents and the problem also includes inability to access the Ft. Bliss website that should be available to the public. As has been stated, the public can't comment on what they can't access. One of the sites on this new EIS includes 2 downloads and the link to the EIS, why isn't that link working even after this has | | | Email reply through PAO June 25, 2013: We have a call in with the Fort Bliss webmaster about the problem with the public-access website https://www.bliss.army.mil/ Ms. Schuster mentions. I will let you know what the webmaster says about this. The Net Zero project also has a website |

| | |
|---|---|
| been called to the attention of many there at Ft. Bliss? There have also been problems in the past when trying to email your PA Office with mail being returned as undeliverable since the addresses provided on some sites aren't working addresses. Even some listed in the Federal Register have not been good. The ones for Jean of your office have never been deliverable in the past. This problem was brought to the attention of your office some time back. These problems should not be occurring on these Ft. Bliss, TX sites.<br><br>Also, the contractors on this project and Ft. Bliss staff, at that meeting, were informed of the problems accessing the site and EIS, and there were also no copies of this EIS at the meeting neither in CD form or hard copy. Why weren't copies of this EIS available at that meeting? I requested a copy and was told it would be sent quickly out the next day by Fed Ex, but over a week later, I still haven't received any documents on this EIS, when we checked for that package.<br><br>With all this in mind, I am requesting that this EIS comment period be extended since it has been our experience and that of others here, that this document has not been available online so the public can become informed and comment on the document, and it is a lengthy document too large to review in a public library setting. Furthermore, little publicity on this project has been provided and once again, the EIS information was located in the legal notice of only several newspapers. This is news that should have been on the front page or pages of the local newspaper not the legal notices that can barely be read. We only became aware of this the day of the meeting when and there are only days left before the July 1, 2013 deadline for comments and we still can't access nor have a copy of this document. If the Army really wants public input, as they have stated they do, then they need to do what is necessary to properly involve the citizens.<br><br>Elected officials and the delegation will be contacted about these problems as well.<br><br>Please also include me in the distribution list for receiving notice and documents related to environmental studies related to Army projects from your installation, and any public notices that you send out on these projects that involve the public. | http://www.ftblissnetzeroeis.net for the public to submit comments.<br><br>The contractor has been made aware that copies should have been available at the meetings and this will be done for any and all future public meetings. The Draft EIS hardcopy and CD were sent out by UPS to Ms. Schuster on Friday June 14 but were returned undeliverable. Ms. Schuster's address, as provided, is a P.O. box and UPS does not deliver to P.O. boxes. The contractor was told about this and is sending the materials out today via next-day mail.<br><br>The request for extending the 45-day comment period is under discussion but a decision has not been made.<br><br>Subsequent Action: The Draft EIS public comment period was extended 30 days from 1 July to 31 July to allow for additional public comments.<br><br>Section 1.9 of the Final EIS documents the public involvement activities that have occurred as part of the NEPA process for this initiative.<br><br>The commentator’s name (as with all commentators) has been added to the Final EIS distribution list. |
| **ID:** 7 **Date:** 6/22/13 **Name:** Donna Collins | **Method:** Email |
| **Comment** | **Response** |
| Why must you build a trash burning plant in my neighborhood when you have plenty of land on Fort Bliss to place such a plant away from populated areas? Would you want the smell and pollution of trash burning within 2 miles of your home? | Refer to Comment #1 response. |
| **ID:** 8 **Date:** 6/24/13 **Name:** Oscar Luevanos | **Method:** Email |
| **Comment** | **Response** |
| I do not wish to have this plant 3 miles from my home. Why so close to people when the base has so much land area? If it is because of gas lines in the area, why not connect to gas lines farther away from population areas? Why not bury the trash in the fort bliss desert? Why burn trash? I do not want to breathe the particulates or the waste gases that burning produces. If the base produces so much trash why | Refer to Comment #1 response. |

| | |
|---|---|
| not scale operations down? The citizenry bought land and homes out here to have clean healthy living and you will ruin the air quality. | |
| **ID:** 9 **Date:** 6/25/13 **Name:** Rafael Garces | **Method:** Email |
| **Comment** | **Response** |
| I am very disappointed that Ft. Bliss is trying to build the incinerator a few blocks from my house. I am a disabled vet with sinus problems from the Persian Gulf War and I don't know what kind of sickness that the incinerator and the collection of trash close to my house will do to my health and my family's health. I will appreciate if they can find another place further down the desert to build that incinerator, where it won't hurt people and it won't be a sore eye for people to look at when they come far east Montana. This is a formal complaint. Thank you. | Refer to Comment #1 response. |
| **ID:** 10 **Date:** 6/26/13 **Name:** Ailed Castillo | **Method:** Email |
| **Comment** | **Response** |
| I don't like that Fort Bliss wants to build the waste-to-energy power plant. Why do you want to do this to us? It is very rude because you could cause us bad things, like we could get really sick. Please care about adults and the children. We are not going to be healthy because of your power plant. | Refer to Comment #1 response. |
| **ID:** 11 **Date:** 6/26/13 **Name:** Thomas Gold | **Method:** Email |
| **Comment** | **Response** |
| This would be an unfortunate event for the East El Paso community. It seems that logic would play an important role of the peoples that govern our community, to protect them from the forms of pollution that will be a fact if said projects are built. So let it be known that the decisions of the El Paso Electric Co. and the U.S. Military are not made by our fellow home town neighbors, but by someone who the consequences would not affect at all. We angrily protest and reject these proposals.<br><br>Both projects should be built where the prevailing wind would not carry these pollutants into existing and or proposed developments. | Refer to Comment #1 response. |
| **ID:** 12 **Date:** 6/26/13 **Name:** Delia Labrado | **Method:** Email |
| **Comment** | **Response** |
| I am writing this comment against the Net Zero proposed waste-to-energy power plant in my neighborhood. Your proposal is both social and environmental injustice.<br><br>Research demonstrates that brain development is hindered by contaminants. Eric Jensen (2006) mentioned that children who live in areas contaminated are at risk of their brains not to develop as well compared to those who live in non-polluted environments. EPA also released a statement in July 2012 warning against pollutants claiming lung/pulmonary and respiratory problems to worsen.<br><br>Fort Bliss has plenty of land away from people and homes. The citizens in Far East El Paso are being abused and offended by social injustice by your proposal and by El Paso Electric Company.<br><br>With all that said, I ask you to please reconsider and go through with your project of waste-to-energy any way near the fence lines. Please take it where the contamination would not be immediate directly to | Refer to Comment #1 response. |

| | | | |
|---|---|---|---|
| humans and animals. | | | |
| **ID:** 13 | **Date:** 6/26/13 | **Name:** Edward Martinez | **Method:** Email |
| **Comment** | | | **Response** |
| I do not welcome this form of pollution forming factory in my community. Put it in the middle of an open area where there are no houses around i.e. vacant land. | | | Refer to Comment #1 response. |
| **ID:** 14 | **Date:** 6/26/13 | **Name:** Ernestina Rivera | **Method:** Email |
| **Comment** | | | **Response** |
| I would like to take this time to express my concern over the proposed 'Trash Burning Site' planned for the Far East part of El Paso, Texas. Please take this email as opposition to this project.<br><br>I am a born and raised El Pasoan and do want my, our, city to grow. I a mall for improving and becoming a self-efficient city. However, not at the expense of the health of the citizens of El Paso, Texas. If you take a real look at the El Paso layout, you will note that Fort Bliss owns a big portion of the city. I am sure you can find another area that is not close to homes, where there is a high risk of affecting those citizens.<br><br>I would like to ask you to ask yourself: "would I support such a project should my family live in one of the homes that is nearby?"<br><br>Thank you for your support in this matter. | | | Refer to Comment #1 response. |
| **ID:** 15 | **Date:** 7/31/13 | **Name:** Risher Gilbert | **Method:** Email and Letter |
| **Comment** | | | **Response** |
| Our firm represents CSM Realty Holdings II, Ltd., (CSM) the owner of three parcels of land that will be adversely impacted by the proposed Alternative 4A site as it is described in the above referenced Draft EIS. CSM believes that Alternative 4A will have a substantial adverse impact on its property and on the environment. My client does not believe these adverse impacts are mitigable to the extent required by the National Environmental Policy Act (NEPA) for the reasons set forth below. These written comments and objections are in addition to those made on behalf of my client at the public meeting in Alamogordo on June 13, 2013. My client reserves the right to clarify and expand its comments as further facts are developed and understood about Alternative 4 specifically including Alternatives 4A and 4B.<br><br>Alternative 4 is the Waste-to-Energy Plant (WTE Plant). Alternative 4A is the alternative that places the Plant in the South Training Areas (STA) with the proposed project footprint shown in yellow on page 2-16 of the EIS. Per the EIS, this project site could use up to 94.2 acres (3-35). CSM's objections to Alternative 4A include the following:<br><br>Cumulative Impacts. The CEQ's NEPA regulations require federal agencies to address cumulative impacts related to their proposals. This includes the incremental impact of the action when added to past, present and a reasonably foreseeable future action, even if a nonfederal person or agency undertakes the action (EIS 4-1). The geographic area near Alternative 4A includes a 148 acre Magellan Pipeline | | | Refer to Comment #1 response. |

| | |
|---|---|
| terminal that fronts on Montana Avenue and presently contains approximately 22 large capacity tanks holding flammable fuels. The area immediately to the north of this tank farm and immediately to the south of the Alternative 4A project area is an almost 264 acre parcel acquired by EI Paso Electric Company for a large electrical power generating plant with turbines, a substation facility and support operations (the EPE Plant). The EPE Plant is expected to generate power for 80,000 homes. During the summer peak demand it will produce up to 176 MW. Added to the 45MW of the WTE Plant, this would be a production of 221 MW of power produced in the immediate vicinity. The EPE Plant will require five 115 KV transmission circuits in possibly 3 transmission corridors of between 50 and 75 feet in width for long distances to and from these facilities. The average height of the transmission structures will be approximately 88 feet (over 8 stories) above ground and the average span of each pole is 450 feet. The EPE Plant will have air emissions and the attendant cooling towers will also have emissions. The immediate EPE project is for two units but EPE has permit authorization for four units (EPE Montana Power Station Overview dated 12-8-12). The cumulative impact of adding a large WTE Plant in the same vicinity as these existing and future heavy industrial uses will have an adverse impact on the environment and a disproportionate impact on the health, safety and welfare of the residents and other landowners in the area.<br><br>Environmental Justice. Executive Order 12898 directs agencies to address environmental and human health conditions in minority and low-income communities so as to avoid the disproportionate placement of any adverse effects from federal actions on these populations. The cumulative adverse effect from Alternative 4A on the environmental and human health conditions in the minority and low-income community adjacent to 4A is disproportionate to other higher income and more educated areas of El Paso. The location of Alternative 4A is adjacent to zip code 79938. Per the U.S. Census Bureau 2007-2011 American Community Survey 5-year Estimates (ACS), over 77% speak Spanish at home and more than 30% do not speak English very well. Twenty one percent of the households in this 79938 zip code are making less than $25,000, which is below the poverty level of$27,570 for a family of 5. 10.7% of households in 79938 are making less than $15,000, which is below the poverty level of $19,530 for a family of 3. Per the ACS 16% have less than a 9th grade education and 27.3% of the residents in 79938 do not have a high school diploma. Less than 13% have a bachelor's degree. Ten percent make less than $14,999 annually.<br><br>It appears from the EIS map of Alternative 4A that the entire four mile easterly boundary of Alternative 4A is adjacent to the Haciendas del Norte and Homestead Meadows residential developments which fall within the smaller census tract 103.39. Census tract 103.39 is located on three sides of Alternative 4A so it is the most impacted by this Alternative. The 2007-2011 103.39 census tract information shows that 60.6% of the households are headed by women, a significantly higher percentage than in the adjacent tracts. The unemployment rate for this tract is higher than in the adjacent tracts. Over 12% of the families in tract 103.39 have income and benefits less than $10,000, which is significantly higher than the percentages of the surrounding census tracts. Although requiring further study, it appears that the educational level for Tract 103.39 is also lower than the adjacent tracts. | |

| | |
|---|---|
| As to the impact of Alternative 4A on disadvantaged children, the EIS notes that a daycare is located less than 2 miles east of the proposed truck route entrance to the WTE Plant and El Dorado High School is approximately 1 mile south of Montana Avenue where Justice Road meets Montana. Hershel Antwine Elementary school is about 3 miles from Montana Avenue where WTE trucks are to move from Montana Avenue onto Fort Bliss. The EIS acknowledges that some adverse impacts to children in the neighborhoods to the south and east of Alternative 4A would occur, to include odor and dust during construction and operation. (3-133).<br><br>Although the Net Zero goal is well intentioned and environmentally commendable from a conceptual standpoint, this end goal does not justify an action alternative that disproportionately impacts an area that is lower in income, has fewer English speakers and has less education than other alternative areas. Net Zero does not justify all of the direct and indirect cumulative adverse consequences to the surrounding environment and the residents of the area that will result from Alternative 4A. It violates the spirit and intent of NEPA as well as the environmental justice directive of EO 12898 to require this geographic area to absorb all of the impacts of the treatment of the waste of a large federal military installation and operation. This is especially true in light of the million other acres of Fort Bliss within which to locate the plant.<br><br>Waste and Hazardous Waste. Alternative 4A should not be the chosen alternative because the nature of the use and operations of the WTE Plant will adversely impact the surrounding uses and the nearby residents. Approximately 1,100 tons of municipal solid waste (MSW) will be delivered to the plant *each day* by between 67 to 100 truck deliveries. These large quantities of waste materials will be stockpiled on the site until they are treated. Another 30 trucks per day are estimated to be needed to transport ash along Flagger and other roadways from the WTE Plant to the Clint landfill for disposal. The area will be adversely impacted by the storage and treatment of this volume of waste as well as by the transportation of this volume of waste and ash. There will also be a large WTE Plant exhaust stack. The waste stored at this site will not be typical municipal waste. Per the EIS, the hazardous materials from Ft. Bliss that will be taken to this plant include flammable and combustible liquids, acids, corrosives, caustics, glycols, compressed gases, aerosols, batteries, hydraulic fluids, solvents, paints, cleaning agents, pesticides and herbicides, petroleum, oils, lubricants, fire retardants, photographic chemicals, alcohols, sealants and ordnance. (3-77)<br><br>Air Quality and Emissions Impact. Alternative 4A will have an adverse impact on air quality in the area, thus adversely affecting the residents, land owners and workers in the area. Residences are downwind of the prevailing westerly winds in the area. Per the EIS, the direct impacts to air quality of this alternative will be significant. (EIS 3-14). It is believed that these impacts either will not or cannot be mitigated to the extent that they will become less than significant. There will be emissions from the combustion of the waste, emissions from support equipment, emissions for the large volume of truck deliveries, and emissions from the staff commuting to the site. The EIS notes that mass-burn incineration is the most commonly used process for these plants. Thus Alternative 4 is described based on mass-burn incineration | |

| | |
|---|---|
| meaning that the process will produce off-gases. The primary pollutants of concern as to air quality include carbon monoxide, sulfur dioxide, nitrogen dioxide, ozone, certain particulate matter and lead. (3-9) Table 3-6 lists 17 pollutants from the plant operations, five of which will exceed the threshold using the spray dryer/fabric filter, including sulfur dioxide and nitrogen dioxide. Nitrogen oxides are expected to exceed the threshold by a factor of almost seven (3-16). Table 3-7 lists 18 anticipated pollutants, six of which are anticipated to exceed applicable thresholds, some by a large percentage (3-17).<br><br>Cumulatively, the increased emissions in the region of influence (ROI), including the WTE Plant, can be expected to contribute to increasing haze in public open space areas including the Hueco Tank State Park and the Guadalupe National Park (4-10). Both are to the east of the site and downwind of what are believed to be prevailing westerly winds. The residential developments along Flagger Street, to include the Haciendas del Norte and Homestead Meadows developments will be impacted by the reduction of air quality, noise and odors emanating from both the storage and the treatment of the high volume of solid waste. All of these will have an adverse impact on the residents and land owners in the area which cannot be adequately mitigated.<br><br>Water Usage. Water usage that is justified in a water rich region is not justified in a desert region where water is the most precious and critical environmental resource. El Paso is in a historical drought of record placing heavy demands on already scarce water resources. The Elephant Butte reservoir from which El Paso receives its allocation of surface water is at only 4.8% of capacity as of June 27, 2013. The estimated water usage of the WTE Plant is between 17 and 19 million gallons of water annually. This is a range of approximately 1.4 to 1.6 million gallons of water used each month, or approximately 47,000 to 52,800 gallons a day. Usage of this amount of water to treat solid waste is excessive and a waste of the area's most precious environmental resource. This is true even if non-potable water is used for the WTE Plant. As justification for the Proposed Action the EIS states that the Army faces significant threats that can affect access to water resources needed to carry out its national defense mission. (Exec Summary page iv) The Army has already greatly benefited from the largest inland desalination plant in the world being located within its reservation and off of Montana Avenue not far from Alternative 4A. Alternative 4A does not appear to increase water security and instead appears to deplete the area's water resources. Water conservation and reclamation can be achieved without Alternative 4A.<br><br>Traffic and Land Use. Per the EIS approximately 6 miles of access roads and 13 or 14 miles of transmission lines to the WTE Plant are also proposed to be constructed (3-95), so the impact to the area goes far beyond the project boundaries and the Plant itself. Approximately 1,100 tons of municipal solid waste (MSW) will be delivered to the plant *each day* by between 67 to 100 truck deliveries. The impact of such substantial daily large vehicle use with quantities of heavy waste materials will be a significant adverse impact on the current infrastructure of the area. Another 30 trucks per day are estimated to travel back and forth to the plant in order to transport ash along Flagger Street and other roadways from the plant to the Clint landfill for disposal. Flagger Street is a poorly paved two lane road without curbing or stripping for a shoulder. Frankie Lane bordering the southerly boundary of the project area is not even | |

| | |
|---|---|
| improved as a roadway, does not appear to be a dedicated County Road, and is merely an uneven and narrow dirt road. In addition, during the two year estimated construction period, some 715 workers (1,430 daily vehicle trips) will be traveling back and forth to the project site (3-162).<br><br>After the site is constructed, some 100 workers will travel to the site each day. All of the truck and car trips will be cumulative of the new truck and car trips related to the future EI Paso Electric plant site. The current infrastructure is woefully inadequate for this project and the traffic and pollution generated by the project will be a danger to the health safety and welfare of the area.<br><br>Cultural Resources. There are 181 identified archaeological sites in the project area of Alternative 4A. (3-60). Even if 72 of these are discounted as suggested in the EIS, this leaves 109 sites. Nine prehistoric sites are eligible for inclusion in the NRHP, and could be adversely impacted by construction activities depending on the location of the plant.<br><br>Need to Re-evaluate Alternative 4 and Re-Locate Alternative 4A. The ends do not justify the means. A waste to energy plant at Alternative 4A is not the environmentally prudent choice under the circumstances. If a waste to energy plant is selected as the preferred alternative, Alternative 4B is greatly preferable to 4A. At the public meeting in Alamogordo, it was mentioned by a consultant that Alternative 4B is located close to two existing landfills used by Fort Bliss. Railroad Drive is a major four lane divided highway for much of its distance. Railroad Drive provides much more of a buffer between any residential uses along it than the narrow and largely unimproved Flagger Street. There is also an elevation difference between the Alternative 4B site and the closest residential uses. Uses to the east of Railroad Drive are consistently heavy industrial uses including industrial plants, numerous manufacturing uses, processing, industrial warehousing, and a large water reclamation plant. Also it is anticipated that the prevailing wind currents in this area will not have the same potential impact on the residents of the Railroad Drive area. It is our understanding that this Railroad Drive location will not require the acquisition or trade of land by Fort Bliss in order to use it, and is preferable to Alternative 4A for numerous other reasons. In the worst case scenario that Alternative 4A is chosen by the Army, any WTE Plant should be located much further into the interior of the ST A, and a significant radius distance from populated areas or private property. The Fort Bliss Army installation consists of 1.12 million acres, an area larger than the state of Rhode Island. There is more than sufficient area for a location for the WTE Plant further away from Flagger Street and privately owned property, residences and schools without a significant adverse impact to national security or military operations. | |
| **ID:** 16 **Date:** 6/29/13 **Name:** Arlene Briggs | **Method:** Email |
| **Comment** | **Response** |
| We feel that our community is being threatened by 2 pending projects; the EP Power Plant and the military waste treatment facility. You have already heard the communities' pleas as they relate to noise/light/air pollution, water usage, increased traffic and I hope (and pray) that they haven't fallen on deaf ears. | Refer to Comment #1 response. |

| | | | |
|---|---|---|---|
| I want to present my pleas once again and say on a very personal level that although I know it isn't personal, it feels like betrayal from our country's finest, our military, the institution we committed our careers to…now impacting our retirement years in a very negative way.<br><br>Please build the waste treatment facility in an area that does not have an existing established community. Then if people want to build their homes there, it is a choice. This is not a choice for us; if it is built here, it will be an imposition of a powerful institution against the will of the occupants of the community that is serves and supports. PLEASE don't! | | | |
| **ID:** 17 | **Date:** 6/29/13 | **Name:** Mary Lyons | **Method:** Email |
| **Comment** | | | **Response** |
| I am against the burning plant out here in the Haciendas Del Norte and Montana Vista area. Reason being, I moved out here because I wanted the fresh and clean air of the desert, away from city pollution. | | | Refer to Comment #1 response. |
| **ID:** 18 | **Date:** 6/29/13 | **Name:** Elizabeth Nieves | **Method:** Email |
| **Comment** | | | **Response** |
| I think there are enough empty places far from communities where they can build this Trash Burning Plant. This can bring health issues and devaluation of our homes. | | | Refer to Comment #1 response. |
| **ID:** 19 | **Date:** 6/30/13 | **Name:** David Teague | **Method:** Email |
| **Comment** | | | **Response** |
| As a resident of Haciendas Del Norte I would like to express my opposition to the proposed construction of a trash burning power plant in our neighborhood. I feel that this plant would have a definite detrimental effect on our peaceful and serene neighborhood. I am concerned about the noise, the air pollution and the smell of such an installation and the health effects it would have on inhabitants of our area. There is also the concern of property values being lowered due to the proximity of this power plant. Lots of residents have sunk their life savings into their homes in this area and will undoubtedly take a serious financial hit on the value of their homes if such a power plant is built. In actuality, who would want a home near a trash burning plant? With the entire wide open and uninhabited desert in El Paso County, why build a trash burning plant in such close proximity to single family homes? Surely a more suitable location can be found that will not affect so many people and their families and homes. | | | Refer to Comment #1 response. |
| **ID:** 20 | **Date:** 6/30/13 | **Name:** Alfredo Garcia | **Method:** Email |
| **Comment** | | | **Response** |
| I live within a half mile of your proposed power plant. We feel this is not the way to pay our community back by putting the plant in our front yard. | | | Refer to Comment #1 response. |
| **ID:** 21 | **Date:** 6/30/13 | **Name:** Ana Garcia | **Method:** Email |
| **Comment** | | | **Response** |
| I live half a mile from your proposed power plant. The thought of having a power plant in our front yard is quite distressing, not to mention the fact that we already have the Longhorn Pipeline fuel storage in that location. As you know, El Paso Electric Co is also planning to build a power plant in the same area, which is why Ft. Bliss wants to build their plant. It seems to me that Far East El Paso is not given the same consideration as the rest of the county, our community & residents are simply a step child that get | | | Refer to Comment #1 response. |

<table>
<tr><td colspan="3">dumped whatever industrial facilities business deems necessary.<br><br>Far East El Paso is very diverse with many of its residents being among the poorest in our county, your proposed plant would be in the direct vicinity of these colonias. While my family and neighbors will be adversely affected by these plants, it does not compare to the devastating consequences that the power plant will have on the children and families of the poorest in our area.<br><br>We love and support Ft. Bliss and out soldiers but believe the decision to build yet another power plant in our area was not made with the thousands of residents in mind. Would you want your children and wife to live within a half mile of these plants?</td><td></td></tr>
<tr><td>ID: 22</td><td>Date: 6/30/13</td><td>Name: John Briggs</td><td>Method: Email</td></tr>
<tr><td colspan="3">Comment</td><td>Response</td></tr>
<tr><td colspan="3">Why are you trying to trash one of the fastest growing areas of the city of El Paso by building a dump in our community? This plan makes no sense at all. It would make more sense to build your plant on White Sands Missile Range at the location of the old Laser facility by Oro Grande. The power lines are in place and you have lots of open spaces for the plant. Holloman and White Sands Missile Range will have access and so will the cities of El Paso, Alamogordo and Las Cruces. Building this plant next to a fuel tank storage facility makes about as much sense as storing nuclear weapons with the fuses attached. WE HAVE NO FIRE DEPARTMENT IN PLACE TO RESPOND TO ANY EMERGENCIES THAT MAY ARISE AT YOUR FACILITY. I REPEAT, THE ONLY FIRE DEPARTMENT IN THE AREA IS A VOLUNTEER FACILITY AND RESPONSE TIMES ACCORDING TO THEM ARE ABOUT AN HOUR AT BEST. Fort Bliss, White Sands Missile Range and Holloman AFB are already major targets for terrorists. Proximity to the border and active drug cartels who deal in illegal drugs from the Middle East increases this threat. A fuel tank farm 500 feet from an Electric power plant that's next to a hazardous waste dump that's part of a military installation? If anything goes wrong, intentional or accidental, it would take out the power grid for this entire area... that's White Sand Missile Range, Ft. Bliss, Holloman, Alamogordo, Las Cruces and El Paso. I'm asking that you rethink this and put safety, our community and surrounding areas first. One major screw up at any one of these three facilities and the disaster at West, Texas will look like a garden party in comparison. Think about it because I live right next to this potential and I do every day.</td><td>Refer to Comment #1 response.</td></tr>
<tr><td>ID: 23</td><td>Date: 6/30/13</td><td>Name: Monica Garcia</td><td>Method: Email</td></tr>
<tr><td colspan="3">Comment</td><td>Response</td></tr>
<tr><td colspan="3">I am not aware of any location in the United States of America, where three potentially fatal, and dangerous power plants exist neighboring not only each other but a large community.<br><br>What kind of toxic waste will you (and El Paso Electric Co.) be introducing to our community? When the Longhorn Pipeline fuel storage tanks were introduced to this area, we were told that if there was some sort of horrible accident and they were to explode, (which never seemed to frighten my family until the horrible West TX disaster) the paint on our house would boil. That is one threat to my life, the life of my family, and neighbors, and now we will have to multiply that by three.</td><td>Refer to Comment #1 response.</td></tr>
</table>

<table>
<tr><td>ID: 24</td><td>Date: 7/1/13</td><td>Name: Sheri Gossett</td><td>Method: Email</td></tr>
<tr><td colspan="3">Comment</td><td>Response</td></tr>
<tr><td colspan="3">I have lived in Homestead Meadows North for 30 years. Like many other residents, we moved here for the peace and quiet, open spaces, and fresh air. Now I'm being faced with not only an electric power plant, but also a landfill and an incinerator within four miles of our home.<br><br>The thought of the wind blowing trash into the desert, the smell, and the flies makes me want to cry. That is from my heart. My mind is concerned with the pollution and the contaminants that will be released into the atmosphere and the hazardous materials that will be disposed of at the site. .<br><br>I am very much concerned for the safety of the people who live in the neighborhoods close to where Fort Bliss proposes to build. I am sure that the Waste to Energy emission projections meets the standards set by TEQ. But does that take into account El Paso's already borderline air quality? Is it a true reflection of the parts per million when it doesn't include the pollution from the future El Paso Electric Power Plant? Does it factor in the pollution already in existence from highway 62/180 traffic and then compound it by the increased traffic from both the electric company's power plant and the military's facilities?<br><br>I understand that Fort Bliss owns over a million acres of land. I understand that the military may have difficulty finding a suitable location for Alternative 4 due to soldier training fields and protected historical sites. I understand that there are laws prohibiting waste from being brought onto federal property because it could contain hazardous materials. Surely there are other areas on the fringes of the military reservation that are not so close to residential neighborhoods that can be utilized for a waste to energy plant. Just like the government is worried about the danger, so are the civilians and the many military families that live in far east El Paso.<br><br>I heard that the Army doesn't want to be in the business of managing landfills and incinerators. That is understandable. I don't want the Army to be either. I want the Army doing what it does best, protecting and fighting for our freedoms. The thought of the maintenance and regulation of such a facility becoming the enormous responsibility of the city is, to say the least, a very scary thought indeed. Officials seem to have enough trouble taking care of business as it is.<br><br>I'm also concerned with the potential risks related to having a fuel tank farm, an electric power plant, a landfill, and an incinerator so close to one another and so close to neighborhoods, businesses, and schools, where the only services are provided by the county and from my personal experience, the county has been overwhelmed for quite some time.<br><br>I read that many green energy projects are not yet cost effective and that "it’s good to see that the US military is leading the way - getting us ready for our future." The future with a waste to energy plant situated where the military suggests is quite frightening indeed. In light of all the pollutant industries moving into our community, I beg of you to consider alternate locations.</td><td>Refer to Comment #1 response.</td></tr>
</table>

| **ID:** 25 | **Date:** 7/1/13 | **Name:** Sheri Gossett | **Method:** Email |
|---|---|---|---|
| **Comment** | | | **Response** |
| I am opposed to the construction of the facility for several reasons.<br>1. Emissions and Environmental Impact<br>2. Truck traffic and congestion<br>3. Safety for the El Pasoans living in the nearby neighborhoods<br>A landfill and an incinerator next to an electric power plant next to a fuel tank farm next to people who have lived here for fifty years? | | | Refer to Comment #1 response. |
| **ID:** 26 | **Date:** 7/7/13 | **Name:** Barney Irving | **Method:** Letter |
| **Comment** | | | **Response** |
| Thank you for the opportunity to comment on the proposal to build an incinerator adjacent to the proposed E1 Paso Electric Co. electrical generation plant.<br><br>As you know the residents of this East E1 Paso County are in strong opposition to the construction of the electrical generation plant and have even taken the issue to Court in Austin TX. I think that it is more than coincidence that the Electric Co. announces its intentions to build and then right after the Army announces its intention to build an incinerator to supply the Electric Co with more energy. If the Army backs away from this proposal then I THINK THAT THE Electric Co. will also have second thoughts about building. To me it is odd that the Army with the power of Genghis Khan would seek out the opinions of the residents and tax payers to get sane kind of buy-in for the project and the Electric Co. which depends on the residents to sell to and try to make a business profit would avoid- seeking public comment and indeed make false assertions that they have sincerely tried to inform the public.<br><br>As has been said there is a fear in the community of environmental damages and degradation and that is not just in parts per million of particulate matter which seems to be the entire reason for environmental studies. How about noise from heavy trucks and flies from the waste and the stench from the garbage. Is that damaging to our environment? I say indeed yes it is. But wait. You say there will be about 400 trucks per day bringing waste and taking out ash. Four hundred trucks per Day! If they work 8 hours a day that will be50 trucks per hour, --big, noisy diesel powered trucks for the purpose of improving our overall environment! Think about 50 trucks per hour going past your front door and down the streets that you and your neighbors drive on every day. Not a very good scene for you and not for us either. Fifty trucks per hour on Flagger street, our access to the city" the airport, shopping and all commerce.<br><br>There are already traffic jams at Flagger and Montana. Putting in a signal light would just stretch out wait times to get from Montana to Flagger and now you propose fifty trucks an hour. And the inevitable will occur. Accidents! Who will win the battle of a crash between a private car and a large trash truck? To say that it won't happen is putting your head in the sand. Another aspect of traffic is the disposing of trash along the highway.<br><br>As it is Montana and Flagger are littered with trash from every kind of vehicle. And please don't tell me | | | Refer to Comment #1 response. |

| | | | |
|---|---|---|---|
| that truck drivers don't throw their beer bottles and coke cans and burger wrappers out of their windows as they drive along as I see it here in El Paso every day.<br><br>Not only will your proposal damage our environment severely but it will damage our property values. People have worked their whole lives to establish a home in the area and now will be faced with having to sellout to move to an area where the quality of life is what it used to be here prior to the incinerator and electric plant. So who will buy their property and at what kind of an environmental discount. Will the Army make up the damages that we suffer on reduced property values? And regarding trash along the highway will the Army send out its soldiers twice a week to pick up the trash that result from your proposal?<br><br>And so I urge you to step up and oppose this this incinerator on behalf of the residents of East El Paso County. If you were to move your home and family out here you would suddenly see the harm that would cane to you, your family as well as the rest of the residents. | | | |
| **ID:** 27 | **Date:** 7/8/13 | **Name:** Edward Martinez | **Method:** Email |
| **Comment** | | | **Response** |
| Will you please notify me if they are building the power plant, as I am considering moving? This is a decisive factor in my family's move. | | | Refer to Comment #1 response. |
| **ID:** 28 | **Date:** 7/30/13 | **Name:** Fred and Carmen Johnson | **Method:** Email |
| **Comment** | | | **Response** |
| Please reconsider this proposal of setting a military refuse receptacle plant near our area of Hacienda Del Norte. If you decide to set your plant here, it will bring in large noisy vehicles to the area and the stench will be unbearable, where our own livelihood will be at stake. You have gone too far by even thinking of destroying our retirement years just because we are outside of the city, when there is so much land that you all occupy where it would be well accepted.<br><br>Please take us into consideration and build this refuse incinerator power plant on the other proposed areas. | | | Refer to Comment #1 response. |
| **ID:** 29 | **Date:** 7/30/13 | **Name:** Sergio Castillo | **Method:** Email |
| **Comment** | | | **Response** |
| I just want to express my concern and disapproval to the Montana trash-burning proposed power plant. I know you have heard many reasons as to why we don't want it there, so I will keep it short: I do not want it in my neighborhood and I want it kept away from the fence lines! | | | Refer to Comment #1 response. |
| **ID:** 30 | **Date:** 7/31/13 | **Name:** Ralph Carrasco | **Method:** Email |
| **Comment** | | | **Response** |
| As much as I appreciate your staff's efforts towards us, I must admit that I abhor the means by which you want to accomplish your initiative. Sacrificing the health of my family (community neighbors included), and the pureness of our desert landscape in order to accomplish your project. Your actions are an insult and an affront that we did not ask for and certainly did not and do not welcome! Even as you witness our bold stand against the proposed power plant, which we are still fighting by the way, you decide to | | | Refer to Comment #1 response. |

| | |
|---|---|
| join the fight against us on the side of our adversary. Wouldn't you call that bullying or kicking somebody while they're down, or better yet, a racial and environmental injustice?<br><br>What you are doing is wrong! We already abide next to 22 large Fuel Tanks that hold Jet Fuel, Diesel, Distillate mix, Ethanol, and various fuel products that are releasing "Benzene" as we speak, EP Electric then decides to join the fight and move in to a community that has repeatedly declared to them that they are unwelcomed and they are blatantly indifferent before us; and now, the very branch of government that is supposed to protect its civilians, is now also joining the fight and further adding to our humiliation!! Excuse me, but you don't need a yearlong "EIS" study to confirm to your boss that our location is already too congested with pollutants. There is no more vacancy for polluters in our backyard.<br><br>I love the area where I live. I can go to my backyard with my kids and fully enjoy activities with them in a clean rural landscape free from 90 ft. chimney's emitting toxic emissions, free from carbon monoxide emissions, free from ash particles floating into our lungs, free from the massive sounds of jet engines and turbines powered on, free from the smell of diesel trucks carrying tons of trash into our backyard, free from the pestilences that may arise from waste, free from the clogging traffic that will plug the only entrance to my residence, free from the heat and electromagnetic radiation flowing in our immediate surroundings, free from the risk of a catastrophe of having an incinerator, a natural gas power plant and fuel tanks going up in an explosion, free from having our beautiful view of the stars at night blocked by the light pollution, free from eye sores of industrial plants, .......must I go on?? You don't need an in depth “EIS" to show you how wrong the location you have chosen is.<br><br>Please have mercy on our community and acknowledge our current situation. We do not deserve to be treated like this. If you boast that your Waste to Energy plant is so eco-friendly and safe, keep it where it belongs, in the midst of your soldiers' communities burning THEIR trash. Let us consider the facts, all of your soldiers' trash wouldn't suffice to create the 80 mega-watts as intended. You would have to collect civilian trash. Isn't that against the Army's policy? Please don't do the dirty work for the City of El Paso if you plan to build then sell or lease the plant to the City. Let the City do what they have to do, but please be open and clear about the intentions that the government has in conjunction with the city of El Paso. I am saying this because to reach your 80 mega-watt goal of production, you definitely need the civilian’s trash.<br><br>I close this e-mail by thanking you once again for the positive efforts your team has shown towards our community but please consider the injustice you are portraying if you go ahead with this location. Is that how you would want to be viewed in the public's eye, bias towards a developing community and indifferent towards their opposition like El Paso Electric? Along with the injustice I also ask you to consider the abundant congestion of pollutants that will concentrate in that specific area if both your plant and the power plant come to realization. | |

| ID: 31 | Date: 7/31/13 | Name: Donna Collins | Method: Email |
|---|---|---|---|
| **Comment** | | | **Response** |
| Please do not place a trash burning plant near the fence. We moved out here to avoid the pollution of the city. My 86 year old mother has asthma and so does my husband and the burning will affect them. | | | Refer to Comment #1 response. |
| **ID:** 32 | **Date:** 7/31/13 | **Name:** David Davilla | **Method:** Email |
| **Comment** | | | **Response** |
| Now the current proposal of the power plant and the NETZERO Plant from FT. Bliss is something I have no say on it. This is extremely frustrating and depolarizing to know that now we have to worry about the quality of the air our family has to breathe every second of our lives here in our dream house due to proposed plants. I am thankful that Ft. Bliss is actually reaching out to hear our opinions and concerns about what FT. Bliss is proposing to do to our living hood. I know this plan "NETZERO" future home is a bad idea to be place on back yard. The quality of air is my main concern to my family and neighbors. Also the extreme hazardous driving issues this will due to our main street to get our residence "Montana". We were told by Ft. Bliss that once the plan is built the traffic will increase to 100 to 150 dumpster trucks. At the current time we have to deal with heavy traffic now I cannot imagine what this dumpster truck will create in the future. I am hopeful that FT. Bliss will do the right thing at the end. I just believe the stress cause by this has already done damage to my family. I am currently dealing with my 20 daughter stress level up the roof. My Wife has been in the hospital due to this stress she feels we need sell the house. My son has severe asthma and any change in the air quality will spike a severe attack to his wellbeing. I can go on and on about what the dumpster will cause our community but it is up to Ft. Bliss to do the right thing. Hope you continue your great work here in El Paso and we enjoy welcome you success. | | | Refer to Comment #1 response. |
| **ID:** 33 | **Date:** 7/31/13 | **Name:** Marisela Delgado | **Method:** Email |
| **Comment** | | | **Response** |
| Keep your burning trash power plant at your site or out of El Paso boundary lines. You might as well kill us with your toxic fumes! Our children deserve a safe environment. We are a new and growing community and you are forcing us to start thinking about selling our home!!!! | | | Refer to Comment #1 response. |
| **ID:** 34 | **Date:** 7/31/13 | **Name:** David Granado | **Method:** Email |
| **Comment** | | | **Response** |
| My comment is reference life itself – the air we breathe on a daily basis is also a necessity to live.<br><br>Many people move outside the city limits in search of having a little cleaner air to breathe – especially for our children and elders.<br><br>The fact that the greater majority of the year the winds within El Paso go east is a true statement. By placing this factory right next to the Haciendas Del Norte community and having the high winds blowing everything that will and might come out of that factory directly into peoples homes which are within walking proximity is not a good thing for anyone.<br><br>We happen to know several families that live in that area just so their kids can be without an inhaler a | | | Refer to Comment #1 response. |

| | |
|---|---|
| little less time than living in the city. Their health is most important – secondly would be their property value to consider. I am not sure what this does to property values but it probably does not make it more marketable. | |
| **ID:** 35 **Date:** 7/31/13 **Name:** Manuela Falcon | **Method:** Email |
| **Comment** | **Response** |
| Buenas noches mi nombre es Manuela Falcon y solo me gustaria expresarles mi inconformidad por el proyecto que planean construir en mi comunidad, no estoy de acuerdo porque hace 24 anos mi familia y yo decidimos venirnos a vivir a esta comunidad, con grandes sacrificios e infinitas iluciones construimos nuestra casa aqui en Vista del Este lugar donde mis hijos crecieron en un ambiente sano , agradable y tranquilo, lejos de la contaminacion y de los ruidos de la ciudad y es donde nosotros mi esposo y yo planeamos vivir nuestra vejez. Y queremos seguir viviendo en el mismo ambiente donde criamos a nuestros hijos .....mi esposo y yo tenemos problemas de salud graves con el aparato respiratorio ( asma y severas alergiad ) y creo firmemente que las plantas que se pretenden construir ( la de la luz y la de la basura) van a tener un impacto negativo en nuestra salud y en nuestra economia puesto que el cuidado medico es a veces inalcanzable, por los altos costos que esto implica. y asi como nosotros hay infinidad de personas en la misma situacion, yo les pido de la manera mas atenta que reconcideren su propuesta y se vayan a otro lugar , lejos de nuestra comunidad ....creo que tenemos el derecho de protestar porque nosotros tenemos una vida hecha en esta comunidad y como cuidadanos de esta gran nacion tenemos tambien el derecho de vivir en lugar libre de los contaminantes que estas plantas despiden y por favor recuerden nosotros estabamos aqui antes no nos vengan a arruinar nuestras vidas y nuestra salud. Nuestra comunidad asi como sus habitantes merecemos un mejor futuro.<br><br><u>Translation:</u><br><br>Good evening my name is Manuela Falcon and I would like to express my disagreement with the project that they plan to build in my community. I disagree because 24 years ago my family and I decided to come to live in this community, with great sacrifice and endless illusions we built our home here at Vista East where my children grew up in a healthy, nice and quiet, away from the pollution and noise of the city and is where we my husband and I plan to live out our old age. And we want to continue living in the same environment where we raised our children. My husband and I have serious health problems with the respiratory (asthma and severe allergies) and I firmly believe that plant that is planned for construction will have a negative impact on our health and our economy since medical care is sometimes unattainable because of the high costs involved. Just as we there are plenty of people in the same situation, I ask for more attention to reconsider the proposal and go to another place, away from our community. I think we have the right to protest because we have made our life in this community and as citizens of this great nation we have also the right to live free instead of by the these plants give off pollutants and please remember us we were here before you come to ruin our lives and our health. Our community as well as its people deserves a better future. | Refer to Comment #1 response.<br><br>Spanish translation of Army response:<br><br>"Gracias por su comentario sobre esta propuesta de proyecto. Su comentario formará parte del Archivo Oficial del proyecto y será considerado en el Registro de la Decisión Final de la Declaratoria de Impacto Ambiental."<br><br>El Ejército ha eliminado la Alternativa 4A, la propuesta de construir una planta de conversión de basura en energía cerca de los límites del sur de Fort Bliss al norte de la Avenida Montana, de la EIS Final como resultado de los comentarios recibidos del público y de las dependencias durante el periodo de comentarios del Borrador de la EIS. También se ha tomado la decisión de eliminar la Alternativa 4B, la propuesta del uso de un sitio alternativo adyacente al Railroad Drive. Estas alternativas ya no serán consideradas en la versión final de la EIS. En su lugar, la Alternativa 4 se enfocará en un análisis programático de varias tecnologías factibles referentes a la conversión de basura en energía. Las posibles áreas para el proyecto dentro de Fort Bliss así como la escala de operaciones de tal planta no serán analizadas. Si la Alternativa 4 es seleccionada en el Registro de la Decisión de la EIS, se requerirá análisis adicional bajo NEPA antes de que una planta de este tipo sea construida. |

| **ID:** 36 | **Date:** 7/31/13 | **Name:** Daniel Gossett | **Method:** Email |
|---|---|---|---|
| **Comment** | | | **Response** |
| I would like to voice my opinion on the matter of a waste energy plant being constructed near my home. I wish that the Military would consider other options as to where the plant should be built. I feel that the potential waste energy plant could be harmful to mine and my neighbor's health and would affect the area in which we live. | | | Refer to Comment #1 response. |
| **ID:** 37 | **Date:** 7/31/13 | **Name:** Loreen Granado | **Method:** Email |
| **Comment** | | | **Response** |
| I am submitting my comments on regards to building a trash burning factory behind our property. I don't think that is a good idea. My son suffers from respiratory problems and this will make it worse for him and my family. This will cause health issues with the people that live in this community. Please be considerate and move this project away from people that will be harmed by this pollution. Keep it away from the fence lines. | | | Refer to Comment #1 response. |
| **ID:** 38 | **Date:** 7/31/13 | **Name:** Julian Herrada | **Method:** Email |
| **Comment** | | | **Response** |
| I do not mind your proposal to build this project as long as it is not close to residential areas. | | | Refer to Comment #1 response. |
| **ID:** 39 | **Date:** 7/31/13 | **Name:** JL | **Method:** Email |
| **Comment** | | | **Response** |
| I'm against the energy to waste plant in far east El Paso. | | | Refer to Comment #1 response. |
| **ID:** 40 | **Date:** 7/31/13 | **Name:** Michael Gossett | **Method:** Email |
| **Comment** | | | **Response** |
| I am opposed to the construction of the proposed trash burning facility for several reasons. Most importantly, the environmental impact on the community and the safety of the people living in nearby neighborhoods. Please consider other alternatives.<br><br>The area is perfect for a solar field. | | | Refer to Comment #1 response. The Army is also currently considering concentrating solar power (or CSP) systems as a viable option in this area under Alternative 6. |
| **ID:** 41 | **Date:** 7/31/13 | **Name:** Mary Lyons | **Method:** Email |
| **Comment** | | | **Response** |
| I am against the burning power plant being in Haciendas Del Norte area. I came out here to be away from all the pollution from the EP and Juarez area. I do not want to have this area taken over by plants that pollute to air which will cause respiratory problems for both humans and animals. We don't need this plant to be in this area and anywhere near our fence lines. | | | Refer to Comment #1 response. |
| **ID:** 42 | **Date:** 7/31/13 | **Name:** Shirley Moreno | **Method:** Email |
| **Comment** | | | **Response** |
| When we initially moved out there we knew that the army would play war games and we accepted that as part of the environment, we just never in a million years thought that it would become a trash burning area or an electric plant. The area had/has areas of habitations that are sporadic and to come in and change that when you can place this trash burning facility further away is not right. | | | Refer to Comment #1 response. |

| **ID:** 43 | **Date:** 7/31/13 | **Name:** Tiffany Noe | **Method:** Email |
|---|---|---|---|
| **Comment** | | | **Response** |
| I am against the Waste to Energy plant in east El Paso. | | | Refer to Comment #1 response. |
| **ID:** 44 | **Date:** 7/31/13 | **Name:** Ralph Carrasco | **Method:** Email |
| **Comment** | | | **Response** |
| Comment 1: Comment on Alternative 4A. I live within a mile of the proposed Waste to Energy Plant in far east El Paso, Texas. I do not want you to build the plant in my neighborhood. According to a 2009 study, air emissions from gasification and pyrolysis will include particulate matter, volatile organic compounds (VOCs), heavy metals, dioxins, sulfur dioxide, carbon monoxide, mercury, carbon dioxide and furans. Even small amounts of some of these toxins can be harmful to human health and the environment. Mercury, for example, is a powerful and widespread neurotoxin that impairs motor, sensory and cognitive functions. Dioxin is the most potent carcinogen known to humankind—to which there is no known safe level of exposure. Health impacts of dioxin include cancer, disrupted sexual development, birth defects, immune system damage, behavioral disorders and altered sex ratios. Particularly at high risk of exposure to dioxin and other contaminants are workers at incinerators and people living near incinerators, but the toxic impacts of incineration are far-reaching: persistent organic pollutants (POPs) such as dioxins and furans travel thousands of miles and accumulate in animals and humans. Contaminants are also distributed when food produced near incinerators is shipped to other communities. See, An Industry Blowing Smoke by David Ciplet, Global Alliance for Incinerator Alternatives (2009), available at: http://florida.sierraclub.org/docs2009/WTEB_report.pdf <http://florida.sierraclub.org/docs2009/WTEB_report.pdf><br>If these processes are chosen, how will you protect the tens of thousands of people that live within a mile of the proposed WTE plant? How will you insure that they are not exposed to these toxins, including dioxin, for which there is no known safe level? Where will the closest monitor for all of these toxins be located? What are the projected emission rates for dioxins, furans and other POPs?<br><br>Comment 2: Comment on Alternative 4A. I live within a mile of the proposed Waste to Energy Plant in far east El Paso, Texas. I do not want you to build the plant in my neighborhood. What sorts of trash will be burned at the WTE if mass incineration, gasification or pyrolysis is chosen? How will this WTE encourage recycling and composting? Won't the need for more trash to incinerate actually reduce the incentives for recycling and composting and the overall reduction, reusing and recycling of solid waste in general?<br><br>Comment 3: Comment on Alternative 4A. I live within a mile of the proposed Waste to Energy Plant in far east El Paso, Texas. Anaerobic digestion is listed as one of the processes being considered for the WTE. I support this alternative because this technology addresses biodegradable waste and generates energy. The risks associated with this process are more similar to composting than high-temperature incineration. What will be the air emissions if this process is chosen? Will the truck traffic volume be different if this process is chosen over gasification and pyrolysis? | | | Refer to Comment #1 response. |

| | |
|---|---|
| Comment 4: Comment on Alternative 4A. I live within a mile of the proposed Waste to Energy Plant in far east El Paso, Texas. I do not want you to build the plant in my neighborhood. The Magellan Pipeline already contains over 18 flammable fuel storage tanks in our neighborhood. We rely on a voluntary fire department. How will you protect our community if there is a fire? What is your emergency response plan?<br><br>Comment 5: Comment on Alternative 4A. I live within a mile of the proposed Waste to Energy Plant in far east El Paso, Texas. I do not want you to build the plant in my neighborhood. Have you considered the cumulative environmental impacts (air, soil water) of the Magellan Pipeline along with the proposed El Paso Electric natural gas plant? Are you aware that the Magellan Pipeline has already had a spill and is the subject of a remediation action by the TCEQ?<br><br>Comment 6: Comment on Alternative 4A. I live within a mile of the proposed Waste to Energy Plant in far east El Paso, Texas. I do not want you to build the plant in my neighborhood. Have you considered the cumulative environmental impacts (air, soil water) of the Magellan Pipeline along with the proposed El Paso Electric natural gas plant? Are you aware that the Magellan Pipeline has already had a spill and is the subject of a remediation action by the TCEQ?<br><br>Comment 7: Comment on Alternative 4A. I live within a mile of the proposed Waste to Energy Plant in far east El Paso, Texas. I do not want you to build the plant in my neighborhood. Page 3-128 of the Environmental Impact Statement, states that our census tract would not be affected by disproportionally high and adverse impacts of the project. Did you consider the impact of the pollution of highly toxic emissions if you chose the incinerator, gasification and pyrolysis alternatives? Did you consider the cumulative impact of the existing sources of pollution? Did you consider the impact of this project on our property values, which for many of us, represent the only equity we have?<br><br>Comment 8: Comment on Alternative 4A. I live within a mile of the proposed Waste to Energy Plant in far east El Paso, Texas. I do not want you to build the plant in my neighborhood. Flager Road will be used by your WTE to for over 130 daily truck trips. That road consists of only 2 lanes. How will you insure the residents' safety as they travel on that road? How will you measure the air emissions from your vehicles?<br><br>Comment 9: Comment on Alternative 4A. I live within a mile of the proposed Waste to Energy Plant in far east El Paso, Texas. Of the four alternative processes proposed for the plant, which will waste the least amount of water? According to the EIS, the mass-burn incinerator will use over 18 million gallons per year – see page 3-148. | |
| **ID:** 45 **Date:** 7/31/13 **Name:** Sara Gossett | **Method:** Email |
| **Comment** | **Response** |
| I am writing to say NO to the proposed landfill and incinerator. | Refer to Comment #1 response. |

| **ID:** 46 | **Date:** 7/31/13 | **Name:** Dory Schuster | **Method:** Email |
|---|---|---|---|
| **Comment** | | | **Response** |
| The Draft EIS for the Ft. Bliss project is reminiscent of other EA's and EIS's for area military projects whether from Holloman AFB, NM, WSMR, or Ft. Bliss, TX. Minimal publicity and awareness persists when such military projects are being planned with the citizens and general public usually unaware of the project and how to participate in the process. This problem is due to how these notices and projects are publicized or, should we say, not publicized. We became aware of the meeting for this EIS just prior to the meeting time, since we had not as much as seen the legal notice about the project and meeting for the Draft EIS, Implementation of Energy, Water, and Solid Waste Sustainability Initiative, Ft. Bliss, TX, and New Mexico. | | | Thank you for your comment on this proposed project.<br><br>The Army provided adequate notice for the NEPA action through publication of a Notice of Intent to proceed with an EIS and an NOA for the Draft EIS in the *Federal Register*. Publication of newspaper announcements and posting of news media releases were done to inform the public about scoping meetings in 2012 and Draft EIS meetings in 2013. |
| This Draft EIS continued to be unavailable online when people attempted to visit the site, and many had no access to it after we became aware of the project. This among other factors was called to the attention of Ft. Bliss staff. Furthermore, there were no hard copies of this Draft EIS, or CD of this project available, even at the meeting held in Alamogordo, NM. Formal request made to receive a hard copy and CD resulted in a long delay receiving it. Ft. Bliss staff had to be contacted on the issue. The Ft. Bliss representatives stated that the package was returned since UPS doesn't deliver to P.O. Boxes. Management of the Alamogordo Post Office informed us that UPS would never have even accepted such a package that would be undeliverable to whom it had no physical addressed for delivery. The Alamogordo post office also commented that the information on the delivered package, that was finally received, had not been filled out appropriately.<br><br>A requests that the comment period be extended was granted, but the notice was once again placed in the legal notices of several newspapers in small print where few would ever see it, even after this factor, of how few can even read the print of the legal notices or find such a notice, was called to the attention of the Ft. Bliss Staff present at the meeting held in Alamogordo, NM. The public shouldn't have to go through such trouble just so they can participate in a process that should involve the public for projects using Federal Tax Dollars. This process should have been perfected by now, if the participation of the public was really a priority.<br><br>Although Holloman AFB, NM is the cooperating agency, it wasn't apparent that there was any AF staff present at the meeting held in Alamogordo, NM.<br><br>Approximately one month is the amount of time we have had had to review this Draft EIS, due to the reasons mentioned. This is not sufficient time to thoroughly become familiar with such a project as the Draft Environmental Impact Statement Implementation of Energy, Water, and Solid Waste Sustainability Initiatives. A brief comment will therefore be submitted and we will submit further comment as necessary. | | | Refer to Comment #6 response. |

| | |
|---|---|
| Although sustainable practices are a positive move for area installations including Ft. Bliss, TX & New Mexico, we are not in agreement that much of what will be done will have "less than significant impacts" and also don't agree that in areas where there may be significant impact, that it is mitigable. Already, there is much significant impact occurring from the military actions and training taking place in TX and NM making this latest Draft EIS appear almost hypocritical. Much of the negative impact from the last large Army initiative is not mitigable from what continues to be observed and experienced in the area, as we have seen the increase in pollutants at high and low levels and reduction of visibility that has never been witnessed in this area previously all due to the growth of the military training and the increase in the militarization of the area. The local environment and the quality of life of the citizens and general public as well as animals, wildlife, and birds, in and around the vicinity of where these military proposed projects may take place will be impacted more than the "less than significant impact" we so often read about in these military environmental studies including the Draft EIS, Implementation of Energy, Water, and Solid Waste Sustainability Initiatives, Ft. Bliss, Texas and New Mexico. Area military projects continue to be the largest polluters and destroyers of our environment in this area of New Mexico. We are reminded of this, even more so, as we recently read the articles in media regarding the radiation issue on Ft. Bliss land from the Manhattan Project era with the recent "secret" surfacing. We continue to be concerned for our communities and our people, as a variety of proposed military projects appear to be occurring more frequently and impacts of varied significance continue to be apparent. Many negative impacts will never be reversed once they occur.<br><br>The realtor present at the Alamogordo meeting, on the topic of the Draft EIS, commented on some of the potential negative impacts to communities in the El Paso area due to pollutants that would be generated and proximity of proposed Ft. Bliss projects to existing communities, in that area, including residential areas, depending on the choice of alternatives by the Army. Ft. Bliss initiatives shouldn't benefit the ARMY community while deteriorating the quality of life of the people and animals residing in any area of El Paso, TX or NM. Ft. Bliss actions are already impacting sufficient TX and NM communities and often some impacts are not being mitigated because often there is no way to mitigate regardless of some comments often made in these environmental studies claiming that certain impacts will be mitigated. We have not seen Ft. Bliss containing its ground and airborne pollution which is a very negative factor impacting the NM environment and people. In the same manner, there are factors from the proposed initiative that won't be able to be mitigated either. There also appears to be a lack of independent monitoring systems in place for the purpose of independent monitoring of pollutants that people, animals, and environments are being exposed to regularly from military operations where the public can independently access information that provides them with findings from such monitoring. Various agencies have been contacted about this issue including the EPA. As has been stated, various pollution and impacts are difficult to impossible to contain or mitigate regardless of what is said in the pages of environmental studies put together by Ft. Bliss, Texas & New Mexico. As a result, we continue to see the decline of area environments and the quality of life of residents in affected areas. Our local environment has already suffered irreversible impact to our water, soil, vegetation, and wildlife due to Ft. Bliss and Holloman AFB military operations. If Ft. Bliss, TX & NM is concerned about sustainability | The impacts described in this EIS are based on the best available information and rationale have been provided to support determination of significant or less than significant impact, where found in the DEIS. Design and site location plans are not known for most of the actions proposed in the DEIS and future NEPA evaluations tiered off of this document will almost certainly be required as projects become foreseeable. The Army will document any mitigation measures that are required for the alternatives selected in the forthcoming Record of Decision. Subsequent NEPA analysis may also identify additional mitigation measures when final project design and site location are known. |

| | |
|---|---|
| initiatives, for starters stop the current military operations that are destroying our environment and negatively impacting the life of humans and animals alike. | |
| **ID:** 47 **Date:** 7/31/13 **Name:** Risher Gilbert | **Method:** Email |
| **Comment** | **Response** |
| EPA Rating of DEIS - We have now had the opportunity to review the EPA comment letter on the DEIS dated June 28, 2013. We concur with the EPA statement that the DEIS does not contain sufficient analysis and information concerning environmental justice, water use, cultural resources and air impacts. Among other EPA points, we agree that there is insufficient data to support the projected substantial increases by Fort Bliss in estimated energy use and water use, especially in light of recent budget cuts and the downsizing trend of the military. Since the energy and water usage numbers are used to justify all of the alternatives including the need for a waste to energy plant, it is critical that they are carefully examined and all assumptions used are substantiated in the DEIS. | Thank you for your comment on this proposed project.<br><br>Project site locations, technology types, and operational details for most of the Draft EIS alternatives are unknown at this time. When these decisions are made, additional NEPA analysis would likely be required to assess potential environmental impacts and prescribe appropriate mitigation measures. The Army will document mitigation measures pertinent to each alternative selected in the Record of Decision for this project. |
| Environmental Justice - The EPA agrees with several of the environmental justice concerns raised in our letter of June 28, 2013, since the location of the Alternative 4A WTE facility is next to an identified Minority and Poverty Area per Figure 3-7. (3-122) In the EPA written review the statement is made that Alternative 4 has the potential to raise *"major* environmental justice issues" (emphasis added). We concur with the EPA that the summary statements in the OEIS suggesting these impacts can be satisfactorily mitigated are unsupported and we believe cannot be substantiated. The violation by Alternative 4A of the spirit and intent of the environmental justice guidance of NEPA is particularly harmful because of the existing large tank terminal and the new EI Paso Electric power plant and large transmission lines being permitted for the same area. | Refer to Comment #1 response. |
| Faulty Assumptions Result in Faulty Conclusions - The DEIS contains many questionable representations, assumptions and expectations which cumulatively drive the summary conclusions that the project will have no adverse impact on the environment or the health of the residents in the project area. If anyone of these major assumptions fails, then the determination of 'no adverse impact' fails. The DEIS uses some form of the word 'assume' 148 separate times and of the word 'expect' 178 times. Approximately] 05 times the DEIS assumes that either best management practices or best available control technologies will be used. Categorically assuming that BMP will be followed in each step of construction, operation, and transportation of waste in regard to a very large waste treatment and energy plant is unrealistic. This is especially true since the plant will be constructed and operated by an independent for profit company. The actual impact of these assumptions creates a paradigm that inherently understates the adverse impact of Alternative 4 on the environment. Examples of the DEIS stating wishful thinking as statements of fact include the following:<br>"An experienced firm, one that would most likely operate similar plants across the U.S. and Europe, | The impacts described in this EIS are based on the best available information and rationale has been provided to support determination of significant or less than significant impact, where found in the Draft EIS. Design and site location plans are not known for most of the actions proposed in the Draft EIS and future NEPA evaluations tiered off of this document will almost certainly be required as projects become foreseeable. The Army will document any mitigation measures that are required for the alternatives selected in the forthcoming Record of Decision. Subsequent NEPA analysis may also identify |

| | |
|---|---|
| would design and operate the WTE plant." (3-15)<br><br>"During operation of the plant, the contractor would make every effort to avoid excessive emissions; however it is possible that occasional malfunctions would occur in an APCD and emissions would be temporarily higher." (3-15)<br><br>"It is assumed all best available control technologies for the silos would be implemented, in accordance with regulatory requirements." (3-17)<br><br>"BMPs would be followed by WTE hauling trucks to prevent, to the extent possible, odors from escaping these trucks." (5-5)<br><br>Assumptions Made About Private Sector Operation. The DEIS makes it clear that the federal government will not construct, own, operate or maintain the WTE Plant as it will be owned and operated by the private sector. (ES x, 2-15, 2-20) This position makes a large assumption that a private company will want to build and operate the WTE Plant and that it can actually do so in an economical fashion. The lack of operating WTE Plants in both New Mexico and Texas suggests otherwise. Per the 2010 ERC Directory of Waste-to Energy Plants, there are no operating WTE plants in Texas or New Mexico. There was a WTE plant that was to produce steam for sale in Carthage, Texas that opened around 2006 and ceased operating as such by 2008. Currently, the Carthage facility is owned by Sharps Environmental Services, Inc., a Delaware corporation, and it currently only incinerates medical waste. (Municipal Waste Combustion, The Energy Report 2008, Texas Comptroller)<br><br>Per our internet research, there were plans for a WTE plant around 2006 for the Dyess Air Force Base near Abilene, Texas. The plans were tabled in 2008 and recently under consideration again as of 2011. The delays and change of use of these plants, the relative newness of the technology and the lack of other WTE plants suggests a significant risk of delayed construction, cost overruns, underperformance and failure to meet expectations. A likely sole-asset and potentially insolvent company storing and treating large volumes of hazardous waste at the 4A location will not protect residents from the consequences of failing to follow BMPs, much less other failures. | additional mitigation measures when final project design and site location are known. |
| Impact on Water Resources of Alternative 4 - Alternatives 4A and 4B have an adverse environmental impact that cannot be mitigated because of their requirements to use 17 to 19 million gallons of water annually to operate the WTE Plant. Alternative 4 will require a "large amount of water for cooling needs" to be obtained from new water wells to be installed. Both Alternative 4A and 4B actually reduce the water resources of Fort Bliss as the WTE Plant requires a new groundwater well and withdrawal from the depleting Hueco Bolson. The WTE creates both the additional demand for water and "large amounts of impermeable surface that would reduce groundwater recharge and increase volume of stormwater runoff as well as ... pollution." (4-37) The DEIS also notes that "[T]he geothermal facilities ... and the WTE plant would contribute the most noticeable water quality impacts ... " (4-39) These | Refer to Comment #1. If Alternative 4 is selected in the Record of Decision, further NEPA analysis would be required before a WTE plant could be constructed including an evaluation of impacts to water resources. The water consumption of a WTE plant depends on its size and impacts to water resources would be influenced by its location. |

| | | | |
|---|---|---|---|
| adverse impacts, including the increased drawdown of a depleting aquifer, are not justified merely to produce limited energy from solid waste.<br><br>Conclusion - Locating and operating a WTE Plant that includes the treatment of several types of hazardous waste in the project area of Alternative 4A will violate the environmental justice provisions of NEPA, and will have a substantial adverse impact on the environment that cannot be satisfactorily mitigated. | | | |
| **ID:** 48 | **Date:** 7/31/13 | **Name:** Jorge Rodriguez | **Method:** Comment Form |
| **Comment** | | | **Response** |
| I would not be content with a waste disposal being built in my area. I feel that it would disrupt the normal pace of the day and environment. I am used to it in and around my home. | | | Refer to Comment #1 response. |
| **ID:** 49 | **Date:** 7/31/13 | **Name:** Luz Rodriguez | **Method:** Comment Form |
| **Comment** | | | **Response** |
| Respecto a la iniciatira que ustedes quieren establecer es para nuestra comunidad demaciado por muchas razones una de estas la planta de luz que quieren establecer, y es demaciado poner a que ustedes se establecer tambien par la contaminacion que esta a largo y corto plazo seria para mi familia ademas el trafico de autos, camines seria demaciado contando con la planta de luz esto seria demaciado.<br><br><u>Translation:</u> In reference to the initiative you want to implement, it is too much for our community for many reasons. One of these is the power plant you (ELP Electric?) want to build or that you build also (Fort Bliss -waste to-energy?). The short and long term pollution, in addition to the automobiles and trucks traffic, would be too much...in addition to the power plant...this would be too much.<br>Thanks for your attention " | | | Refer to Comment #1 response.<br><br>Refiérase a la contestación del comentario #35 de la traducción en español en cuanto a la respuesta del Ejército. |
| **ID:** 50 | **Date:** 7/31/31 | **Name:** Elaine Alvarado | **Method:** Comment Form |
| **Comment** | | | **Response** |
| I don't agree with the Solid Waste around my area. I totally oppose to the plans for creating a new one around this area. There are many risks such as health problems and pollution. Solid waste also increases risk of injury and infection in children and adults. | | | Refer to Comment #1 response. |
| **ID:** 51 | **Date:** 7/31/13 | **Name:** Anaid Carrasco | **Method:** Comment Form |
| **Comment** | | | **Response** |
| If we have this thing that burns trash and this power plant it will make our health bad and will make us weak and we can die from all these chemicals floating in the air and lots of people will get sick and our dogs they will get weak and not play anymore and all these animals will die and not live. | | | Refer to Comment #1 response. |
| **ID:** 52 | **Date:** 7/31/13 | **Name:** Florentino Moreno | **Method:** Comment Form |
| **Comment** | | | **Response** |
| A trash waste near my home is a cruel punishment nobody deserves. People need to understand that this place is not a dumpster, it's our home and nobody deserves a trashed place. I love the smell of the fresh air that comes in my home when I open my window/door, the air I smell when I come home from work. I don't want my children to get a disease or an infection because of the new energy, water, solid waste the | | | Refer to Comment #1 response. |

| | | | |
|---|---|---|---|
| government wants to provide in this area. There is much land here in El Paso, TX that is not used as shelter. The government can purchase a bigger and a more suitable piece of land at a different location and that way it won't be rude to just randomly use our homes as a dumpster. | | | |
| **ID:** 53 | **Date:** 7/31/13 | **Name:** Pabloe Fernandez, Emma Fernandez and Jose Roman Gonzalez | **Method:** Comment Form |
| **Comment** | | | **Response** |
| We wholeheartedly opposed the proposed location of the waste-to-energy plant. What a disheartening experience to see how the government instead of looking out for its civilian population, is spending too much time and tax money inspecting our community with hopes to turn in into ground zero for El Paso's trash. You, the ARMY knows too well that all of the bases' trash combined wouldn't gather the sufficient trash necessary in order to create the 80 megawatts as intended. Because you would definitely need the city's trash, along with your soldier's trash in order to reach your goal of 80 MW's. Here in our community we are already taking on a big fight against a polluter that wants to clog our air with particulate matter, carbon monoxide, and other health hazards; and now, to kick us while we're down, a proposed waste plant wants to move in with their "stench" and further contribute along with EP Electric in polluting and directly affecting our health. This is environmental injustice and an outrage. | | | Refer to Comment #1 response. |
| **ID:** 54 | **Date:** 7/31/13 | **Name:** Ralph Carrasco | **Method:** Comment Form |
| **Comment** | | | **Response** |
| It hasn't even been a year and our new house will already be devalued because of a proposed power plant. The least of my worries at this point is my property value, because I have an 8 year old daughter and a 2 year old son that will unfairly grow and develop in the immediate presence of chemicals like carbon monoxide, ammonia, sulfuric oxide, particulate matter, electromagnetic radiation, etc., because of the proposed plant from EP Electric. Now my children and further threatened by a waste-to-energy plant being built less than a mile away. This is a total spit in our face as the government acknowledges our current battle with EP Electric and still insists on using our residential community as a dumping ground for trash that will not even be ours. Keep your soldier's trash in your soldier's backyards not ours! What a total disrespect and lack of justice by a sector of the government that should protect its civilians, not humiliate them by burning trash in their backyard. This is not a third-world country, we pay taxes, and rather my taxes keep your soldier's on duty, please consider our current battle with EP Electric and move elsewhere. Trash equals bacteria and a breeding ground for diseases like hepatitis. Then incinerating the trash will only contribute further to the particulate matter exposure. We do not deserve this blatant and indecent attack on our health. The people in my community with asthma will suffer greatly. I will not be surprised if a sudden increase in asthma cases occurs in my community. If so, I will hold you accountable. Please be assured that we will fight with every ounce of our strength against this environmental injustice. | | | Refer to Comment #1 response. |
| **ID:** 55 | **Date:** 7/31/13 | **Name:** Lucio Campos III | **Method:** Comment Form |
| **Comment** | | | **Response** |
| I really think a power plant is good, but further out of the city limits. Why because of our health can be a problem in the future and we really don't want something that can hurt our health. | | | Refer to Comment #1 response. |

| **ID:** 56 | **Date:** 7/31/13 | **Name:** Linda Moreno | **Method:** Comment Form |
|---|---|---|---|
| **Comment** | | | **Response** |
| This initiative is out of place. I am in disagreement because it affects the health of my children who have asthma. In addition, instead of helping the environment, it is harmed because it is polluting earth (land), water and air. | | | Refer to Comment #1 response. |
| **ID:** 57 | **Date:** 7/31/13 | **Name:** Angel Moreno | **Method:** Comment Form |
| **Comment** | | | **Response** |
| I disagree with the Fort Bliss solid waste sustainability because it will pollute not just the area where we live but also it might pollute the entire city. And I don't think that anyone would want their children or child to grow up in a neighborhood where they are exposed to pollution. And many people don't know about it but they would probably not want that, in their neighborhood. So don't build in here build it somewhere else. | | | Refer to Comment #1 response. |
| **ID:** 58 | **Date:** 7/31/13 | **Name:** Diana Carrasco | **Method:** Comment Form |
| **Comment** | | | **Response** |
| If you start this energy, water, and solid waste plant you are going to take our joy away. All we have done in our property has been a big effort trying to build the house of our dreams. We don't want this plant, if you fight for us, to protect us, please; the way you could help us is by not making this bad decision. Do it somewhere really far, where you will not affect nobody's health and peace, joy, etc. This plant would not bring no advantage for us, it would only bring more contamination to our air with the diesel truck that are going to be going and coming to bring trash. We don't want this here, no matter what they tell us or offer us. Our answer will always be "SAY NO TO THE WASTE PLANT". | | | Refer to Comment #1 response. |
| **ID:** 59 | **Date:** 7/31/13 | **Name:** Ralph Carrasco | **Method:** Comment Form |
| **Comment** | | | **Response** |
| Waste-to-energy, far east location. You have placed or are planning to at least your "W2E" plant as far away as you can from your soldier population, but in doing that you are location it within half-a-miles distance from civilian population. Why? Consider why you are moving it away from your soldiers and realize that we deserve the same consideration. This isn't even our trash, yet it will be in our backyard. Perfect example of discrimination and environmental injustice. The location of your other projects I have no problem with, I have a 2-year old son and an 8-year old daughter that will be fully exposed to ash, and flue gas being released from your waste plant. Along with the ash particles, particulate matter, carbon-monoxide, nitrogen oxides and sulfuric oxides will also be released into our immediate atmosphere. Why must my community bear the pollution burden not just from your proposed waste plant, but also from an established fuel-tank terminal site that already is releasing "benzene", and not to mention the proposed EP Electric Power Plant that will also be emitting similar contaminants to yours. We do not deserve this environmental injustice! My community will be within a 1-mile radius of 3 major polluting industries. Nobody deserves to be treated this way! Consider another location please! | | | Refer to Comment #1 response. |

| **ID:** 60 | **Date:** 6/11/13 | **Name:** Agustina Almaraz | **Method:** Comment Form Received at the Mountain View High School Public Meeting |
|---|---|---|---|
| **Comment** | | | **Response** |
| Es algo que no queremos en nuestra comunidad por la contaminación que va a traer y el riesgo de la seguridad el tráfico, si tenemos tanques de gasolina ya no queremos mas contaminación ahorita tenemos problemas con el paso electric y todavía (EIS) nos quiere, invadir hay varias razones por la que no queremos primero nuestra salud, la seguridad y luego que las propiedades se van a devaluar y que van a contaminar el medio ambiente.<br><br><u>Translation:</u><br>It is something that we do not want in our community because of the pollution it is going to bring and the risk of the traffic…if we have gasoline deposits we do not want more pollution…right now we have problems with El Paso Electric and then EIS wants to invade us, there are several reasons why we do not want (it)…first our health, (and) safety and then the properties will lose value and that (the project?) will pollute the environment. | | | Refer to Comment #1 response.<br><br>Refiérase a la contestación del comentario #35 de la traducción en español en cuanto a la respuesta del Ejército. |
| **ID:** 61 | **Date:** 6/11/13 | **Name:** Elia Belmar | **Method:** Comment Form Received at the Mountain View High School Public Meeting |
| **Comment** | | | **Response** |
| Este es un proyecto que afecta nuestro medio ambiente el cual afecta la salud de nuestros niños, ancianos y toda nuestra comunidad. Este proyecto va a afecta incluso el trafico nos va a traer contaminación, ruido y basura la cual tiene que ser quemada para lograr la energía que ellos quieren pero a nadie le gustaría vivir en lugar así por mucho progreso que trajera a la comunidad yo pienso que es mas lo que nos va a afecta que lo que nos podría beneficiar por esta motivo les suplicamos de la manera más atenta presten su atención a nuestra suplica y no la ignoren solo tienen que visitar nuestra comunidad y conocer a nuestros niños y vecinos para darse cuenta del daño que nos pueden causar.<br><br><u>Translation:</u><br>This is a project that affects the environment which affects the health of our children and older (people) and all our community. This project will affect including the traffic will bring pollution, noise, and trash that has to be burned to get the energy they want but nobody would like to live in a place like this despite the progress it would bring to the community… I think the effects are more than the benefits … for this reason we beg you in a respectful way, to pay attention to our reply and do not ignore it, all you need to do is to visit our community and meet our children, and neighbors to find out the damage you can cause. | | | Refer to Comment #1 response.<br><br>Refiérase a la contestación del comentario #35 de la traducción en español en cuanto a la respuesta del Ejército. |
| **ID:** 62 | **Date:** 6/11/13 | **Name:** Cleotilde Carrasco | **Method:** Comment Form Received at the Mountain View High School Public Meeting |
| **Comment** | | | **Response** |
| Tenemos miedo por la contaminación por el humo, moscas mosquitos y ya ahorita el trafico esta y cada día hay más gente aparte de la planta eléctrica junto a los tanques de la gasolina y con tanto niño pequeños y yo tengo nietos que tiene asma y con tanto humo me pregunto qué va a pasar con ellos nosotros aquí ya tenemos 20 años viviendo aquí y nos sentíamos seguros y no piensan en nuestros niños | | | Refer to Comment #1 response.<br><br>Refiérase a la contestación del comentario #35 de la traducción en español en cuanto a la respuesta del |

| | |
|---|---|
| y ancianos y la verdad nosotros tenemos miedo escuchen nuestros suplicas no tenemos dinar para el doctor. El asma es un peligro y al hospital tenemos que llevarlos.<br><br>Por favor, les suplicamos que piensen que la luz y la gas y ahora el humo de la basura no puede ser.<br><br>Translation:<br>We are afraid because of the pollution, the smoke, flies, mosquitoes and the traffic that is already here and every day there are more people…and the power plant adjacent to the gasoline tanks and with so many small children…I have grandkids that suffer from asthma and with so much smoke I ask myself what is going to happen to them…we have been living here for 20 years and we felt safe…and you do not think of our children and elderly and in reality, we are afraid…listen to our replies, we have no money for the doctor…asthma is a danger and we have to take them to the hospital.<br><br>Please, we beg you consider the electricity (power plant) the gas (fuel deposits) and now the smoke and the trash…this cannot be. | Ejército. |
| **ID:** 63 **Date:** 6/11/13 **Name:** Guillermina Flores | **Method:** Comment Form Received at the Mountain View High School Public Meeting |
| **Comment** | **Response** |
| Yo no sé si ustedes estén enterados que actualmente tenemos el problema de El Paso Electric que quiere poner una planta de energía eléctrica que va a contaminar el medio ambiente y perjudicarnos gravemente en el salud aparte de devaluarnos las propiedades para podernos defender do este monopolio estamos con abogados eso para nosotros es muy desgastante y ahora saber que ustedes pretende hacer esta planta también porque la quieren poner a un lado de mi casa como se atener a decir que todavía no saber cómo me va a impactar negativamente tengo ese foco de contaminación a un lado de mi casa Fort Bliss es muy grande váyanse lejos de mi área porque quieren perjudicar esto es una burla esto no pasa ni en países tercermundistas por favor escuchen nuestros opiniones. NO NO NO<br><br>Translation:<br>Gentlemen: I do not know if you are aware that at this time we have a problem with the El Paso Electric that wants to build a power plant that will pollute the environment and greatly impact our health in addition to devaluate our properties…to defend ourselves against this monopoly we have lawyers and for us that is overwhelming and now also to find out that you also pretend to build this plant…why do you want to do it next to my house? How do you dare to say that you do not know how this is going to negatively impact me by having that pollution source next to my house. Fort Bliss is very big, go away far from my area… why do you wat to cause damage? This is a joke, this does not even happen in third world countries. Please listen to our opinions. NO –NO-NO | Refer to Comment #1 response.<br><br>Refiérase a la contestación del comentario #35 de la traducción en español en cuanto a la respuesta del Ejército. |

| ID: 64 | Date: 6/11/13 | Name: Laura Alvarez | Method: Comment Form Received at the Mountain View High School Public Meeting |
|---|---|---|---|
| **Comment** | | | **Response** |
| Este es un proyecto que va ha perjudicar nuestra comunidad porque afectaría el medio ambiente y la contaminación seria mas fuerte afectaría el riesgo a la comunidad al haber tanto tráfico en la cable por las trocas de basura y transitarían, afectaría a la gente en su salud habría alergias sobre todo a los niños el medio ambiente porque esto traería mosquitos, moscas y demás. Además, la quieren poner en un lugar de riesgo porque ahí están los tanques de almacenamiento de combustible y además quieren poner ahí la planta de luz y traería problemas con el agua o sea ustedes están tomando nuestra comunidad como lugar al que pueden poner todo lo y ensucia el ambiente.<br><br>También esta baja el valor a nuestras propiedades y necesitamos vivir en un medio ambiente sano para nuestros hijos y por eso me opongo fuertemente tanto a la planta de luz como a la instalación de esta planta de basura residual.<br><br><u>Translation:</u><br>This is a project that is going to affect our community because it will impact the environment. The pollution would be greater, it would affect the risk to the community because the garbage trucks traffic on the streets would affects the people's health, it would be allergies specially in children…and the environment. This would bring mosquitoes, flies, and alike. Additionally, you eat to build it in a risky place because the fuel storage tanks are there in addition to the power plant that would bring problems with the water. In other words, you are taking our community to build all that pollute the environment.<br><br>Also, this lowers the value of our properties and we need to live in a healthy environment for our children and that is why I am strongly opposed both to the power plant and to the construction of the residual trash plant. | | | Refer to Comment #1 response.<br><br>Refiérase a la contestación del comentario #35 de la traducción en español en cuanto a la respuesta del Ejército. |
| **ID:** 65 | **Date:** 6/11/13 | **Name:** Vincent Perez (El Paso County Commissioner Precinct 3) | **Method:** Oral Comment Given at the Mountain View High School Public Meeting |
| **Comment** | | | **Response** |
| I just wanted to express some concern with the project 4-A, that particular alternative which is a waste burning facility. My concern is the commissioner who represents any of the residents there in some of the development at least that's merging, I'm sure as you know, we already have the Magellan tanks that are situated there. El Paso Electric has recently announced plans that it's pursuing a permit from TCEQ to build a power plant right behind the tanks, literally just 500 feet behind the tanks. And this scrap burn facility would go essentially right behind El Paso Electric's facility. As the commissioner who represents many of the residents there, I share many of the concerns that I heard from many of them who are concerned about this type of development, the impact it would have on future developments in their community. Far east El Paso is one of the fastest-growing areas in El Paso County. If you just go down Montana literally just a mile or two, you'll see movie theaters popping up, we expect restaurants to pop up very soon. So it's an area that's experiencing rapid growth and rapid developments and I'm just | | | Refer to Comment #1 response. |

| | |
|---|---|
| speaking concern that these types of projects might have a negative impact on this type of growth or certainly even stunt growth to a certain extent as we get further east in El Paso.<br><br>El Paso Electric is unfortunately moving forward with its plans to build a power plant, but I'm encouraged to see -- unlike El Paso Electric that did not have an alternative site for their facility, I'm glad to see that at least in this particular circumstance there is an alternative site that's being considered near Railroad Drive. I would strongly consider pursuing this alternative because just given the cumulative effects that we've seen with the Magellan tanks, with the El Paso Electric and now having a waste burning facility, you know, just from looking at the grid there I see that the air quality obviously would be a main concern of the residents and the impact it would have and, obviously, on the traffic. Those are two of the red bullets at least I see in that particular alternative. Again, you know, there are a lot of positive things that are happening in far east El Paso.<br><br>There's great potential I believe not only for commercial development, but also for future residential development. My concern is just that really grouping these types of projects, like I said, although very worthy and worthwhile and we support the goal of becoming a zero net energy installation, I'm just very concerned about the location and the impact it's going to have on the development but, with that, I mean I appreciate the time you're taking to hear from residents, but again we strongly advocate for pursuing an alternative site just due to the fact of the types of developments that are already occurring there, the industrial sites and the impact it's already having on some of the residents that live in that area. | |
| **ID:** 66 **Date:** 6/11/13 **Name:** Alfredo Garcia | **Method:** Oral Comment Given at the Mountain View High School Public Meeting |
| **Comment** | **Response** |
| I live right there in what we call the red zone, others call it the affected zone and we -- my main concern, sir, is those tanks, that tank farm that's there. We are fighting the electric company to build -- to not build there because of that. That's one of the issues and, of course, the air quality. Being that we have a prevailing westwardly wind out here, that plant would be literally right on the edge of you-all's property and, then, as the wind would blow, it would carry it directly into the developed areas of housing there. This town, sir, loves Fort Bliss, we love our soldiers. I personally don't think this is the way to pay us back. I respect you, sir, and everything, and I know we've got other alternatives. To me, sir, it's just a big mistake to put it out here. It would scar our community out here. We've been fighting for respect, we've been fighting for acknowledgment and I just don't feel, sir, that that would be a place to do it. | Refer to Comment #1 response. |
| **ID:** 67 **Date:** 6/11/13 **Name:** Rafael Carrasco | **Method:** Oral Comment Given at the Mountain View High School Public Meeting |
| **Comment** | **Response** |
| I personally think its great what you guys are doing in your base as far as taking care of our future water, our energy, even looking after the waste, I applaud that with all my heart. But where I live, our community, it's currently being plagued with a serious environmental injustice. I live less than half a mile away from these fuel tanks that store ethanol, jet fuel, diesel, distillate mix and various fuel liquids. | Refer to Comment #1 response. |

| | | | |
|---|---|---|---|
| Right now we are currently combatting a power plant that wants I personally think it's great what you guys are doing in your base as far as taking care of our future water, our energy, even looking after the waste, I applaud that with all my heart. But where I live, our community, it's currently being plagued with a serious environmental injustice. I live less than half a mile away from these fuel tanks that store ethanol, jet fuel, diesel, distillate mix and various fuel liquids. Right now we are currently combatting a power plant that wants being plagued by industrial companies. It is not our fault, we were there first. We were there over 40 years ago. We, up to this day, have been working hard building our homes, building our communities and it's unfortunate that companies come and belittle our efforts with dumping of trash where we live.<br><br>We ask that you consider the contamination that you will bring to our area. We ask that you consider the traffic that you will bring to our two-way street and how many -- the traffic flow that will clog up our community with only a two-way street. That is very unfair to the people that live there. The noise of the traffic, the noise of the power plants, the smell of the waste plant, it's not fair to us and we ask that you please consider any other alternative. It's unfortunate that we are there, but like I said we plead that you consider other alternatives. Also, please consider our gratitude to your service and our gratitude to what these companies do and what these companies bring to the city, but like I said our health is our number one concern. We are under the impression that the governments and their defense is supposed to protect the civilians, not endanger the civilians. We are grateful for your service, like I said, and we look at you as our protectors, as our guardians. We look to you as the people that fight for us. We look to you as the people that lay your life down for liberty and fight for our freedom and fight for our rights. So we are getting a distorted message with looking at the government and looking at our area as a dumping ground and that is not fair to us. Please consider other areas. | | | |
| **ID:** 68 | **Date:** 6/11/13 | **Name:** Adrian Castillo | **Method:** Oral Comment Given at the Mountain View High School Public Meeting |
| **Comment** | | | **Response** |
| I mean you do acknowledge that you're going to build a waste to energy power plant. Basically this is what used to be called an incinerator, but I guess because of the fancy word to say, we are going use the waste and we're go to use it to create energy. Well, the majority of the waste comes from Fort Bliss. I believe if it's a great project, let's keep this in Fort Bliss, but let's keep it close to the homes. I mean the majority of the waste or the trash comes from Fort Bliss, wow, what a great plan you guys have in mind, but let’s keep it over there where the waste and the trash will be produced. So why come to our community? Why bring the trash or the waste of Fort Bliss and the trash away from the city? The majority of the trash will not come from our community so I think in order to be -- to provide any type of justice, let's have it over there close to the soldiers that are going to produce the waste or close to the hospitals or whatever you're going to pick up the waste, because you do acknowledge in this flyer that they're going to have hazardous materials and waste. I mean that makes me think twice, what type of waste are you guys talking about? If it's hazardous, it may produce health issues with the people around us. So my recommendation would be please do not bring it close to the people. | | | Refer to Comment #1 response. |

| | |
|---|---|
| In your flyer you also acknowledge that you have 1.12 million acres in Fort Bliss, why next to us? Once again, we do not want this next to us; we do not want this type of power plant next to our families, next to our homes, next to schools. I don't know if you're aware, but there are many schools close by. We have many many businesses close by also so I'm concerned about the air quality.<br><br>It has been acknowledged that incinerators, once again, they call it -- you guys call it waste to energy, but I call it an incinerator. That's basically the type of power plant that we have right now in other states. And, by the way, they haven't built one of these since a while back, I believe since 1970-something was the last one they built. The types of pollutants we can expect are dioxins. For those of you who don't know or people maybe you're not aware, but dioxins produce cancer and it has been proven. Particulate matter, once again, you want to be next to an already proposed site for a power plant that's going to produce great amounts of particulate matter and then you're going to contribute to the -- with more particulate matter?<br><br>That's very concerning to me. And then heavy metals and acid gas. So we're talking -- we were talking about many many pollutants and I'm concerned about contamination to our region and the soil may be contaminated. What about the water under the soil? The noise, up to 160 trucks coming back and forth, that's really concerning. We do not have the infrastructure to have that quantity of vehicles coming by the streets. What about the pollution from the trucks? They have to operate with diesel so we also have that contributing factor, the diesel coming off from the trucks. And then what about talking about traffic? What about our families coming back and forth visiting their families, going to school? There's another hazard or another danger to us. What about the noise? Yes, the noise that's what's concerning. We're out here for the peace. We're working for peace of mind, we want to relax and now we're going to have all this noise coming from the power plant. So I'm concerned about many many hazards with your proposed power plant. With 1.12 million acres, I'm trying to figure out why you guys picked our region. I don't have -- I mean it doesn't make sense. Maybe it's because you -- the energy that's going to be left over, the extra -- the amount of electricity will be sold back to El Paso Electric, I don't know, maybe that's the possibility. I don't think it's a coincidence that you want to build next to El Paso Electric's power plant. I think there was a plan beforehand, there's something going on, and the people are aware. We're fighting El Paso Electric so we're fighting them, but, please; do not make us fight you guys. We don't want to fight the government. Like my partner said, you're sending mixed messages, but we don't want those because, believe me, if it requires us to fight whoever is going to come to our region and contaminate our families and homes, we're going to do that but, please, do not force us to go that route. | |
| **ID:** 69 **Date:** 6/11/13 **Name:** Delia Labrado | **Method:** Oral Comment Given at the Mountain View High School Public Meeting |
| **Comment** | **Response** |
| I am here to ask you to please keep it very, very, very far away from the fence line. Our families should not have to put up with all those hazards that will be in invading. And you stated about the hazards, it is an environmental and social injustice what you're trying to do. When I was talking to my daughter, because I'm a member of the Far East El Paso Citizens United Group, and my daughter, eight years old, | Refer to Comment #1 response. |

| | | | |
|---|---|---|---|
| she says, "Mom, where are we going?" "To another meeting." "Another meeting?" "Yeah, you know, we have meetings to go to." "And now what's this about?" And I told her, "It's Fort Bliss." "Explain that to me." I go, "Well, Fort Bliss, they're trying to do this and that." "Mom, is that our soldiers?" "Yes." "Those are our heroes. They're supposed to protect us; they're not supposed to harm us. They should be ashamed." That's what she said on our way over here. And I'm proud to have such a daughter and I do ask, you know, we're happy to have you here in El Paso and we thank you for all your efforts and every protection that you provide us citizens. Far east El Paso, still part of the United States, and we do demand and merit respect and our health should be also protected by you especially. | | | |
| **ID:** 70 | **Date:** 6/11/13 | **Name:** Mario and Arlennee Solano | **Method:** Oral Comment Given at the Mountain View High School Public Meeting |
| **Comment** | | | **Response** |
| I'm here to tell you that what you're all planning here is wonderful, however, you-all definitely need to look at your impact study of the environment, not only air quality, look at the safety of where you're coming to. I'm actually at ground zero; my friends over here are red zone, which is the surrounding environment. I'm directly in front of Flager where the electric power plant and your facility is proposed to be and the alternative site. I'm here to tell you that part of your impact study should involve the safety of the community, not only of Fort Bliss. The safety of the community is that we have a fuel tank where we have 4.2 million gallons of fuel stored, class A fuel. We also have nearby 65,000 gallons of LPG natural gas which services the community. We have an electric company who has disrespected this arm of this community by trying to sneak in a power plant on a fuel farm. Nowhere in the world is there an electric plant on a fuel farm. It doesn't take a rocket scientist to figure out that if this thing goes caboom, how many people are in – or neighbors in the community is it going to affect? A five-mile radius, 200,000 plus families. If you want to be part of that charade of disrespect to our community, look at the consequences when that thing goes up. We just had an explosion in west Texas with the fertilizer plant, a fraction of fuel of what is stored there, it devastated a community. We have a senator that was quoted in the Associated Press, "We have to look around to see what other issues we have out there that could blow up." Duh. A blind man can see that you don't put an electric plant next to a fuel farm.<br><br>The impact study should also, Colonel, address the safety of the community, the welfare being of the community being air pollutants, smog, stink, mosquito growth from your water treatment plants and a heavy carbon monoxide that the trucks will do on a daily basis. 160 trucks barreling through a two-way street, the safety and the air pollutants are a major concern.<br><br>I want to quote something that I saw in your presentation, "the quality of life and relationship with our local communities." You're looking at the quality of life for Fort Bliss, I applaud you for that.<br>Several years ago your base was due to become extinct. Thanks to the efforts of Mr. Perez and Congressman Reyes, the base was salvaged. We came this close of you guys not being here. The community backed up what the congressman was doing. We helped salvage your base. Do not do this to our community. If you obviously think that your plant is such a good thing and it's clean, why don't you put it across your house? Why do you want to put it across mine? | | | Refer to Comment #1 response. |

| | | | |
|---|---|---|---|
| We support solar geothermal energy, but look at what you're going to do to this community. This community, we have below poverty individuals. Your communication, if it wasn't for Mr. Barrera's e-mail that they've been tracking us fighting the electric company, we would have never known this was going on. This community doesn't have e-mail so don't send them messages, come out here and talk to them in English and Spanish. We don't have running water, we don't have sewer, but, yet, you're worried about quality of life for Fort Bliss. Think about our community. It's about time somebody cared about what we do in our community. | | | |
| **ID:** 71 | **Date:** 6/11/13 | **Name:** Barney Irving | **Method:** Oral Comment Given at the Mountain View High School Public Meeting |
| **Comment** | | | **Response** |
| I did hear you talk about 160 trucks. That's just coming one way I guess. Then I guess 160 trucks will go the other way. That's 320 trucks and probably not on propane, they're probably on diesel fuel. And where are they going to be? On my street, Flager Street, a two-way street, that's how I get to Montana, that's how I get to the airport, that's how I get downtown, that's how I get anywhere from my house is down Flager Street. Not on my street, folks. You've got a million acres out there, build a road for your tracks and build it through another area of Fort Bliss. Quality of life, I wonder how many flies are going to be on these trucks. I've been down to the landfill and you can't breathe, you need a handkerchief over your face in order to breathe. So the pollution from the trucks, the flies, the stench, that's quality of life. It's not just about parts per million like the EPA talks about. Environment is a whole lot more than parts per million in the air. It's what we've got to put up with every day. I think you could move the place to some other area in Fort Bliss. And then, when you think about it, the cheapest thing in the world we can transport is electricity. Why wouldn't you put it remotely from our area? If you want to bring electricity into El Paso Electric, it's cheap, they can bring power in from up in British Columbia to Los Angeles Department of Water and Power, high tension line, and they move the electricity around this country in grids.<br><br>Do you have to be right next door to a power plant that we don't want either? So I just hope you think about an environment that's more than parts per million, but it's noise and it's confusion and it's accidents on the streets and trucks coming and going and we're going to be putting up with that for a long time. Oh, by the way, and then we're going to have trucks going to the landfill with the waste from the -- from what you're burning. It's too much. The streets aren't for it and we don't have -- we don't have the facilities for that kind of thing and you're going to crowd us off our own roads. No. And if you really love us, then you must love the soldiers in Fort Bliss just as much and, like Ralph said, give it to them. So that's mainly my point. And one other thing, putting in a big industrial plant in the middle of a residential neighborhood is really nutty, it's unheard of. And I was driving by the Newman plant up north not too long ago and I was looking for all the beautiful homes that were snuggled up against that big Newman plant. I couldn't find one. People don't want to move in by an industrial plant and in this you should not be moving into our neighborhood. | | | Refer to Comment #1 response. |

| ID: 72 | Date: 6/11/13 | Name: John Briggs | Method: Oral Comment Given at the Mountain View High School Public Meeting |
|---|---|---|---|
| **Comment** | | | **Response** |
| I built my house out here three years ago, it cost me over $300,000, that was my retirement after spending 20 years in the service and 25 years working for the government out at White Sands, and you want to take this away from me. This is something that I had built that my children would be able to inherit after I'm gone and it's not going to be here -- I mean it's not going to be there for them. The price of my property, if you build this plant, is going to go down to next to nothing because you can't have property next to a dump and you keep telling me this isn't a dump. If it looks like a duck and quacks like a duck, it's a duck and this is a duck. And the other thing that you were talking about was security. What kind of security do you have? As far as I could tell driving by that fuel tank farm that they have out there, there is no security or little to speak of. What's going to keep terrorists – which the base is the terrorist part of it, you have to admit that -- to come in there and put a couple of RPGs in one of those tanks and take out your whole facility, the electric company and everything else out there along with our community. Now, we can't do anything about it.<br><br>The tank farmers there, it's already there and we can't do anything about that, but we can do something about what you guys are doing and it's stupid to build a dump in the middle of a city and that's what you're doing. The other thing is if you have three major military facilities in this area, you've got Fort Bliss, you've got White Sands and you've got Holloman Air Force Base. Now, if you guys are truly looking at some way where you can save money, why can't you get together with these other three military installations and build some place centrally where all three of those facilities can use for something like this and build it out in the middle of nowhere? You have plenty of land around here with nothing in it. Why do you want to build this right in the middle of our city? It's stupid and you need to think about that. | | | Refer to Comment #1 response. |
| **ID:** 73 | **Date:** 6/11/13 | **Name:** Fred Johnson | **Method:** Oral Comment Given at the Mountain View High School Public Meeting |
| **Comment** | | | **Response** |
| I like what you-all are doing with renewable energy and the whole aspect of Net Zero, I really do, but this is selfish, not by my house. Everybody said everything, we all feel that way. I was hoping my kids would inherit my property. I spent about what he did on his, my retirement. This is my retirement plan and I just personally don't want it near my place. There's a lot of other land out there that would be closer to where the electricity renews. Traffic is a big concern of ours, the pollution; children live out here and everything respectfully. | | | Refer to Comment #1 response. |

| **ID:** 74 | **Date:** 6/11/13 | **Name:** Veronica Carbajal | **Method:** Oral Comment Given at the Mountain View High School Public Meeting |
|---|---|---|---|
| **Comment** | | | **Response** |
| Net Zero is wonderful for our communities. We fight environmental racism and injustice next to landfills, next to power plants and what you're doing will help my other clients, it will help my clients in the Clint Landfill, it will help our clients near the Newman Power Plant in Montana Vista where they'll manage to fight the power plant because your reduction in energy reduces the pollution that El Paso Electric generates around these already sensitive communities.<br><br>However, Montana Vista should not bear the cost of your efforts. This community is comprised of over 7,000 people, over 30 percent of them live below the federal property guidelines. And I say live, but, really, they survive below the federal property guidelines and income. 90 percent of them are people of color, many of them are immigrants and if you've driven by the community, you have witnessed that it's a community of pioneers; folks who have managed to survive for over 40 years without, for a time, potable water, without sewage, without street lighting, with terrible roads. They really moved out here because they needed affordable housing and because they love the desert and your plans drive them both.<br><br>My clients have poured every single penny they own into their homes, that is their equity, and what you're proposing will threaten their property values. As many have said, it will threaten what they leave their children and also what they can bank on during their own lifetimes. So we're pleading with you that you consider the other alternatives because if you don't, my clients do have legal counsel and we will pursue this as far as we need to. We applaud what you're doing for El Paso to go -- for Fort Bliss and El Paso to go to Net Zero is fantastic and as an environmentalist, I -- again, we're all behind you on that, but we ask that you also consider the environmental impact. | | | Refer to Comment #1 response. |
| **ID:** 75 | **Date:** 6/11/13 | **Name:** Guillermina Flores | **Method:** Oral Comment Given at the Mountain View High School Public Meeting |
| **Comment** | | | **Response** |
| Before anything, I would like to make a -- I would like to ask a question of Fort Bliss. If you are aware of the project of El Paso Electric, the impact that they want to have in our community, this for me is quite deplorable that you still don't know the impact that this plant is going to have for us. For me personally, if you really need this plant, then please put it in an area where it will impact you and not for us. Why on the outskirts of the property? Why where we live and not where you live? That is not a good neighbor who would like to harm us. I don't think that that is really the policy of Fort Bliss. | | | Refer to Comment #1 response. |

| **ID:** 76 | **Date:** 6/13/13 | **Name:** Risher Gilbert | **Method:** Oral Comment Given at the Otero County Administration Building Public Meeting |
|---|---|---|---|
| **Comment** | | | **Response** |
| My primary comments are that I think alternative 4-A is a bad alternative. I think it's bad for several reasons. First of all it's near numerous residences. As you all know with your EIS recognizes the Homestead Meadows North, there's also a Haciendas development. It simply, I believe, is inappropriate to have a waste treatment plant that close to those residences with emissions. Your EIS document makes it clear there are hazardous materials that will be disposed of at the site on page 3, hyphen, 77. It's a long list of those. I won't repeat them, but it's a fairly serious list. There will also be emissions, as I recall, of lead, maybe cadmium and chromium. I'm not sure of all those, but it's under your air quality section. With Fort Bliss owning or leasing over a million acres, it is simply not logical to put this type of treatment plant that close to residences. Also the impacts of the plan include substantial daily traffic and other impacts that are recited in your EIS.<br><br>I think, though, most importantly what I want you to take note of tonight is an environmental justice issue which I think is very valid. This neighborhood where you are proposing to – where alternative 4-A would be placed has already absorbed a very large tank farm. It is now going to have a large El Paso Electric power plant with its own emissions and its own traffic. It's going to have huge transmission lines which are currently before the Public Utility Commission, as you may know. And to add this treatment plant to a neighborhood that's already been so impacted, I believe is frankly irresponsible and not good planning and is not -- and I expect more out of Fort Bliss and its land use planners than that. The -- there is a tipping point with neighborhoods. I've done fairly extensive environmental work for neighborhoods and there is a tipping point and when you add one more plant like this waste treatment plant, I believe it will be the tipping point for this neighborhood if it's not already going to be reached with the El Paso Electric power plant.<br><br>So I have many other things I could comment on. I think your alternative 4 -- I think its 4-B on Railroad Drive makes much more sense. Particularly as I've learned tonight you have two waste treatment plants or at least landfills near there already and you don't have as many private residences near there. I also would urge you to consider on any of these sites, as has been pointed out to me, you've given the general footprint in the EIS but not the specific location. I would urge you to go into a location further in to the military reservation as opposed to on the edges and I realize that there are all kinds of balancing factors you have to look at for operations in your other military uses. | | | Refer to Comment #1 response. |
| **ID:** 77 | **Date:** 6/13/13 | **Name:** Dory Schuster | **Method:** Oral Comment Given at the Otero County Administration Building Public Meeting |
| **Comment** | | | **Response** |
| I can't really comment on this environmental impact statement because I barely found out about it today, but I do have to say, as I was commenting to some of the -- your associates here, that I had a problem that's been reoccurring with other military impact statements that -- environmental impact statements that have come through and that is that the Fort Bliss Web site isn't accessible to many of the public. When | | | Refer to Comment #1 response. |

| | |
|---|---|
| we try to access it, is not accessible so if it's not accessible, we cannot read the document and with that in mind, I believe that this 45-day period should be extended because we should be able to access it online, hard copy, CD. I see that coming here tonight I asked for a CD or hard copy. Neither of those is available either. I cannot sit at a public library for hours on end to read a 500-page document, it's impossible. And this is not the first time. Fort Bliss has been contacted numerous times, White Sands, which this is a Fort Bliss issue, this environmental impact statement, but I know the Army wants to get there on many initiatives. So that is a disadvantage to the public and I do not believe that I can read a 500-page document, comment and do a good effort in what's left. From what I saw on the Register, there's a few days left for the 30 days to end and then there's, what, a couple of weeks which brings us to July 1st. This is a busy time for many people and I will ask formally that that extension be done and I will also be contacting the delegation and others who might be involved both here in my area and elsewhere. And another problem that has been is the inaccessibility of even contacting the Fort Bliss Public<br><br>Affairs Office. When we have problems related to the military, it's impossible to contact public affairs. I've have to call all the way to the garrison commander's office and then someone might speak to me from public affairs because going through that loop, but it has been quite a challenge because, as I mentioned, many times the e-mail address as given even on the Register are inaccessible so we have to call public affairs to get a working e-mail address, a working number. That should not be -- we as the public, if you want us to be involved, we need to have access, proper access or we cannot be involved. The other issue that's a regular occurrence. We also can't be involved if the notification is through a legal notice on the back of a newspaper published one time that is so small nobody can read it. We're -- how can we be involved? And the only reason I can -- I know that's the way it is because is because this is reoccurring, we've seen it on emissions -- emissions, White Sands initiatives, Fort Bliss issues, and that is the way it's done. I do not believe that the public is really welcome. As tonight I asked how many people here from the city of Alamogordo and vicinity? Who is being represented here by the public besides the few? There are just a few of us.<br><br>When I ask what, nobody will have heard of this. If somebody doesn't tell me this afternoon about it, I would not be here tonight. And I want to be the – make known about it because I just had not heard of this. And then going back into the Register, this apparently was initiated back in 2012 so that's quite a long time that I had not heard. And so, again, you know, we only have a few weeks for comment and that's a lot of pages of technical information for public citizens to comb through. Some of us have more knowledge than others, but for the regular folk, they don't have a chance so I would appreciate if those issues were addressed and even though I live in this community, in the area and I care about it, I care about what my neighbors go through, including her comments about El Paso and communities, social justice and justice to the people who live, their consideration, and I believe there should be a balance. We're seeing a lack of balance in what's going on here now with the military community which I've never had to get involved till now because I see the lack of balance, the pollution, the extreme noise and the negative impact and that's why I'm here tonight. | |

| AGENCY COMMENTS | | | |
|---|---|---|---|
| **ID:** 78 | **Date: 6/28/**13 | **Name:** State of New Mexico Department of Game and Fish | **Method:** Letter |
| **Comment** | | | **Response** |
| The New Mexico Department of Game and Fish (Department) has reviewed the Fort Bliss Sustainability Initiative Draft Environmental Impact Statement. The Department does not anticipate adverse effects to wildlife or important wildlife habitats from implementation of action alternatives 2 through 6. However, if action alternative 7 is implemented, which could include large scale wind generating facilities, adverse effects could occur to birds and bats, and the Department requests an opportunity to comment on subsequent NEPA scoping documents regarding siting locations of these potential facilities. | | | Thank you for your comment.<br><br>In the event that the Army implements Alternative 7 for a large-scale wind energy project, follow-on NEPA analysis will include appropriate consultation and correspondence with your agency. |
| **ID:** 79 | **Date: 6/28/**13 | **Name:** United States Environmental Protection Agency | **Method:** Letter |
| **Comment** | | | **Response** |
| <u>Air Quality -</u> The agencies responsible for the project should include a Construction Emissions Mitigation Plan and adopt this plan in the Record of Decision (ROD). In addition to all applicable local, state, or federal requirements, the EPA recommends that the following mitigation measures be included in the Construction Emissions Mitigation Plan in order to reduce impacts associated with emissions of NO x, CO, PM, S02, and other pollutants from construction-related activities:<br><br>Fugitive Dust Source Controls:<br><br>• Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate at active and inactive sites during workdays, weekends, holidays, and windy conditions;<br>• Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions; and<br>• Prevent spillage when hauling material and operating non-earthmoving equipment and limit speeds to 15 miles per hour. Limit speed of earth-moving equipment to 10 mph.<br><br>Mobile and Stationary Source Controls:<br><br>• Plan construction scheduling to minimize vehicle trips;<br>• Limit idling of heavy equipment to less than 5 minutes and verify through unscheduled inspections;<br>• Maintain and tune engines per manufacturer's specifications to perform at EPA certification levels, prevent tampering, and conduct unscheduled inspections to ensure these measures are followed;<br>• Consider use of construction equipment meeting EPA's Tier 4 engine standards. However, lacking availability of such non-road construction equipment that meets these standards, we would suggest use of EPA-verified particulate traps, oxidation catalysts and other appropriate controls where suitable to reduce emissions of diesel particulate matter and other pollutants at the construction site; and<br>• Consider alternative fuels and energy sources such as natural gas and electricity (plug-in or battery). | | | Thank you for your comments. A general construction emissions mitigation plan has been developed and is detailed in Section 5.1 of the Final EIS. |

| | |
|---|---|
| Administrative controls:<br><br>• Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking;<br>• Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips; and<br>• Identify sensitive receptors in the project area, such as children, elderly, and infirmed, and specify the means by which impacts to these populations will be minimized (e.g. locate construction equipment and staging zones away from sensitive receptors and building air intakes). | |
| Appendix C - Draft Air Quality Technical Study; page 3<br>This section states the USEPA also has classified Dona Ana and Otero counties in New Mexico (40 CFR 81.332) for criteria pollutants. A portion of Dona Ana County (Anthony, New Mexico) is designated as moderate non-attainment for PM10."This section primarily discusses counties that are designated nonattainment or maintenance of National Ambient Air Quality Standards (NAAQS) in 40 CFR 81.332), whereas Otero county is currently designated as "Unclassifiable/ Attainment" for all NAAQS, and is not included in the Dona Ana County/Anthony Quadrangle PM10 "Nonattainment" designation.<br><br>*Recommendation:*<br>• Clarify the classification that is being referred to regarding Otero County. | Wording in the FEIS has been adjusted to clarify the classification. |
| <u>Energy Demand and Generation -</u> Energy Supply; page 3-64:<br>According to 2015 use estimates, both average energy and peak energy use are projected to double from 2010 usage. This estimate came from a bullet point contained in an August 2011 newsletter published by Fort Bliss. It is unclear what information the newsletter used to arrive at the 2015 energy use estimates.<br><br>*Recommendation:*<br>• Cite the information source or study used to calculate the 2015 energy estimates for Fort Bliss. Highlight the expected changes at fort Bliss that would cause energy use to double from 2010 - 2015. | The FEIS incorporates revised information on baseline and projected energy use at Fort Bliss. This data is taken from a 2012 National Renewable Energy Laboratory report on Net Zero implementation at Fort Bliss and the FEIS references cited has been updated with this reference. |
| <u>Socioeconomics and Environmental Justice</u> - Alternative 3 - Water Reclamation Pipeline; page 3-126: The construction of a Water Reclamation Pipeline has the potential to raise major environmental justice issues. The DElS makes conclusions regarding the potential impacts to low income or minority populations of Alternative 3, but does not provide analysis or information to support such a conclusion. | The reclaimed water pipeline (Alternative 3) is part of an El Paso Water Utilities project that will distribute water inside Fort Bliss for landscape irrigation. Low-income or minority populations in El Paso will not be directly or indirectly affected by this project. |
| Alternative 4 - Waste to Energy Plant; page 3-128: The construction of a waste to energy (WTE) facility has the potential to raise major environmental justice issues. The proposed location of the WTE facility is adjacent to an identified Minority and Poverty Area (Figure 3-7). Some information is provided to | The Army has removed Alternative 4A, a proposed Waste-to-Energy (WTE) plant near the southern boundary of Fort Bliss north of Montana Avenue, |

| | |
|---|---|
| support the conclusion regarding impacts to low income or minority communities; however, there is no relevant public health and industry data concerning the potential for exposure (direct, indirect, and cumulative) from WTE facility activities to human health or environmental hazards in the potentially affected populations.<br><br>The DElS states that at least 100 fully loaded garbage trucks would be delivered daily for combustion to the WTE facility and another 30 trucks a day of ash would be leaving daily. The DElS does not evaluate the potential for noise, odor, flies, debris and ash from truck traffic on minority or low income communities **in** proximity to the facility. The DEIS explains some economic benefits of Zero Net initiative, but does not describe whether the residents (particularly minority or poverty communities) adjacent or nearby would benefit from the project.<br><br>4.3.10 Socioeconomic and Environmental Justice Cumulative Impacts; page 4-33: The cumulative impacts chapter contains summary statements that are not supported with analysis, documentation, or information. For example, page 4-33 states "Since implementation of this alternative is not expected to have a disproportionately high and adverse human health or environmental effect on minority, low-income, or younger segments of the local population, it would not cause cumulative impacts for the purposes of environmental justice when considered with any other actions in the area".<br><br>*Recommendation:*<br>The Army should provide a more detailed level of analysis, particularly for Alternatives 3 and 4, potential cumulative impacts, and potential direct impacts. The analysis should include:<br>• historical environmental stressors on these communities,<br>• health impacts of past, present or reasonably foreseeable future actions, and<br>• environmental and health impacts of the alternatives on identified environmental justice communities. | from the Final EIS as a result of public and agency comments received during the Draft EIS comment period. A decision has also been made to remove Alternative 4B, an alternate site proposed adjacent to Railroad Drive. These alternatives are not being carried forward for consideration in the Final EIS. Alternative 4 will instead focus on a programmatic analysis of several technically feasible WTE technologies. Possible project areas within Fort Bliss and scale of operations of such a plant will not be analyzed. If Alternative 4 is selected in the Record of Decision, further NEPA analysis would be required before a WTE plant could be constructed. |
| <u>General Comments - Consultation with Tribes</u><br>No documentation was provided in the DEIS showing the Army sent letters to Tribes, or their responses. Also, the document indicates that Tribes were identified and contacted for the limited purpose of National Historic Preservation Act (NHPA) discussion, or other concerns of a limited scope. Due to the nature of the project, it appears it could affect tribal resources (including natural resources), citizens or government services.<br><br>*Recommendation:*<br>Send the DEIS to the following Tribes: Tonkawa Tribe of Oklahoma, the Wichita and Affiliated Tribes of Oklahoma, Cheyenne/Arapaho Tribes, Apache Tribe of Oklahoma, Ponca Tribe of Oklahoma, and Jicarilla Apache Tribe (New Mexico). These Tribes practice religious ceremonies similar to the Tribes already identified in the DEIS and may have a historical or cultural connection to the EI Paso/Ft Bliss | Fort Bliss has an ongoing consultation relationship with the tribes that are listed in the EIS. The distribution list was developed from lists recommended by the New Mexico State Historic Preservation Office website, consultation with the Texas Historical Commission, and consultation with the tribes seeking their input about other tribes that may have interest. The tribes on the list are those that have currently expressed interest in the resources at Fort Bliss. Consultation with the tribes is government-to-government, and the Army has discussed the proposed projects with the tribes and is |

| | |
|---|---|
| ROI. Similarly, the Arizona State Historic Preservation Officer (SHPO) and the Arizona Apache Tribes, such as, the White Mountain and San Carlos Apache should be contacted.<br><br>• Identify all potentially affected tribes, resources and tribal communities, potentially applicable treaties, laws, policies, legal responsibilities and duties. Contact and, as appropriate, initiate consultation with Tribes concerning the potential effects of the alternatives. Provide an appendix that includes letters sent from the Army to Tribes for the purposes of NHPA and consultation under E.O. 13175, and the responses from Tribes. | taking into account their interest on all resources, including natural resources.<br><br>Fort Bliss will conduct consultation with the New Mexico and Texas SHPO, as well as the ACHP, in accordance with our Programmatic Agreement. None of the proposed alternatives have the potential to affect cultural resources in the State of Arizona, therefore under NHPA the Arizona is not required to be a consulting party. |
| <u>Other Consultations</u><br>Due to potential impacts to air quality, water quality and quantity, threatened and endangered species, migratory birds, and cultural, historical, and archeological resources; consultation with applicable local, regional, state, tribal, and federal agencies or governments is required.<br><br>*Recommendation:*<br>• In a dedicated section of the Final EIS include all correspondence between the Army and all applicable local, regional, state, tribal, and federal agencies or governments.<br><br>Affected Environment and Environmental Consequences; page 3-1<br>All of the alternatives are in the planning stage of development and implementation, and many details about each alternative need to be identified and assessed before the impacts of the alternatives can be adequately evaluated.<br><br>*Recommendation:*<br>• EPA recommends that analysis for each of the alternatives be provided in the form of a supplemental environmental analysis or tiered off of this DEIS. This would allow proper evaluation of, and comment on, the alternatives before progressing to the Final EIS stage. | Project site locations, technology types, and operational details for most of the DEIS alternatives are unknown at this time. When these decisions are made, additional NEPA analysis would likely be required to assess potential environmental impacts and prescribe appropriate mitigation measures. The Army will document mitigation measures pertinent to each alternative selected in the Record of Decision for this project. |
| Potential Mitigation and Monitoring; page 5-1<br>The best management practices (BMP's) and mitigation proposed in the DEIS are vaguely described and phrased in ways that diminish the certainty of their implementation. Phrases, such as, "could be used", "potentially", and may be implemented" do not qualify as mitigation. Similarly, stating that BMP's will be used to lessen impacts; and then offering vague BMP's which are not linked to specific impacts is not mitigation.<br><br>*Recommendation:*<br>• The DEIS needs to definitively state what BMP's and mitigation measures will be implemented, and then relate those BMP's and mitigation measures to a potential impact. | Best Management Practices and mitigation measures described in this EIS are based on the best available information. As final design plans are not available for all alternatives, future NEPA evaluations tiered off of this EIS may be required once final designs are known. |

| **ID:** 80 | **Date:** 7/30/13 | **Name:** State of Texas Representative Mary Gonzalez – District 75 | **Method:** Letter |
|---|---|---|---|
| **Comment** | | | **Response** |
| I am concerned however with the proposed location of the Waste-to-Energy plant detailed in Alternative 4A. This location is in the far southeast comer of Fort Bliss near the Montana Vista Community, the area that El Paso Electric has already begun construction for their gas-powered generating plant, and the petroleum holding wells for the Magellan pipeline. Since the public meeting held on June 11th I have heard from numerous constituents who are concerned of the possible implications that would come with placing this project in this sensitive location.<br><br>Upon reviewing the draft EIS I do not believe that the effects of coupling this Waste-to-Energy project with the future El Paso Electric natural gas power plant and the petroleum tanks have been adequately looked into. Ensuring the safety of my constituents is of the upmost importance to me and the potential dangers of having these combined projects within a mile of two colonias should be further examined.<br><br>Additionally, the implications that result from the transportation of the trash collected to fuel the Waste-to-Energy project and the ash it produces would negatively impact the quality of life of the surrounding community. The draft EIS indicates that residents would be impacted by the increased truck traffic that would occur from the approximately 130 daily truck deliveries entering and exiting the Waste-to-Energy plant on a daily basis. These trucks would be travelling on already heavily traveled roads which run through minority and low income communities. The draft EIS indicates that these same trucks would carry odors that could potentially bother residents in these communities. This location is also the only one which your draft £IS indicates would result in significant traffic impacts during the estimated two year construction period.<br><br>It is equally troubling that the draft EIS indicates that the operation of the Waste-to-Energy plant would result in significant impacts to air quality. The emissions produced from the Waste-to-Energy plants combustion of 1,100 tons of waste processed daily combined with the El Paso Electric natural gas power plant could cause potential public health and safety issues that need to be further investigated.<br><br>If Fort Bliss were to pursue construction of a Waste-to-Energy plant I ask that you consider the location designated in alternative 4B. The area in alternative 4A already has two potentially delicate projects located within its region of influence. Adding this project within such a close proximity would adversely impact the surrounding community. | | | Thank you for your response.<br><br>The Army has removed Alternative 4A, a proposed Waste-to-Energy (WTE) plant near the southern boundary of Fort Bliss north of Montana Avenue, from the Final EIS as a result of public and agency comments received during the Draft EIS comment period. A decision has also been made to remove Alternative 4B, an alternate site proposed adjacent to Railroad Drive. These alternatives are not being carried forward for consideration in the Final EIS. Alternative 4 will instead focus on a programmatic analysis of several technically feasible WTE technologies. Possible project areas within Fort Bliss and scale of operations of such a plant will not be analyzed. If Alternative 4 is selected in the Record of Decision, further NEPA analysis would be required before a WTE plant could be constructed. |

| **ID:** 81 | **Date:** 7/1/13 | **Name:** United States Department of the Interior | **Method:** Letter |
|---|---|---|---|
| **Comment** | | | **Response** |
| The U.S. Department of the Interior has reviewed the Draft Environmental Impact Statement for the Implementation of Energy, Water, and Solid Waste Sustainability Initiatives at Fort Bliss, Texas and New Mexico. In this regard, we have no comment. | | | Thank you for your comment. |

| **ID:** 82 | **Date:** 7/30/13 | **Name:** United States Representative Beto O'Rourke – 16th District, Texas | **Method:** Letter |
|---|---|---|---|
| **Comment** | | | **Response** |
| I have concerns with the proposed Alternative 4A location for the WTE plant and the impacts it would have on the adjacent Montana Visit Community.<br><br>Alternative 4A, as described in the EIS, is problematic for a number of reasons. First, the location in the far southeast corner of Fort Bliss would be in close proximity to a new El Paso Electric natural gas power plant. Residents in the Montana Vista community are rightly concerned that the two projects together could adversely impact their community. The EIS notes the impacts on air quality the facility would have due to the combustion of 1,100 tons of waste each day. When combined with the emissions from the new El Paso Electric plant, the health and environmental impacts on this low-income and predominately minority community could be severe.<br><br>Second, Alternative 4A would place the WTE plant in the same vicinity as the Magellan pipeline petroleum holding wells. Area residents continue to have concerns about place the WTE plant in such a sensitive location and what precautions will be taken to protect their community.<br><br>Third, the proposed trash truck route for Alternative 4A, which would be used to transport the trash needed to fuel the WTE plant, would have an impact on the Montana Vista Community. The EIS estimates that 130 truck deliveries would occur each day. There would be additional traffic impacts during the 2-year construction phase. As the EIS notes, this traffic would further burden already heavily travelled roads and would exacerbate air pollution in the area. Odors associated with trucks carrying waste would impact the quality of life of nearby residents.<br><br>Given the problems associated with Alternative 4A and the fact that the Montana Vista community is already home to both the holding wells and the future El Paso Electric plant, I respectfully request that Fort Bliss consider other designated alternatives for the WTE plant. I hope that you and the Fort Bliss leadership will work to find a site that will minimize the impact on the health and quality of life of my constituents. | | | Thank you for your comments.<br><br>The Army has removed Alternative 4A, a proposed waste-to-energy (WTE) plant near the southern boundary of Fort Bliss north of Montana Avenue, from the Final EIS as a result of public and agency comments received during the Draft EIS comment period. A decision has also been made to remove Alternative 4B, an alternate site proposed adjacent to Railroad Drive. These alternatives are not being carried forward for consideration in the Final EIS. Alternative 4 will instead focus on a programmatic analysis of several technically feasible WTE technologies. Possible project areas within Fort Bliss and scale of operations of such a plant will not be analyzed. If Alternative 4 were selected in the Record of Decision, further NEPA analysis would be required before a WTE plant could be constructed. |
| **ID:** 83 | **Date:** 7/30/13 | **Name:** Texas Department of Parks and Wildlife | **Method:** Letter |
| **Comment** | | | **Response** |
| Alternative 2 have been established, construction activities would likely occur on previously developed lands or disturbed, actively managed areas (i.e., mowed or landscaped). Recommendation: Depending on the project location, construction of housing projects and wind energy infrastructure can result in loss and degradation of wildlife habitat. As discussed in the EIS, risks to wildlife from wind energy projects can also include bird and bat collisions with wind turbines and associated infrastructure as well as displacement and behavioral changes (e.g. avoidance). If this alternative is implemented, TPWD requests that the Army coordinate the above-mentioned housing project and the wind turbine project with this office once the locations 'of these projects have been determined so that TPWD may provide a detailed | | | Thank you for your comments.<br><br>If Alternatives 2, 4, 6 or 7 are selected for implementation and projects with high-profile structures such as wind turbine towers or transmission lines are planned in Texas, Texas Parks and Wildlife Department will be consulted and engaged in project review. The Army would seek |

| | |
|---|---|
| project-specific review. | input from Texas Parks and Wildlife Department on tower design and location of suitable sites. Additional NEPA analysis for specific project site(s) and system technologies would likely be required and tiered to this EIS. |
| Alternative 4 - TPWD supports the Army's proposal to follow raptor protection guidelines. However, depending on the project location, construction of the WTE plant and electrical transmission lines could result in loss and degradation of wildlife habitat. In addition, steampowered turbines could require large quantities of water, which is in limited supply in this arid environment. If this alternative is implemented, TPWD requests that the Army coordinate the above-mentioned WTE project and proposed electrical transmission lines with this office once the locations of these projects and plans for water sources have been determined so that TPWD may provide a detailed project-specific review.<br><br>Alternative 6 - TPWD supports the Army's proposal to follow raptor protection guidelines. However, depending on the project location, construction of the solar power project and electrical transmission lines could result in loss and degradation of wildlife habitat. In addition, steampowered turbines could require large quantities of water, which is in limited supply in this arid environment. If this alternative is implemented, TPWD requests that the Army coordinate the above-mentioned solar power project including the associated transmission lines with this office once the location of this project and plans for water sources haves been determined so that TPWD may provide a detailed project-specific review.<br><br>Alternative 7 - If this alternative is implemented, TPWD requests that the Army coordinate any future projects that would be developed under Alternative 7 with this office so that TPWD may provide a detailed project-specific review. | The Army has removed Alternative 4A, a proposed waste-to-energy (WTE) plant near the southern boundary of Fort Bliss north of Montana Avenue, from the Final EIS as a result of public and agency comments received during the Draft EIS comment period. A decision has also been made to remove Alternative 4B, an alternate site proposed adjacent to Railroad Drive. These alternatives are not being carried forward for consideration in the Final EIS. Alternative 4 will instead focus on a programmatic analysis of several technically feasible WTE technologies. Possible project areas within Fort Bliss and scale of operations of such a plant will not be analyzed. If Alternative 4 is selected in the Record of Decision, further NEPA analysis would be required before a WTE plant could be constructed. |
| Vegetation - TPWD recommends reducing the amount of vegetation proposed for clearing if at all possible. TPWD recommends minimizing clearing of native vegetation, particularly mature native trees (if present) and shrubs to the greatest extent practicable. TPWD recommends in-kind on-site replacement/restoration of the native vegetation wherever practicable. Colonization by invasive species, particularly invasive grasses and weeds, should be actively prevented. Vegetation management should include removing invasive species early on while allowing the existing native plants to revegetate the disturbed areas. To minimize adverse effects, activities should be planned to preserve any mature trees (if present), particularly acorn, nut or berry producing varieties. These types of vegetation are high value to wildlife as food and cover. TPWD generally recommends that trees greater than 12 inches in diameter at breast height (dbh) to be removed be replaced at a ratio of three trees for every one (3: 1) lost to the extent practicable, either on –site or off-site. Trees less than 12-inches in dbh should be replaced at a 1:1 ratio. Replacement trees should be of equal or better wildlife quality than those removed and be regionally adapted native species. A three to five year maintenance plan that ensures an 85 percent survival rate should be developed for the replacement trees. | The Army will strive to avoid or minimize effects on locally important natural resources. Project design would seek to minimize the amount of native vegetation cleared to the greatest extent practicable. Re-vegetation of disturbed sites would use locally-adapted native plants, selected with the help of reference sources provided by Texas Parks and Wildlife Department. |

| | |
|---|---|
| Invasive Species and Revegetation - TPWD discourages the use of any non-native vegetation in landscaping and revegetation and recommends using locally adapted native species. Lists of invasive species to avoid can be accessed online at http://texasinvasives.org/invasives database/.<br><br>The TPWD Texas Wildscapes website has information about selecting native plants that would be best suited for revegetation and landscaping. Information on Texas Wildscapes is available at http://www.tpwd.state.tx.us/huntwildlwildlwildscapes/. Additional sources include the TPWD Texas Plant Information Database at http://tpid.tpwd.state.tx.us/ and the Ladybird Johnson Wildflower Center's Recommended Native Plants database at<br>http://www . wildflower.org/collections/.<br>The Ladybird Johnson Wildflower Center's Native Plant Alternatives to Invasives database can be accessed at http://www.wildflower.org/ alternatives/index.php<br><br>Migratory Bird Treaty Act - In addition to the above-mentioned USFWS Final Land Based Wind Energy Development Guidelines, TPWD recommends reviewing the attached Draft TPWD Voluntary Recommendations for Wind Energy Development These guidelines are intended to enable Texas to develop its wind resources in a manner that minimizes adverse impacts to the wildlife, habitats, and natural resources of Texas through proper pre-project risk assessment, good project design and operation, and effective adaptive management practices.<br><br>TPWD recommends a minimum of two years of preconstruction avian surveys focused during migratory periods in appropriate habitat. One of the reasons for multi-year surveys is to account for variability in species occurrence that may relate to factors that vary from year to year like weather, varying migration pathways, and annual changes in habitat and food availability. Pre-construction survey sites should include areas which may exhibit high bird use (such as water features and prairie dog towns), and/or support rare and protected species. Information obtained during pre-project assessments should be used in the design of the project to avoid adverse impacts to birds to the greatest extent feasible.<br><br>TPWD also recommends a minimum of two years of post-construction fatality surveys. The attached table titled Site Sensitivity for Birds may be useful to determine recommended pre- and post-construction monitoring needs. If conclusive fatality data can be obtained in one year, the second year of post-construction studies could focus on the issues of displacement and edge effects. | |
| TPWD recommends the electrical collection systems be buried between turbines when feasible, and bird flight diverter markings should be installed when overhead collection lines are used. Raptor protection measures such as adequate conductor spacing, perch guards and insulated jumper wires should also be used whenever overhead transmission lines are present. For additional information, please see the attached TPWD Recommendations for Electrical Transmission/Distribution Line Design and Construction. | WTE, wind turbine, and transmission line site locations have not yet been determined; however, likely locations would not be near known bat concentrations or avian migration routes. The Army will refer to the TPWD Recommendations for Electrical Transmission/Distribution Line Design and Construction when any future projects begin the |

| | |
|---|---|
| | planning process. |
| Endangered Species Act - TPWD recommends that construction crews be made aware of the potential for the Northern Aplomado Falcon to be in the project area and instructed to avoid any disturbance of Northern Aplomado Falcons if they occur within the vicinity of any of the proposed projects. As previously stated in the MBT A section of this letter, please refer to the above-mentioned wind energy and transmission line guidelines to minimize impacts to migratory birds. TPWD strongly recommends that any project area that may contain suitable habitat be surveyed for the Sneed's pincushion cactus. On-the-ground surveys should be performed by a qualified biologist familiar with the identification of this species prior to construction. Surveys should be conducted when this species is most detectable and identifiable (usually during the flowering season), and disturbance of this species should be avoided during construction to the extent feasible. If plants are found in the path of construction, this office and the USFWS should be contacted for further coordination and possible salvage of plants and/or seeds for seed banking. Plants not in the direct path of construction should be protected by markers or fencing and by instructing construction crews to avoid any harm. | Habitat for the Northern Aplomado Falcon is not being considered for project development for any of the action alternatives. If future projects would possibly affect habitat for this species, Section 7 consultation would be initiated.<br><br>The Army (Fort Bliss DPW-E) monitors the occurrence and distribution of Sneed's pincushion cactus. It is not foreseeable that future projects under this EIS would affect habitat for this species, if this potential exists, consultation with TPWD and USFWS would be required. |
| State-listed Species - TPWD recommends that a pre-construction survey be conducted for each of the proposed projects to determine if horned lizards are present on site. A useful indication that Texas horned lizard may occupy the site is the presence of Harvester Ant *(Pogonomyrmex barbatus)* nests since Harvester Ants are the primary food source of horned lizards. The survey should be performed during the warm months of the year when the horned lizards are active. Fact sheets, including survey protocols and photos of Texas horned lizard may be found on-line<br>At http://www.tpwd.state.tx.us/learning/texas nature trackers/horned lizard and at http://www.tpwd.state.tx.uslhuntwildlwildlspecies/thlizardl.<br><br>If mammal burrows, existing drainage pipes, storm drains, cement culverts, or any other urban structure that may provide suitable habitat would be disturbed as a result of the proposed projects, TPWD recommends the burrows or structures be surveyed for burrowing owls. If nesting owls are found, disturbance should be avoided until the eggs have hatched and the young have fledged.<br><br>TPWD recommends that personnel involved with clearing and construction be instructed to take appropriate measures to avoid impacts to bird species protected under the MBT A. In the event that bird species are encountered on-site during construction, every effort should be made to avoid take of protected birds, active nests, eggs, and/or young. | The Army has addressed protection of rare species that have the potential to occur on Fort Bliss that would conceivably be affected by the action alternatives. Many of the species listed in the Annotated County List of Rare Species for El Paso County do not have habitat on Fort Bliss where projects would be located. For instance, Hueco rock-daisy is found in areas with steep rocky slopes and screening criteria would keep project away from such areas. Likewise, desert night-blooming cereus is not known within Fort Bliss and projects are not foreseen that would be sited on potential habitat. Proposed projects would be designed so as to protect rare species and their habitat, if any were to occur in areas under consideration. |
| TPWD requests that the Army address potential impacts to rare species that are included on the Annotated County List of Rare Species for EI Paso County. If potential impacts are identified, TPWD requests that the Army incorporate actions into the proposed projects to minimize impacts to these species. | The Army has addressed protection of rare species occurring on Fort Bliss that would conceivably be affected by the action alternatives. Many of the species listed in the Annotated County List of Rare Species for El Paso County do not have habitat on |

| | |
|---|---|
| TPWD would like to point out that before a determination can be made as to whether the project would affect species or resources, the evaluation would have to be carried further with on-the ground surveys for potential habitat and species. TPWD recommends that an on-the-ground survey be performed by a qualified biologist prior to all of the proposed projects if they have not been performed to date. | Fort Bliss where projects would be located. For instance, Hueco rock-daisy is found in with steep rocky cliffs and screening criteria would keep project away from such areas. The desert night-blooming cereus occurs in vegetation communities of Fort Bliss but outside of potential project areas. Surveys conducted in selected areas of Fort Bliss during 2012 indicate that the Wheeler's spurge is locally abundant in typical sandy habitat. These surveys located over 900 plants. Project site locations under this EIS will avoid areas where sensitive natural resources occur in accordance with screening criteria. |

This page intentionally left blank.

# Appendix C: Environmental Screening Criteria

This page intentionally left blank.

# Checklist of Environmentally Compatible Criteria (Programmatic Site Development)

*Please note: The following checklist of environmentally compatible criteria are intended to be used for the screening of potential future renewable energy projects and determine if a Record of Environmental Consideration may be prepared or if additional National Environmental Policy Act review is warranted.*

| CATEGORY | | Yes, No, N/A | RESPONSE DOCUMENTATION (as needed) |
|---|---|---|---|
| **Compliance with this EIS** | | | |
| 1 | The proposed renewable energy project is within the scope of this environmental impact statement (EIS) and was identified within Alternatives 2, 4, 5, or 6. | | If no, tiering from this EIS is dependent on the answer to question #2.<br>If yes, continue to question #3. |
| 2 | The proposed renewable energy project is within the scope of this PEIS and is consistent with the range of renewable energy projects included in Alternative 7. | | If no, the environmental analysis required under the National Environmental Policy Act (NEPA) may not be tiered from this EIS. Initiate a separate NEPA action.<br>If yes, continue to question #3. |
| **Air Quality** | | | |
| 3 | Construction of the proposed project would cause violation(s) of National Ambient Air Quality Standards. | | If yes, further analysis and coordination with air quality permitting authority may be required.<br>If no, continue to question #4. |
| 4 | Construction of the proposed project would cause violation(s) of the installation's Title V Operating Permit. | | If yes, further analysis and coordination with air quality permitting authority may be required.<br>If no, continue to question #5. |
| 5 | Construction of the proposed project would cause violation(s) of emission standards for hazardous air pollutants at the installation or in the immediate surrounding area. | | If yes, further analysis and coordination with air quality permitting authority may be required.<br>If no, continue to question #6. |
| **Airspace** | | | |
| 6 | Construction of the proposed project would restrict movement of other air traffic or create conflicts with air traffic control | | If yes, further analysis and coordination with the Federal Aviation Administration may be required.<br>If no, continue to question #7. |

| CATEGORY | | Yes, No, N/A | RESPONSE DOCUMENTATION (as needed) |
|---|---|---|---|
| **Compliance with this EIS** | | | |
| 7 | Construction of the proposed project would have potential to impacts operations at El Paso International Airport, Biggs Army Airfield, or Holloman Air Force Base | | If yes, further analysis and coordination with the Federal Aviation Administration or U.S. Air Force may be required.<br>If no, continue to question #8. |
| 8 | Construction of the proposed project would require a change in operations within airspace already designated for other purposes, result in the need to designate controlled airspace where previously none existed, result in the reclassification of controlled airspace, or result in a need to designate regulatory special use airspace | | If yes, further analysis and coordination with the Federal Aviation Administration may be required.<br>If no, continue to question #9. |
| **Biological Resources** | | | |
| 8 | The proposed project is located in an area where locally important natural resources such as black grama grasslands, sand sagebrush communities, shinnery oak islands, and riparian and wetland areas occur. | | If yes, initiate preliminary survey. Further analysis may be required.<br>If no, continue to question #9. |
| 9 | Construction of the proposed project would cause a significant decrease in the relative percentage of any one vegetation type within Fort Bliss, particularly if the vegetation type is not widespread within Fort Bliss or regionally | | If yes, further analysis may be required.<br>If no, continue to question #10. |
| 10 | Construction of the proposed project would cause fragmentation, loss, or degradation of high-quality natural areas or sensitive sites. | | If yes, initiate preliminary survey. Further analysis may be required.<br>If no, continue to question #11. |
| 11 | Construction of the proposed project would cause local destruction of rare or sensitive plant species. | | If yes, initiate preliminary survey. Further analysis may be required.<br>If no, continue to question #12. |
| 12 | Construction of the proposed project would cause local population impacts on local flora or fauna. | | If yes, make necessary revisions.<br>If no, continue to question #13. |
| 13 | Construction of the proposed project would cause long-term loss or impairment of local habitat. | | If yes, make necessary revisions.<br>If no, continue to question #14. |

| | CATEGORY | Yes, No, N/A | RESPONSE DOCUMENTATION (as needed) |
|---|---|---|---|
| **Compliance with this EIS** | | | |
| **Cultural Resources** | | | |
| 14 | Construction or operation of the proposed project would alter the characteristics of a property that may qualify for or is listed on the National Register of Historic Places (NRHP). | | If yes, you may need to initiate formal consultation with the State Historic Preservation Officer (SHPO). Consultation with the SHPO may be necessary if a historic or cultural resource is within the cantonment area or range complex.<br>If no, continue to question #15. |
| 15 | Construction or operation of the proposed project would:<br>• Cause physical destruction, damage, or alteration to all or part of the property that may qualify for or is listed on the NRHP.<br>• Introduce visual, audible, or atmospheric elements that are out of character with the property or alter its setting.<br>• Violate the provision of Archaeological Resources Protection Act or Native American Graves Protection and Repatriation Act.<br>• Disturb sacred sites or properties of traditional cultural or religious importance. | | If yes, you may need to initiate formal consultation with the SHPO or tribes. Consultation with the SHPO may be necessary if a historic or cultural resource is within the energy development site.<br>If no, continue to question #16. |
| **Geology and Soils** | | | |
| 16 | Construction or operation of the proposed project would cause a substantial increase in soil compaction resulting in decreased re-vegetation potential. | | If yes, contact the Installation environmental office and consult with the Natural Resources Conservation Service, as needed.<br>If no, continue to question #17. |
| 17 | Construction or operation of the proposed project would cause a substantial increase in soil erosion and/or loss of productivity due to soil mineral leaching. | | If yes, contact the Installation environmental office and consult with the Natural Resources Conservation Service as needed. Incorporate and document soil erosion control BMPs, as needed.<br>If no, continue to question #18. |
| 18 | Construction or operation of the proposed project would cause a decrease of a unique soil type. | | If yes, contact the Installation environmental office and consult with the Natural Resources Conservation Service, as needed.<br>If no, continue to question #19. |

| CATEGORY | | Yes, No, N/A | RESPONSE DOCUMENTATION (as needed) |
|---|---|---|---|
| **Compliance with this EIS** | | | |
| 19 | The proposed project would require either or both a soil erosion control plan and a National Pollutant Discharge Elimination System (NPDES) permit for the construction process. | | If yes, coordinate with the appropriate regulating authority to obtain the NPDES permit and submit the soil erosion control plan for review and approval.<br>If no, continue to question #20. |
| **Hazardous Waste and Hazardous Material** | | | |
| 20 | Construction or operation of the proposed project would cause the storage, use, transport, or disposal of hazardous materials to increase risk to human health the environment. | | If yes, initiate preliminary survey. Further analysis may be required.<br>If no, continue to question #21. |
| 21 | Construction or operation of the proposed project would cause the installation to violate laws or regulations governing hazardous material/waste management and/or violate the installation’s hazardous waste permit. | | If yes, coordinate with Installation hazardous waste management specialists and state regulator, as necessary.<br>If no, continue to question # 22. |
| 22 | The installation has installed and has a maintenance program to ensure BMPs to reduce, to the maximum extent possible, migration of hazardous waste and other materials generated by the proposed project.<br>If yes, specify and describe all implemented BMPs. | | If no, additional evaluation or procedures to treat waste may be needed.<br>If yes, specify implemented BMPs; continue to question #23. |
| **Land Use** | | | |
| 23 | Construction and operation of the proposed project would alter existing land use and cause severe incompatibility with adjacent land uses. | | If yes, evaluate adjacent land uses or consider an alternate site.<br>If no, continue to question #24. |
| 24 | Construction and operation of the proposed project would cause significant changes to existing or regional land use. | | If yes, evaluate adjacent land uses or consider an alternate site.<br>If no, continue to question #25. |
| **Noise** | | | |
| 25 | Noise from the construction and operation of the proposed project would exceed the standard for noise levels in Land Use Planning Zones (see Table 3-26 of the EIS). | | If yes, initiate further analysis to determine noise contours and identify potential mitigations.<br>If no, continue to question #26. |

| CATEGORY | | Yes, No, N/A | RESPONSE DOCUMENTATION (as needed) |
|---|---|---|---|
| **Compliance with this EIS** | | | |
| 26 | Noise caused from construction would exceed City of El Paso noise standards (see Tables 3-29 and 3-30 of the EIS). | | If yes, recommend contacting the Installation natural resource specialist and state natural resource agency as appropriate.<br>If no, continue to question #27. |
| 27 | A sensitive noise receptor (e.g., hospital, school, church, or day care facility) is located within 100 meters of the project. | | If yes, evaluate the technology and need for any additional noise analysis.<br>If no, continue to question # 28. |
| **Socioeconomics and Environmental Justice** | | | |
| 28 | Construction of the proposed project causes a public health hazard or adversely affects housing, school, or community services. | | If yes, further analysis to determine the severity of impacts and identify potential mitigations<br>If no, continue to question #29. |
| 29 | Construction or operation of the proposed project would cause a disproportionate environmental health or safety risk to children. | | If yes, further analysis to determine the severity of impacts and identify potential mitigations.<br>If no, continue to question #30. |
| 30 | Construction or operation of the proposed project would cause a disproportionate environmental, economic, social, or health impacts on minority of low-income populations (Executive Order 12898). | | If yes, further analysis to determine the severity of impacts and identify potential mitigations.<br>If no, continue to question #31. |
| 31 | Construction or operation of the proposed project would cause impacts to socioeconomics greater that those described in this EIS. | | If yes, further analysis to determine the severity of impacts and identify potential mitigations.<br>If no, continue to question #32. |
| 32 | Construction and operation of the proposed project would require the need for additional utilities to operate, including electrical, sewer, fiber optics, gas, and water, or would cause an impairment of utility service to local communities, homes, and businesses. | | If yes, further analysis to determine the severity of impacts and identify potential mitigations.<br>If no, continue to question #33. |
| **Water Resources** | | | |
| 33 | Construction and operation of the proposed project would involve direct or indirect discharge (or runoff) of sediment into a waterway or storm sewer or obstruct water flows. | | If yes, further analysis needed to determine the severity or impacts and identify potential mitigations.<br>If no, continue to question #34. |

| CATEGORY | | Yes, No, N/A | RESPONSE DOCUMENTATION (as needed) |
|---|---|---|---|
| **Compliance with this EIS** | | | |
| 34 | Construction and operation of the proposed project would result in adverse impacts to surface water quality and result in chemical, physical, or biological effects that would adversely alter historical baseline or a change in surface water impairment status. | | If yes, further analysis to determine the severity of impacts and identify potential mitigations.<br>If no, continue to question #35. |
| 35 | Construction or operation of the proposed project would affect groundwater | | If yes, further analysis to determine the severity of impacts and identify potential mitigations.<br>If no, continue to question #36. |
| 36 | Construction or operation of the proposed project would result in ground disturbance of 1 acre or greater or result in an increase impermeable surfaces. | | If yes, further analysis to determine the severity of impacts and identify potential mitigations.<br>If no, continue to question #37. |
| **Traffic and Transportation** | | | |
| 37 | Construction and operation of the proposed project would increase traffic volumes or cause delays to levels that would impair a roadway's handling capacity or increase traffic safety hazards. | | If yes, further analysis to determine the severity of impacts and identify potential mitigations.<br>If no, continue to question #38. |
| 38 | Construction and operation of the proposed project could cause road failure resulting in rutting, cracking, or other pavement problems that requires substantial maintenance or construction activities. | | If yes, further analysis to determine the severity of impacts and identify potential mitigations.<br>If no, and if the answer to all of the questions above was no, proceed with Record of Environmental Consideration signature and implementation of the Proposed Action. |

# Appendix D: Economic Forecast System

This page intentionally left blank.

# 1.0 Socioeconomic Impact Assessment

Socioeconomic impacts are linked through cause-and-effect relationships. Military payrolls and local procurement contribute to the economic base for the region of influence (ROI). In this regard, the action alternatives would have a multiplier effect on the local and regional economy. With the action alternatives, direct jobs would be created, generating new income and increasing personal spending. This spending generally creates secondary jobs, increases business volume, and increases revenues for schools and other social services.

# 2.0 Economic Impact Forecast System

The U.S. Army, with the assistance of many academic and professional economists and regional scientists, developed the Economic Impact Forecast System (EIFS) to address the economic impacts of the National Environmental Policy Act (NEPA)-requiring actions and to measure their significance. As a result of its designed applicability, and in the interest of uniformity, EIFS should be used in NEPA assessments for the action alternatives. The entire system is designed for the scrutiny of a populace affected by the actions being studied. The algorithms in the EIFS model are simple and easy to understand, but still have firm, defensible bases in regional economic theory.

EIFS was developed under a joint project of the U.S Army Corps of Engineers (USACE); the Army Environmental Policy Institute (AEPI); and the Computer and Information Science Department of Clark Atlanta University, Georgia. EIFS is an online system, and the EIFS Web application is hosted by USACE, Mobile District. The system is available to anyone with an approved user-id and password. University staff and the staff of USACE, Mobile District are available to assist with the use of EIFS.

The databases in EIFS are national in scope and cover the approximately 3,700 counties, parishes, and independent cities that are recognized as reporting units by federal agencies. EIFS allows the user to define an economic ROI by identifying the counties, parishes, or cities to be analyzed. Once the ROI is defined, the system aggregates the data, calculates multipliers and other variables used in the various models in EIFS, and prompts the user for forecasted input data.

## 3.0 Economic Impact Forecast System Model

The basis of the EIFS analytical capabilities is the calculation of multipliers that are used to estimate the impacts resulting from military-related changes in local expenditures or employment. In calculating the multipliers, EIFS uses the economic base model approach, which relies on the ratio of total economic activity to basic economic activity. Basic, in this context, is defined as the production or employment engaged to supply goods and services outside the ROI or by federal activities (such as military installations and their employees). According to economic base theory, the ratio of total income to basic income is measurable (as the multiplier) and sufficiently stable so that future changes in economic activity can be forecast. This technique is especially appropriate for estimating aggregate impacts and makes the economic base model ideal for the environmental assessment and environmental impact statement processes.

The multiplier is interpreted as the total impact on the economy of the region resulting from a unit change in its base sector; for example, a dollar increase in local expenditures due to an expansion of its military installation. EIFS estimates its multipliers using a location quotient approach based on the concentration of industries within the region relative to the industrial concentrations for the nation.

The user inputs into the model the data elements that describe the Army action: the change in expenditures, or dollar volume of the construction project(s); change in civilian or military employment; average annual income of affected civilian or military employees; the percent of civilians expected to relocate due to the Army's action; and the percent of military living on-post. Once these are entered into the EIFS model, a projection of changes in the local economy is provided. These are projected changes in sales volume, income, employment, and population. These four indicator variables are used to measure and evaluate socioeconomic impacts. Sales volume is the direct and indirect change in local business activity and sales (total retail and wholesale trade sales, total selected service receipts, and value-added by manufacturing). Employment is the total change in local employment due to the Proposed Action, including not only the direct and secondary changes in local employment, but also those personnel who are initially affected by the military action. Income is the total change in local wages and salaries due to the Proposed Action, which includes the sum of the direct and indirect wages and salaries, plus the income of the civilian and military personnel affected by the Proposed Action. Population is the increase or decrease in the local population as a result of the Proposed Action.

# 4.0 Significance of Socioeconomic Impacts

Once model projections are obtained, the rational threshold value (RTV) profile allows the user to evaluate the significance of the impacts. This analytical tool reviews the historical trends for the defined region and develops measures of local historical fluctuations in sales volume, income, employment, and population. These evaluations identify the positive and negative changes within which a project can affect the local economy without creating a significant impact. The greatest historical changes define the boundaries that provide a basis for comparing an action's impact on the historical fluctuation in a particular area. Specifically, EIFS sets the boundaries by multiplying the maximum historical deviation of the following variables: the sales volume, income, employment, and population (see Table 1).

Table 1. Historical Deviation Variables

| | | **Increase** | **Decrease** |
|---|---|---|---|
| Sales Volume | X | 100% | 75% |
| Income | X | 100% | 67% |
| Employment | X | 100% | 67% |
| Population | X | 100% | 50% |

These boundaries determine the amount of change that will affect an area. The percentage allowances are arbitrary, but sensible. The maximum positive historical fluctuation is allowed with expansion because economic growth is beneficial. While cases of damaging economic growth have been cited, and although the zero-growth concept is being accepted by many local planning groups, military base reductions and closures generally are more injurious to local economics than are expansion actions.

The major strengths of the RTV are its specificity to the region under analysis and its basis on actual historical data for the region. The EIFS impact model, in combination with the RTV, has proven successful in addressing perceived socioeconomic impacts. The EIFS model and the RTV technique for measuring the intensity of impacts have been reviewed by economic experts and have been deemed theoretically sound.

The following are the EIFS inputs and output data and the RTVs for the ROI. These data form the basis for the socioeconomic impact analysis presented in Section 3.11 of the EIS.

## 4.1 Summary of Assumptions

Two EIFS models each were run for Alternatives 5 and 6 and for the combined alternatives as these alternatives had both construction period and operations period economic impacts. One EIFS model was run for Alternative 3 as this alternative had no associated operations period employment; therefore, only socioeconomic impacts from construction related spending were analyzed under this alternative. Alternatives 1, 2, and 7 did not have any costs explicitly associated with them; therefore, no EIFS analysis was performed on these alternatives.

For purposes of running the EIFS model, the overall construction spending associated with each alternative and all of the alternatives combined was selected to determine the maximum impact that the action alternatives could have on the regional economy. Though a small number of construction and operations period workers may relocate to the ROI, they are not included in this analysis as it is unclear as to exactly how many construction workers would relocate to the ROI during the construction period or how many operations period workers would relocate to new operations period jobs, and the total number of those relocating during these periods is not anticipated to have any significant socioeconomic impacts. Therefore, only construction costs, and not civilian or military employment associated with them, were used to determine the impact of the Proposed Action during the construction period of each action alternative. Operations period impacts are assessed separately under alternatives that have operations period employment associated with them.

Construction cost estimates are shown in Tables 2, 4, and 8 for each of the action alternatives with construction costs available. Table 12 shows the total estimated combined construction costs for all of the action alternatives combined. The costs for all of these models were obtained through various sources for each action alternative. These sources are identified in Section 3.10.2 under their respective action alternatives. The impacts from construction related spending on sales, income, and employment generated for the economy and the percent annual fluctuation these represent are shown in Tables 3, 5, and 9 for each of the action alternatives with construction costs available. Table 13 shows the impacts from the estimated total combined construction costs of all of the action alternatives. Tables 6 and 10 show the average operations income per civilian and the change in civilian employment for the operations period of each action alternative that have operations period employment associated with them. Table 14 shows the total combined average operations period income and total employment levels for the combined alternatives that have operations period employment. Tables 7 and 11 show the socioeconomic impacts on sales, income, and employment generated for the economy and the percent annual fluctuation associated with the operations period employment of those alternatives with operations period employment. Table 15 shows the impacts from the total combined operations period employment of all of the action alternatives. Table 16 shows the annual fluctuations in RTV for the ROI above or below which the action would be considered significant.

### 4.1.1 Alternative 3 – Construction Period – Water Reclamation Pipeline

Table 2 shows the input value into the EIFS model for the total anticipated construction cost of the water reclamation pipeline. These costs do not include the costs related to the removal or replacement of asphalt.

Table 2. Forecast Input for the EIFS Model

| Forecast Input | |
|---|---|
| Change In Local Expenditures | $17,538,000 |
| Change In Civilian Employment | 0 |
| Average Income of Affected Civilian | $0 |
| Percent Expected to Relocate | 0 |
| Change In Military Employment | 0 |
| Average Income of Affected Military | $0 |
| Percent of Military Living On-base | 0 |

Table 3 shows the EIFS model outputs that would result from construction-related spending on the water reclamation pipeline.

Table 3. EIFS Report for ROI – Forecast Output

| Forecast Output | | |
|---|---|---|
| Employment Multiplier | 3.35 | |
| Income Multiplier | 3.35 | |
| Sales Volume – Direct | $12,302,780 | |
| Sales Volume – Induced | $28,911,520 | |
| Sales Volume – Total | $41,214,300 | 0.18% |
| Income – Direct | $2,217,212 | |
| Income - Induced | $5,210,448 | |
| Income – Total (place of work) | $7,427,659 | 0.05% |
| Employment – Direct | 62 | |
| Employment – Induced | 146 | |
| Employment – Total | 209 | 0.05% |

### 4.1.4 Alternative 5 – Construction – Geothermal Energy Facility

Table 4 shows the input value into the EIFS model for the highest estimated total construction cost of the geothermal energy facility.

Table 4. Forecast Input for the EIFS Model

| Forecast Input | |
|---|---|
| Change In Local Expenditures | $30,000,000 |
| Change In Civilian Employment | 0 |
| Average Income of Affected Civilian | $0 |
| Percent Expected to Relocate | 0 |
| Change In Military Employment | 0 |
| Average Income of Affected Military | $0 |
| Percent of Military Living On-base | 0 |

Table 5 shows the EIFS model outputs that would result from construction-related spending on the geothermal energy facility development.

Table 5. EIFS Report for the ROI – Forecast Output

| Forecast Output | | |
|---|---|---|
| Employment Multiplier | 3.35 | |
| Income Multiplier | 3.35 | |
| Sales Volume – Direct | $21,044,780 | |
| Sales Volume – Induced | $49,455,200 | |
| Sales Volume – Total | $70,499,990 | 0.3% |
| Income – Direct | $3,792,699 | |
| Income - Induced | $8,912,841 | |
| Income – Total (place of work) | $12,705,540 | 0.09% |
| Employment – Direct | 107 | |
| Employment – Induced | 250 | |
| Employment – Total | 357 | 0.09% |

### 4.1.5 Alternative 5 – Operations Period - Geothermal Energy Facility

Table 6 shows the input value into the EIFS model for the average operations income per civilian and change in civilian employment for the operations period of the geothermal energy facility.

Table 6. Forecast Input for the EIFS Model

| Forecast Input | |
|---|---|
| Change In Local Expenditures | $0 |
| Change In Civilian Employment | 6 |
| Average Income of Affected Civilian | $58,725 |
| Percent Expected to Relocate | 0 |
| Change In Military Employment | 0 |
| Average Income of Affected Military | $0 |
| Percent of Military Living On-base | 0 |

Table 7 shows the EIFS model outputs that would result from operations-related spending that would result from the six person increase in employment capacity as a result of the operation of the geothermal energy facility on Ft. Bliss.

Table 7. EIFS Report for the ROI – Forecast Output

| Forecast Output | | |
|---|---|---|
| Employment Multiplier | 3.35 | |
| Income Multiplier | 3.35 | |
| Sales Volume – Direct | $283,289 | |
| Sales Volume – Induced | $665,730 | |
| Sales Volume – Total | $949,020 | 0.00% |
| Income – Direct | $352,350 | |
| Income – Induced | $119,978 | |
| Income – Total (place of work) | $472,328 | 0.00% |
| Employment – Direct | 7 | |
| Employment – Induced | 3 | |
| Employment – Total | 11 | 0.0% |

### 4.1.6 Alternative 6 – Construction Period – Dry-cooled Concentrating Solar Power Technology

Table 8 shows the input value into the EIFS model for the estimated total construction cost of dry-cooled concentrating solar power (CSP) technology on Fort Bliss.

Table 8. Forecast Input for the EIFS Model

| Forecast Input | |
|---|---|
| Change In Local Expenditures | $217,000,000 |
| Change In Civilian Employment | 0 |
| Average Income of Affected Civilian | $0 |
| Percent Expected to Relocate | 0 |
| Change In Military Employment | 0 |
| Average Income of Affected Military | $0 |
| Percent of Military Living On-base | 0 |

Table 9 shows the EIFS model outputs that would result from construction-related spending on the development of dry-cooled CSP technology on Ft. Bliss.

Table 9. EIFS Report for the ROI – Forecast Output

| Forecast Output | | |
|---|---|---|
| Employment Multiplier | 3.35 | |
| Income Multiplier | 3.35 | |
| Sales Volume – Direct | $152,223,900 | |
| Sales Volume – Induced | $357,726,100 | |
| Sales Volume – Total | $509,950,000 | 2.17% |
| Income – Direct | $27,433,850 | |
| Income - Induced | $64,469,550 | |
| Income – Total (place of work) | $91,903,410 | 0.63% |
| Employment – Direct | 771 | |
| Employment – Induced | 1811 | |
| Employment – Total | 2582 | 0.64% |

### 4.1.7 Alternative 6 – Operations Period – Dry-cooled CSP Technology

Table 10 shows the input value into the EIFS model for the average operations income per civilian and change in civilian employment for the operations period of the development dry-cooled CSP technology.

Table 10. Forecast Input for the EIFS Model

| Forecast Input | |
|---|---|
| Change In Local Expenditures | $0 |
| Change In Civilian Employment | 28 |
| Average Income of Affected Civilian | $60,275 |
| Percent Expected to Relocate | 0 |
| Change In Military Employment | 0 |
| Average Income of Affected Military | $0 |
| Percent of Military Living On-base | 0 |

Table 11 shows the EIFS model outputs that would result from operations-related spending that would result from the 28 person increase in employment capacity as a result of the operation of dry-cooled CSP Technology on Ft. Bliss.

Table 11. EIFS Report for the ROI – Forecast Output

| Forecast Output | | |
|---|---|---|
| Employment Multiplier | 3.35 | |
| Income Multiplier | 3.35 | |
| Sales Volume – Direct | $1,356,906 | |
| Sales Volume – Induced | $3,188,728 | |
| Sales Volume – Total | $4,545,634 | 0.02% |
| Income – Direct | $1,687,693 | |
| Income - Induced | $574,674 | |
| Income – Total (place of work) | $2,262,367 | 0.02% |
| Employment – Direct | 35 | |
| Employment – Induced | 16 | |
| Employment – Total | 51 | 0.01% |

### 4.1.8 Alternatives Combined – Construction Period

Table 12 shows the input value into the EIFS model for the estimated total construction cost of all of the action alternatives combined. Construction costs associated with Alternative 4 are included in this model's input.

Table 12. Forecast Input for the EIFS Model

| Forecast Input | |
|---|---|
| Change In Local Expenditures | $264,538,000 |
| Change In Civilian Employment | 0 |
| Average Income of Affected Civilian | $0 |
| Percent Expected to Relocate | 0 |
| Change In Military Employment | 0 |
| Average Income of Affected Military | $0 |
| Percent of Military Living On-base | 0 |

Table 13 shows the EIFS model outputs that would result from the combined impacts of all of the action alternatives occurring at the same time.

Table 13. EIFS Report for the ROI – Forecast Output

| Forecast Output | | |
|---|---|---|
| Employment Multiplier | 3.35 | |
| Income Multiplier | 3.35 | |
| Sales Volume – Direct | $ 185,571,400 | |
| Sales Volume – Induced | $436,092,900 | |
| Sales Volume – Total | $621,664,300 | 2.65% |
| Income – Direct | $33,443,760 | |
| Income - Induced | $78,592,840 | |
| Income – Total (place of work) | $112,036,600 | 0.77% |
| Employment – Direct | 940 | |
| Employment – Induced | 2,208 | |
| Employment – Total | 3,148 | 0.78% |

### 4.1.9 Alternatives Combined – Operations Period

Table 14 shows the input value into the EIFS model for the average operations income per civilian and change in civilian employment for the operations period of all of the action alternatives combined if they occurred at the same time. Operations period employment impacts associated with Alternatives 4 and 6 are included in this model's input.

Table 14. Forecast Input for the EIFS Model

| Forecast Input | |
|---|---|
| Change In Local Expenditures | $0 |
| Change In Civilian Employment | 34 |
| Average Income of Affected Civilian | $60,001 |
| Percent Expected to Relocate | 0 |
| Change In Military Employment | 0 |
| Average Income of Affected Military | $0 |
| Percent of Military Living On-base | 0 |

Table 15 shows the EIFS model outputs that would result from operations-related spending that would result from the 154 person increase in employment capacity as a result of all of the action alternatives occurring at the same time.

Table 15. EIFS Report for the ROI – Forecast Output

| Forecast Output | | |
|---|---|---|
| Employment Multiplier | 3.35 | |
| Income Multiplier | 3.35 | |
| Sales Volume – Direct | $1,640,187 | |
| Sales Volume – Induced | $3,854,440 | |
| Sales Volume – Total | $5,494,628 | 0.02% |
| Income – Direct | $2,040,034 | |
| Income – Induced | $694,649 | |
| Income – Total (place of work) | $2,734,682 | 0.02% |
| Employment – Direct | 42 | |
| Employment – Induced | 20 | |
| Employment – Total | 62 | 0.02% |

Table 16 shows the annual fluctuations in RTV for the ROI above or below which the forecasted outputs of the action alternatives would have a significant socioeconomic impact.

Table 16. EIFS Report for the ROI – RTV Summary

| RTV Summary | | | | |
|---|---|---|---|---|
| | Sales Volume | Income | Employment | Population |
| Positive RTV | 7.98% | 8.07% | 3.9% | 1.21% |
| Negative RTV | -7.15% | -6.54% | -4.29% | -1.66% |