DRAFT

ENVIRONMENTAL ASSESSMENT

OF THE

CONSTRUCTION AND OPERATION OF A SOLAR PHOTOVOLTAIC ARRAY (SPVA) BUCKLEY AIR FORCE BASE, COLORADO

Prepared for

460 CES/CEV
660 S. Aspen Street, Stop 86
Buckley AFB, CO 80011-9551

APRIL 2009

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Cover Sheet
Draft Environmental Assessment of the
Construction and Operation of a Solar Photovoltaic Array (SPVA)
Buckley Air Force Base, Colorado

Responsible Agency: 460th Space Wing (460 SW), Buckley Air Force Base (AFB), Colorado

Affected Location: Buckley AFB, Colorado

Document Designation: Draft Environmental Assessment

Proposed Action: The Proposed Action is to install a 1 megawatt (MW) SPVA on-site at Buckley AFB on the southern portion of the installation. This SPVA system would be designed for future expansion to a 2+ MW system onto the surface of Installation Restoration Program (IRP) Site 3 which is a former base dump. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. The arrays would be embedded into the ground with concrete footings. A small unmanned building, no larger than 1,500 square feet would be built for storage. Inverters would be used to transform DC to AC. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. Security fencing would completely surround the SPVA.

This SPVA system would be designed to accommodate future expansion to a 2+ MW system which could encompass the portion of IRP Site 3 above the 100-year floodplain and could occupy up to approximately 40 acres. Underground trenches would not exceed 3 feet in the expansion area. Construction activities under the proposed action would avoid impacts to groundwater monitoring wells associated with IRP Site 3 and Buckley AFB operations associated with those wells. Currently, there are approximately 12 acres in IRP Site 3 above the 100-year floodplain that require additional landfill cover. No construction would occur in these areas until the landfill cover work is complete.

Preferred Alternative: Under the Preferred Alternative the SPVA would be installed on the southern portion of the installation. The design and footprint would be identical to that described for the Proposed Action.

Other Locations Considered: Construction and operation of the SPVA was also considered in three alternative locations:

- The north east corner of Telluride Street and Steamboat Avenue; north of the gas station. This location lies within a 55-acre area that is the subject of a 2003 Compliance Order from Colorado Department of Public Health and Environment (CDPHE) that requires investigation of potentially asbestos contaminated soil. This investigation has not been completed. The location is also highly visible to off-base civilians close to the installation. Due to concerns surrounding asbestos in the area and Antiterrorism Force Protection (AT/FP) concerns due to high off-base visibility, this alternative was not considered in detail.

- The retention Pond Area, on the south-east corner of Aspen Street and Steamboat Avenue north of Building 730. The approved 2050 plan proposes to extend Runway 1432 and the location of the retention pond is located in the future 'clear zone'. In addition, the retention pond area would not have available acreage to provide the opportunity for future expansion. Due to the potential

incompatible land use and the lack of expansion potential, this alternative was not considered in detail.

- The general vicinity of the munitions storage areas, on the east-side of the base, east of the run-way and south of Silver Creek Street. This location would not conflict with future development plans and would provide for expansion. However, the proposed location would be located within a series of quantity distance (QD) arcs surrounding the munitions storage areas. Due to safety issues and incompatible land use associated with QD arc restrictions, this alternative was not considered in detail.

No Action Alternative: Under the No Action Alternative, a SVPA would not be constructed at Buckley AFB. The No Action Alternative would result in legislation requirements including Executive Order (EO) 13423 and the Energy Policy Act of 2005 not being met at Buckley AFB.

Written comments and inquiries regarding this document should be directed to Ms. Pamela McWharter, NEPA Program Manager, 460th CES/CEV; Tel. 720-847-7159; email Pamela.mcwharter.ctr@buckley.af.mil.

Draft
FINDING OF NO SIGNIFICANT IMPACT (FONSI)
ENVIRONMENTAL ASSESSMENT OF THE CONSTRUCTION AND OPERATION OF A SOLAR PHOTOVOLTAIC ARRAY (SPVA)

INTRODUCTION

The United States Air Force (USAF) 460th Space Wing (460 SW) proposes to install a solar photovoltaic array (SPVA) on Buckley Air Force Base (BAFB) in response to legislation requirements including Executive Order 13423 (EO 13423) and the Energy Policy Act of 2005. Within the past several years, costs and demand for energy produced through non renewable resources, such as crude oil, have increased dramatically. In response to this energy crisis, Congress passed the Energy Policy Act of 2005 (PL 109-58), which was signed by President Bush on August 8, 2005. Among the many energy conservation measures, the Act directs the federal government to use more renewable energy, with a goal of using 7.5 percent or more by 2013 (US House Committee on Energy and Commerce Press Office, April 2005). Solar power is among the renewable energy sources promoted in the Act.

The electrical power used by Buckley AFB is provided by Xcel Energy, the local company that provides electrical power to the Denver metropolitan area. The vast majority of the company's power supply is fueled by nonrenewable resources. The construction and operation of a SPVA would provide the base with up to 3 percent of its required electricity, which would decrease Buckley AFB reliance on non-renewable energy sources. The proposed action would support the Energy Policy Act of 2005, increase overall Air Force use of renewable energy, and allow Buckley AFB to start to meet the Department of Defense (DoD) installation energy policy long-range goal for renewable energy use.

The Proposed Action and the No Action Alternative were assessed in an Environmental Assessment (EA) which is incorporated herein by reference.

DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action is to install a 1 megawatt (MW) SPVA on-site at Buckley AFB on the southern portion of the installation. This SPVA system would be designed for future expansion to a 2+ MW system onto the surface of Installation Restoration Program (IRP) Site 3 which is a former base dump. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. The arrays would be embedded into the ground with concrete footings. A small unmanned building, no larger than 1,500 square feet would be built for storage. Inverters would be used to transform direct current (DC) to alternating current (AC). Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. Security fencing would completely surround the SPVA.

This SPVA system would be designed to accommodate future expansion to a 2+ MW system which could encompass the portion of IRP Site 3 above the 100-year floodplain and could occupy up to approximately 40 acres.

SUMMARY OF ALTERNATIVES TO THE PROPOSED ACTION

Preferred Alternative: Under the Preferred Alternative the SPVA would be installed on the southern portion of the installation. The design and footprint would be identical to that described for the Proposed Action.

No Action Alternative: Under the No Action Alternative, a SVPA would not be constructed at Buckley AFB. The No Action Alternative would result in legislation requirements including EO 13423 and the Energy Policy Act of 2005 not being met at Buckley AFB

SUMMARY OF ANTICIPATED ENVIRONMENTAL IMPACTS

Analyses performed in the EA addressed potential effects of the Proposed Action and No Action Alternatives on land use, utilities, noise, HAZMAT and wastes (including the IRP), water resources, and biological resources. The analyses indicate that implementing the Proposed Action would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment.

PUBLIC REVIEW AND INTERAGENCY COORDINATION

Based on the provisions set forth in the Proposed Action, all activities were found to comply with criteria or standards of environmental quality and coordinated with Federal, state, and local agencies. The Draft EA and Draft FONSI were made available to Federal, state, and local agencies; and to the public for a 15-day review period beginning 5 April 2009 and ending 20 April 2009. [**Section to detail agency comments**]

FINDING OF NO SIGNIFICANT IMPACT

Reasonable alternatives to the Proposed Action were considered. The Proposed Action was found to be the preferred alternative to meet Buckley AFB's purposes and needs. After review of the EA prepared in accordance with the requirements of the National Environmental Policy Act, the Council on Environmental Quality regulations, and the Environmental Impact Analysis Process (32 Code of Federal Regulations 989, as amended), I have determined that the Proposed Action would not have a significant impact on the quality of the human or natural environment. An Environmental Impact Statement (EIS) will not be prepared. This decision has been made after taking into account all submitted information and considering a full range of practical alternatives that would meet project requirements and are within the legal authority of the USAF.

_____ _____

DONALD W. McGEE Jr, Colonel, USAF Date
Commander

DRAFT
ENVIRONMENTAL ASSESSMENT
OF THE
CONSTRUCTION AND OPERATION OF A SOLAR PHOTOVOLTAIC ARRAY
BUCKLEY AIR FORCE BASE, COLORADO

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ABBREVIATIONS AND ACRONYMS

460 SW	460th Space Wing
AC	Alternating current
ACM	Asbestos-Containing Material
ADP	Area Development Plans
AEI	Annual Emissions Inventory
AFB	Air Force Base
AFI	Air Force Instruction
ANGB	Air National Guard Base
AR	Army Regulation
AT/FP	Antiterrorism Force Protection
BMP	Best Management Practice
CAA	Clean Air Act
CD	Compact Disc
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental, Response, Compensation, and Liability Act
CES/CEV	Civil Engineering Squadron/Environmental Flight
CFR	Code of Federal Regulations
CGP	Construction General Permit
COANG	Colorado Air National Guard
dB	Decibels
dBA	A-weighted Sound Level Measurements
DC	Direct current
DoD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
EPACT	Energy Policy Act of 2005
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ETL	Engineering Technical Letter
FR	Federal Register
FONSI	Finding of No Significant Impact
HAZMAT	Hazardous Materials
HAZWOPER	Hazardous Waste Operation and Emergency Response
IEC	International Electrotechnical Commission
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
IRP	Installation Restoration Program
KVA	Kilovolt Ampere
MMRP	Military Munitions Response Program
MW	Megawatt
MWD	Military Working Dog
NAAQS	National Ambient Air Quality Standards
NEC	National Electric Code
NEPA	National Environmental Protection Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
PL	Public Law
QD	Quantity Distance
RC	Remedy Completion
RCRA	Resource Conservation and Recovery Act
RMP	Restoration Program Manager

ROI	Region of Influence
SARA	Superfund Amendments and Reauthorization Act
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SPVA	Solar Photovoltaic Array
SWMP	Stormwater Management Plan
SWPPP	Storm Water Pollution Prevention Plan
U.S.C.	United States Code
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

1. INTRODUCTION

This section describes the purpose of and need for the Proposed Action at Buckley Air Force Base (AFB), provides summaries of the scope of the environmental review and the applicable regulatory requirements, and presents an overview of the organization of the document.

Federal agencies are required to consider the environmental consequences of proposed actions in the decisionmaking process under the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] Sections 4321 to 4370d) and the Council on Environmental Quality's (CEQ) implementing regulations (40 Code of Federal Regulations [CFR] Parts 1500–1508). This Environmental Assessment (EA) for Construction and Operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB was prepared in accordance with NEPA. This EA evaluates the potential environmental impacts of activities associated with the construction and operation of a 2+ megawatt (MW) SPVA. The Buckley AFB SPVA project would include minor construction and maintenance activities.

CEQ regulation 1506.4 states that, "Any environmental document in compliance with NEPA may be combined with any other agency document to reduce duplication and paperwork." Additionally, CEQ regulation 1502.20 encourages tiering to eliminate repetitive discussions and CEQ regulation 1502.21 encourages material to be incorporated by reference to cut down on bulk as long as the material is reasonably available for inspection by potentially interested persons within the time allowed for comment. For these reasons, this EA references the *Environmental Assessment for Capital Improvement Projects at Buckley AFB, Colorado* (Finding of No Significant Impact [FONSI] signed September 2006) which assesses past, present, and future foreseeable cumulative impacts and the *Environmental Assessment of the Relocation and Construction of a Military Working Dog (MWD) Kennel at Buckley AFB, Colorado* (FONSI signed February 2007) which analyzed the same general location as the Proposed Action site. Security fencing is a component of the Proposed Action; the *Second Supplement to the EA for Proposed Prairie Dog Management Practices* (FONSI signed December 2003) analyzed the construction and maintenance of a seven-foot high security fence around the perimeter of the airfield which included the same general location as the Proposed Action site.

These documents are available on the public Buckley AFB website (www.buckley.af.mil) under the Environmental tab on the right. In addition, electronic copies of these documents are included with the Draft EA provided for public and agency review. Contact the Buckley AFB Public Affairs Office at 720-847-9431 for questions or to request additional copies of the referenced EAs.

1.1 BACKGROUND

Buckley AFB occupies approximately 3,283 acres (1,328 hectares) adjacent to the city of Aurora, Arapahoe County, Colorado, within the Denver metropolitan area (Figure 1-1, Buckley AFB Vicinity Map). Buckley Field was first used by the military for training during World War II, and then the Colorado Air National Guard (COANG) acquired use of Buckley Field in 1946. After ownership by the Department of the Navy from 1947 to 1959, COANG resumed use of the installation in 1959. In October 2000, Buckley Air National Guard Base (ANGB) was realigned and became an air force base under the 821st Space Group. The 460th Space Wing (460 SW) is the current host of Buckley AFB (BAFB 2004).

The mission of the 460 SW is to deliver global infrared surveillance, tracking missile warning for theater and homeland defense and provide combatant commanders with expeditionary warrior Airmen. The vision is, "Total vigilance, warrior culture and strong community." A wide range of missions are performed at Buckley AFB including flight training, support for transient military aircraft, and space-

related initiatives by a variety of tenants including active-duty, National Guard, and Reserve personnel from the United States Air Force (USAF), Army, Navy, and Marine Corps (BAFB 2009a).

Buckley AFB currently supports more than 92,000 plus people throughout the Front Range community. This includes 3,156 active duty members from every service, 3,300 National Guard personnel and Reservists, 3,800 civilians, 2,400 contractors, and 36,000 retirees and approximately 40,000 veterans and dependents. The base contributes an estimated $1.11 billion annually to the local economy (BAFB 2009a).

1.2 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

Within the past several years, costs and demand for energy produced through non renewable resources, such as crude oil, have increased dramatically. In response to this energy crisis, Congress passed the Energy Policy Act of 2005 (EPACT) (Public Law [PL] 109-58), which was signed by President Bush on August 8, 2005 requires, in part, that the President, acting through the Secretary of Energy, shall seek to ensure that, to the extent economically feasible and technically practicable, of the total amount of electric energy the Federal government consumes during any fiscal year, the following amounts shall be renewable energy:

a) Not less than 3 percent in fiscal years 2007 through 2009
b) Not less than 5 percent in fiscal years 2010 through 2012
c) Not less than 7.5 percent in fiscal year 2013 and each fiscal year thereafter

Section 203 (a) of EPACT 2005. (42 U.S.C. 15852(a)). Solar power is among the renewable energy sources promoted in the Act.

Executive Order (EO) 13423, signed January 24, 2007 (72 Federal Register 3919) requires that agencies ensure that:

(i) at least half of the statutorily required renewable energy consumed by the agency in a fiscal year comes from new renewable sources, and
(ii) to the extent feasible, the agency implements renewable energy generation projects on agency property for agency use.

It is the policy of the Air Force to consider energy conservation in all of its activities. In fiscal year 2008, the Air Force purchased over 40 percent (> one billion kilowatt hours) of the federal government total for renewable power, receiving recognition from the United States Environmental Protection Agency (USEPA) as the number one renewable power purchaser in the Green Power Partnership. Currently, 5 percent of all electricity used by the Air Force is produced from renewable sources, which surpasses the Energy Policy Act mandates by 2 percent (USEPA 2008, EERE 2006). The Department of Defense (DoD), however, stated in a memorandum, Subject: Installation Energy Policy Goals, dated November 18, 2005, that each DoD component should strive to aggressively expand use of renewable energy to a total of 25 percent by the year 2025.

One hundred percent of the electrical power used by Buckley AFB is provided by Xcel Energy, the local company that provides electrical power to the Denver metropolitan area. Ninety-five percent of the company's power supply is fueled by nonrenewable resources (Xcel 2009). The construction and operation of a SPVA would provide the base with up to 3 percent of its required electricity, which would decrease Buckley AFB reliance on non-renewable energy sources. The proposed action would support the EPACT, increase overall Air Force use of renewable energy, and allow Buckley AFB to start to meet the DoD installation energy policy long-range goal for renewable energy use.

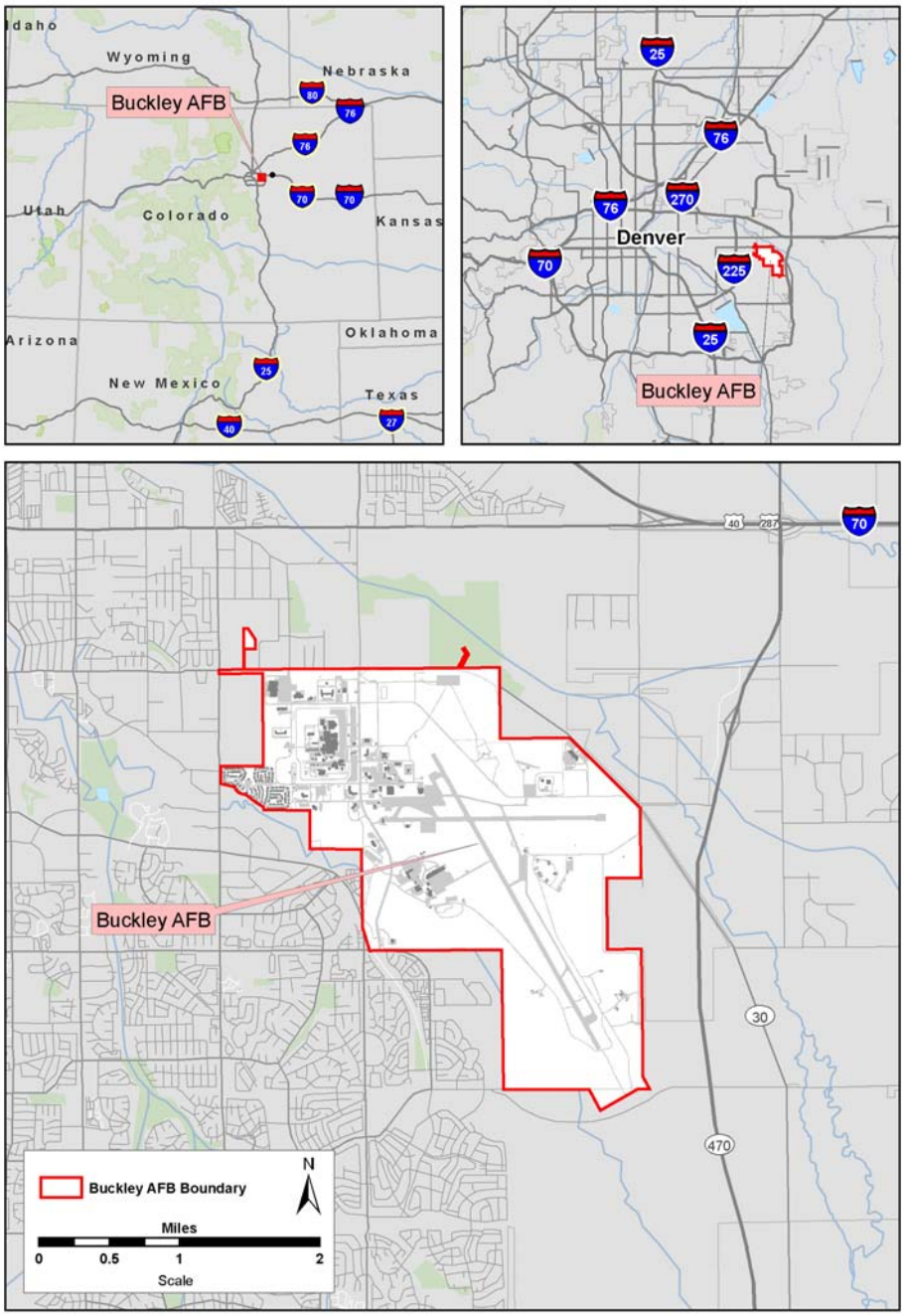


Figure 1-1. Buckley AFB Vicinity Map

1.3 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

The Draft EA will be made available for public and agency review and comment. If the analyses presented in the EA indicate that the Proposed Action would result in no significant impacts, a FONSI would be prepared. If the analyses reveal the potential for significant environmental impacts that cannot be reduced to insignificance, an Environmental Impact Statement (EIS) would be prepared or no action would be taken.

In compliance with NEPA, CEQ, and USAF regulations and guidelines, this document focuses on those conditions and resource areas that are potentially subject to impacts. These resources include land use, utilities, noise, hazardous materials (HAZMAT) and wastes (which includes the Installation Restoration Program [IRP]), water resources, and biological resources. Some environmental resources and conditions that are often analyzed in an EA have been eliminated from analysis or review. The following paragraphs identify these resource areas and the basis for such exclusions.

- **Air Quality -** The Clean Air Act (CAA) authorized USEPA to delegate responsibility for ensuring compliance with National Ambient Air Quality Standards (NAAQS) to the states and local agencies. As such, each state develops air pollutant control programs and promulgate regulations and rules that focus on meeting NAAQS and maintaining healthy ambient air quality levels. These programs are detailed in state implementation plans (SIPs) that must be developed by each state or local regulatory agency and approved by USEPA. Construction and operation activities related to the SPVA installation and maintenance could impact air quality to the extent that motorized equipment would be used during construction and dust would be generated. There would be no emissions associated with the operation of the Proposed Action. With the implementation of Best Management Practices (BMPs) for fugitive dust, construction of this project is expected to contribute no more than negligible impacts on air quality. Accordingly, the USAF has eliminated detailed examination of air quality.

  The CAA requires that USEPA promulgate general conformity regulations. These regulations are designed to ensure that Federal actions do not impede local efforts to achieve or maintain attainment with the NAAQS. The General Conformity Rule and the promulgated regulations, found in 40 CFR Part 93, exempt certain Federal actions from conformity determinations (e.g., contaminated site cleanup and natural emergency response activities). Other Federal actions are assumed to conform if total indirect and direct project emissions are below de minimis levels presented in 40 CFR 93.153. The threshold levels (in tons of pollutant per year) depend on the nonattainment status that USEPA has assigned to a nonattainment area. Once the net change in nonattainment pollutants is calculated, the Federal agency must compare them to the de minimis thresholds.

  General Conformity under the CAA, Section 176 has been evaluated for the Proposed Action according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this Proposed Action because total direct and indirect emissions have been estimated and are below the applicable conformity threshold values established at 40 CFR 93.153 (b), and the project is not considered regionally significant under 40 CFR 93.153 (i). General Conformity Air Quality Emissions Estimates are detailed in Appendix D.

- **Airspace Management -** Because the Proposed Action would not involve any flying or flying missions, there would be no new impacts on airspace. Accordingly, the USAF has eliminated detailed examination of airspace management.

Cultural Resources - Buckley AFB has undergone four separate cultural resources surveys since 1983 which cumulatively evaluated all areas of the installation with the exception of portions of the 152 acres within the fenced high security area (BAFB 2002, BAFB 2004). Cultural resources identified in these combined surveys included a number of lithic scatters, foundations of historic properties, trash dumps, and a railroad spur line, none of which were considered eligible for the National Register of Historic Places (NRHP); and six buildings that are eligible for the NRHP. None of these buildings are in the location of the Proposed Action or Alternatives. The Colorado State Historic Preservation Officer (SHPO) has previously concurred that no significant archaeological resources have been identified at Buckley AFB and that various proposed actions are, therefore, unlikely to impact such resources. The implementation of the Proposed Action does not lead to any actions that have the potential to affect cultural resources, tribal resources, tribal rights, or Indian lands. Should any cultural resources be uncovered during implementation of the Proposed Action, work would stop and the site would be evaluated prior to the continuation of the project. There are no known cultural resources in the area, accordingly, the USAF has eliminated detailed examination of cultural resources, including historic structures and buildings, archaeological resources, and tribal resources.

- **Geology and Soils** - The Proposed Action would not involve major excavation or drilling that would impact geological material for either the construction or the operation of the SPVA. Assuming standard BMPs for minimizing soil erosion during construction activities, no sedimentation patterns would be notably altered and no structural movements or changes in seismicity would result. Therefore, there would be no impacts on geology or soils as a result of implementing the Proposed Action.
- **Safety** - Under the Proposed Action, there would be an increased construction safety risk. This risk is an acceptable one associated with all construction activities. The proposed action is located outside all quantity distance (QD) explosive clear zones. The contractor would ensure that a site-specific Health & Safety Plan is developed for this project. Procedures for decontamination of heavy equipment would be established and enforced by the contractor. The contractor would provide for safeguarding base personnel and the public (i.e., conspicuous signage, security, air monitoring, etc.), and that an AF Form 103, Base Civil Engineering Work Clearance Request, is coordinated through multiple organizations, including the Safety office prior to initiation of any construction. In addition, flight safety would not be impacted as no part of the Proposed Action would employ or influence airspace operations or air traffic management at or around Buckley AFB. The solar panels would have a non-glare surface and would not affect aviation activities. In 2007, the California Department of Transportation conducted overfly studies on a proposed 250 acre solar array near a runway and determined that reflection from non-glare surface solar panels presented no hazard to flight safety. A letter dated 11 December, 2007 summarizing the results of the overfly study is included in Appendix E. Construction, operation, and maintenance of the Proposed Action would not attract wildlife to the areas and thus, would not increase the bird/wildlife aircraft strike hazard at Buckley AFB. Therefore, there would be no impact to flight safety under the proposed action. Accordingly, the USAF has eliminated detailed examination of safety.
- **Socioeconomics and Environmental Justice** - It is assumed that local construction crews would be used for construction. The proposed construction of the SPVA would not notably impact employment levels or economic indicators in the Region of Influence (ROI). Additionally, the Proposed Action does not have the possibility to disproportionately affect low-income or minority residents. The construction footprint of the Proposed Action would be relatively small and would therefore have a minimal impact on the adjacent areas. The census tract that contains Buckley AFB and the tract directly adjacent to the installation do not have a disproportionately high percentage of minorities or low-income inhabitants. Therefore, there would be no potential for

adverse impacts from construction or operation activities on any low-income or minority populations.

1.4 SUMMARY OF KEY ENVIRONMENTAL COMPLIANCE REQUIREMENTS

This EA is documentation of the Environmental Impact Analysis Process (EIAP) (32 CFR Part 989), and complies with NEPA, CEQ regulations, and DoD Instruction 4715.9. The EA addresses all applicable Federal, state, and local laws and regulations, including the CAA; Endangered Species Act (ESA); Air Force Instruction (AFI) 32-7040, *Air Quality Compliance*; EO 11990, *Protection of Wetlands*; EO 12898, *Federal Actions to Address Environmental Justice in Minority Population and Low-Income Populations*; EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*; Resource Conservation and Recovery Act (RCRA); and Comprehensive Environmental, Response, Compensation, and Liability Act (CERCLA). The EA does not constitute approval for the Proposed Action.

In accordance with the National Pollutant Discharge Elimination System (NPDES) requirements, a site-specific Storm Water Pollution Prevention Plan (SWPPP), including sediment- and erosion-control measures, would be developed and implemented for construction activities. A Notice of Intent (NOI) would be filed to obtain coverage under the USEPA Storm Water Construction General Permit. A fugitive dust permit would not be required for the initial installation of the Proposed Action as the impact area for the new construction is below the 25-acre limit, beyond which a fugitive dust permit would be needed.

1.5 ORGANIZATION OF THE ENVIRONMENTAL ASSESSMENT

This EA is organized as follows:

Acronyms and Abbreviations: provides a list of acronyms and abbreviations used throughout the document.

Section 1 – Introduction: Purpose and Need for the Proposed Action: provides background information about the installation, the purpose and need for the Proposed Action, the scope of the environmental review, applicable regulatory requirements, and a brief description of how the document is organized.

Section 2 – Description of the Proposed Action and Alternatives: provides the selection criteria; a detailed description of the Proposed Action and the No Action Alternative; other alternatives that were considered but not carried forward in the evaluation process; and an alternatives comparison table.

Section 3 – Affected Environment and Environmental Consequences: provides reference to a description of the existing conditions of the areas potentially affected by the Proposed Action and the No Action Alternative; and an analysis of the direct and indirect project impacts on resources from the Proposed Action and the No Action Alternative.

Section 4 – Cumulative Impacts: provides an analysis of present and reasonably foreseeable projects, and the potential incremental impacts of the Proposed Action and the No Action Alternative when considered along with these other planned or reasonably foreseeable projects.

Section 5 – List of Preparers: provides a list of the document preparers and contributors.

Section 6 – References: provides a listing of the references used in preparing this EA.

2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This section identifies selection criteria, and provides a detailed description of the Proposed Action, Action Alternatives, and the No Action Alternative for the proposed SPVA. In addition, a comparison of how the alternatives meet the selection criteria is provided at the end of this section.

2.1 IDENTIFICATION OF SELECTION CRITERIA

In an effort to satisfy the purpose and need for the Proposed Action, several criteria were developed to compare and contrast alternative ways of fulfilling the objectives of the Proposed Action in accordance with 32 CFR 989.8(c).

Selection criteria for the installation of the SPVA include:

- SPVA location is in a compatible land use area which would not conflict with proposed development as outlined in the General Plan for Buckley AFB.
- SPVA location provides enough space for construction of the initial installation to include associated support facilities (e.g., storage facility, transformers) and additional space to accommodate expansion of the SPVA system as funding becomes available.
- SPVA location is supplied by necessary infrastructure such as access roads and connectivity to base power distribution system.
- SPVA is in a location that will be monitored and will not be susceptible to vandalism or terrorism.

2.2 DESCRIPTION OF THE PROPOSED ACTION

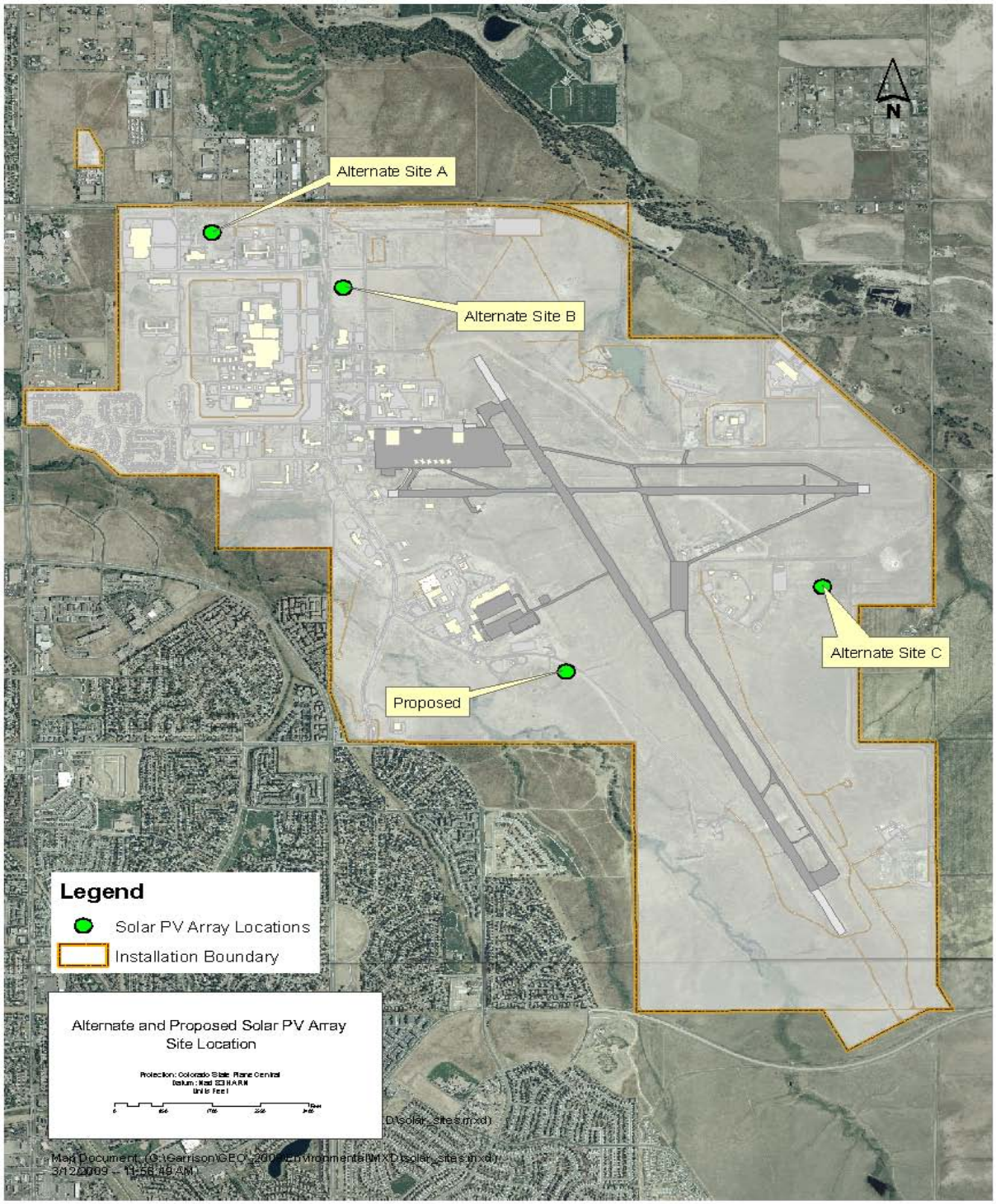
The Proposed Action is to install a 1 MW SPVA on-site at Buckley AFB east and adjacent to IRP Site 3 (a former base dump further described in Section 3.4.1) east of Aspen Street and South of Sunlight Way on the southern portion of the installation. This SPVA system would be designed for future expansion to a 2+ MW system onto the surface of IRP Site 3. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Figure 2-1, Proposed and Alternative Solar Array Locations, presents the current, proposed, and alternative project locations. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. The arrays would be embedded into the ground with concrete footings. A small unmanned building, no larger than 1,500 square feet would be built to house inverters and optional battery storage; no heat, water, or sewer would be required for the building. The building would include a containment system to safeguard battery leaks. Inverters would be used to transform direct current (DC) to alternating current (AC). Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. Security fencing would completely surround the SPVA.

The SPVA would tie into the Buckley AFB electrical system through an existing 15 kilovolt ampere (KVA) switch. The switch feeds underground to the Buckley AFB electrical system. This would protect the integrity of the Buckley AFB system during electrical failures and lightning strikes. The SPVA would be designed to continuously feed power to the Buckley electrical system should the Xcel Energy feed to Buckley AFB fail. All power produced from the SPVA would be used by Buckley AFB. It is estimated that the system would meet 2 percent to 3 percent of the Buckley AFB electrical power demands. An

electric meter would be placed at the location where the SPVA connects to the Buckley AFB system to provide the Xcel energy new metering requirements. Concrete encased conduit connecting the solar panel arrays to the switch would be placed underground in trenches that could be as deep as 5 feet in some areas, but typically no deeper than 3 feet and covered with earth. Following emplacement of the conduit, disturbed areas would be graded to maintain current drainage patterns. Transformers would be located at least 100 feet away from a proposed MWD kennel located north of the project location site. Regular cleaning of the solar panels would be accomplished by either rinsing with water, blowing with compressed air, or a combination of both. All solid waste generated during construction would be removed by the contractor and disposed of at an appropriate disposal facility outside of Buckley AFB.

This SPVA system would be designed to accommodate future expansion to a 2+ MW system which could encompass the portion of IRP Site 3 above the 100-year floodplain and could occupy up to approximately 40 acres. Underground trenches would not exceed 3 feet in the expansion area. Construction activities under the proposed action would avoid impacts to groundwater monitoring wells associated with IRP Site 3 and Buckley AFB operations associated with those wells. Currently, there are approximately 12 acres in IRP Site 3 above the 100-year floodplain that require additional landfill cover. This action will involve importing clean soil from off base and spreading it to a depth as great as 3 feet. No construction would occur in these areas until the landfill cover work is complete.

Figure 2-1. Proposed and Alternative Solar Array Locations



2.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, the SVPA would not be installed at Buckley AFB. Renewable power at Buckley AFB would consist of 20 kW from photovoltaic panels located on the roofs of buildings. IRP Site 3 would remain undeveloped. This document refers to the continuation of existing (i.e., baseline) conditions of the affected environment, without implementation of the Proposed Action, as the No Action Alternative. The No Action Alternative serves as a benchmark against which Federal actions can be evaluated. Inclusion of a No Action Alternative is prescribed by CEQ regulations and, therefore, will be carried forward for further analysis in this EA. The No Action Alternative would result in legislation requirements including EO 13423 and the EPACT not being met at Buckley AFB.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER REVIEW

Construction and operation of the solar array was also considered in three alternative locations:

Alternative A - North east corner of Telluride Street and Steamboat Avenue; north of the gas station. This location lies within a 55-acre area that is the subject of a 2003 Compliance Order from Colorado Department of Public Health and Environment (CDPHE) that requires investigation of potentially asbestos contaminated soil. This investigation has not been completed. The location is also highly visible to off-base civilians close to the installation. Due to concerns surrounding asbestos in the area and Antiterrorism Force Protection (AT/FP) concerns due to high off-base visibility, this alternative was not considered in detail.

Alternative B - Retention Pond Area, on the south-east corner of Aspen Street and Steamboat Avenue north of Building 730. The approved 2050 plan proposes to extend Runway 1432 and the location of the retention pond is located in the future 'clear zone'. In addition, the retention pond area would not have available acreage to provide the opportunity for future expansion. Due to the potential incompatible land use and the lack of expansion potential, this alternative was not considered in detail.

Alternative C - In the general vicinity of the munitions storage areas, on the east-side of the base, east of the run-way and south of Silver Creek Street. This location would not conflict with future development plans and would provide for expansion. However, the proposed location would be located within a series of QD arcs surrounding the munitions storage areas. Due to safety issues and incompatible land use associated with QD arc restrictions, this alternative was not considered in detail.

2.5 COMPARISION OF ALTERNATIVES

Table 2-1, Comparison of Alternatives with Selection Criteria, illustrates the Proposed Action and Action Alternatives as they relate to the selection criteria presented in Section 2.1. Only the Proposed Action meets all four of the selection criteria.

Table 2-1. Comparison of Alternatives with Selection Criteria

Selection Criterion	Proposed Action	Alternative A	Alternative B	Alternative C
SPVA location is in a compatible land use area which would not conflict with proposed development as outlined in the General Plan for Buckley AFB.	Yes	Yes	No	No
SPVA location provides enough space for construction of the initial installation to include associated support facilities (e.g., battery and inverter storage facility, transformers) and additional space to accommodate expansion of the SPVA as funding becomes available.	Yes	Yes	No	Yes
SPVA location is supplied by necessary infrastructure such as access roads and connectivity to base power distribution system.	Yes	Yes	Yes	Yes
SPVA is in a location that will be monitored and will not be susceptible to vandalism or terrorism.	Yes	No	Yes	Yes

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3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the current conditions for and anticipated impacts on those resources which might be impacted by the Proposed Action including land use, utilities, noise, HAZMAT and wastes (including the IRP), water resources, and biological resources. Affected environment descriptions in this chapter reference the *EA of the Relocation and Construction of a MWD Kennel at Buckley AFB, Colorado* which analyzed the same general location as the Proposed Action site, and the *EA for Capital Improvement Projects at Buckley AFB, Colorado.* Impacts associated with the security fencing aspect of the Proposed Action have been evaluated as a component of the *Second Supplement to the EA for Proposed Prairie Dog Management Practices* (FONSI signed December 2003) which analyzed the construction and maintenance of a 7-foot high security fence around the perimeter of the airfield which included the site in the same general location as the Proposed Action site.

The definitions for impact intensity thresholds used in this document are:

- Negligible – Impacts on the resource, although anticipated, could be difficult to observe and are not measurable.
- Minor – Impacts on the resource would be detectable upon close scrutiny, or would result in small but measurable changes to the resource.
- Moderate – Impacts on the resource would be easily observed and measurable, but would be localized or short-term.
- Major – Impacts on the resource would be easily observed and measurable, widespread, and long-term.

The definitions for duration of impacts used in this document are:

- Short-term – Impacts are not anticipated to last for more than 1 to 2 years.
- Long-term – Impacts are anticipated to last for more than 2 years.

3.1 LAND USE

3.1.1 Affected Environment

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Compatibility among land uses fosters the societal interest of obtaining the highest and best uses of real property. Tools supporting land use planning include written master plans/management plans and zoning regulations. In appropriate cases, the locations and extent of proposed actions need to be evaluated for their potential effects on the project site and adjacent land uses.

Buckley AFB occupies approximately 3,283 acres adjacent to the city of Aurora, Arapahoe County, Colorado, within the Denver metropolitan area. Reference the *EA of the Relocation and Construction of a MWD Kennel at Buckley AFB, Colorado* Section 3.1.1 for a detailed description of the affected environment for Land Use.

Proposed Action

The Proposed Action would initially construct the solar array adjacent to and east of the IRP Site 3 east of Aspen Street and south of Sunlight Way on the southeastern portion of the installation. The

approximately 10-acre footprint of the initial proposed site is currently open space (BAFB 2005). On-installation land use north of the proposed site is currently industrial and airfield-related. A MWD kennel is planned north of the initial proposed project location. To the west, east, and south of the Proposed Action site, land use is currently open space with planned future land use of unspecified outdoor recreation (BAFB 2005). As funding becomes available and after landfill cover work is completed at IRP Site 3, the project would be designed to expand up to 40 acres west of the initial site. This land is currently identified as IRP Site 3 which is the former base dump and can not be utilized for traditional development. Construction of the SPVA requires only relatively small, shallow footings and minimal trenching, which allows for construction on what is otherwise virtually unusable installation acreage.

No Action Alternative

Under the No Action Alternative, a new SPVA would not be constructed. The land use designations for the project area would remain open space with planned future land use of unspecified outdoor recreation.

3.1.2 Impacts

The primary issues and concerns related to land use include the ability of Buckley AFB to continue to perform its mission while maintaining the viability of the land uses at and adjacent to the installation. Also of concern are the health, safety, and welfare of persons using land adjacent to Buckley AFB. The ROI considered for land use is limited to the areas inside of and immediately outside of Buckley AFB boundaries.

Impacts on land use from the Proposed Action or Action Alternatives would include:

- Land use changes on installation that would conflict with community land use plans or zoning.
- Land use conflicts on installation that are considered incompatible with the Buckley AFB General Plan.
- Land use changes on installation that would impact communities (i.e., residential, business) that are located off installation, adjacent to Buckley AFB.

Proposed Action

Within installation boundaries, the Proposed Action is compatible with both current (open space) and planned (unspecified outdoor recreation) land use to the south and east of the proposed SPVA site locations. Land use associated with the project location site would be converted from open space to light industrial. Future outdoor recreational activities planned in the vicinity of the Proposed Action should consider potential impacts on the SPVA and vice versa. Because the area associated with IRP Site 3 has limited potential for development, and because the construction and operation of the Proposed Action would convert an IRP Site into a role model for energy efficiency, impacts to land use would be beneficial, long-term, and moderate.

No Action Alternative

There would be no changes to land use and no associated impacts under the No Action alternative.

3.2 UTILITIES

3.2.1 Affected Environment

Infrastructure typically refers to the systems and physical structures that enable a population in a specified area to function. Components include transportation and circulation (i.e., movement of vehicles), utilities, solid waste handling, and wastewater treatment. Transportation, circulation, natural gas, potable water, communication lines, and wastewater are not differentially affected by the Proposed Action or Action Alternatives, nor is solid waste handling. Therefore, this EA focuses on electricity. Xcel Energy currently supplies electrical power to Buckley AFB.

3.2.2 Impacts

Issues and concerns regarding infrastructure are related to (1) availability of necessary infrastructure to support the facility; and (2) creation of stress on existing infrastructure systems, such that they must be updated or changed. Assessing impacts on infrastructure entails a determination of infrastructure that would be used as a result of the Proposed Action.

Proposed Action

Necessary infrastructure is currently available close to the Proposed Action site. There would be a decreased burden on the utility provider as there would be a decrease in installation demand from outside sources. Therefore, impacts associated with utilities would be beneficial, long term, and moderate.

No Action Alternative

The No Action Alternative would have no impact on utilities.

3.3 NOISE

3.3.1 Affected Environment

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Reference the *EA of the Relocation and Construction of a MWD Kennel at Buckley AFB, Colorado* Section 3.4.1 for a detailed description of the affected environment for Noise.

3.3.2 Impacts

Issues and concerns regarding noise are related to nuisance for people in the area and adverse affects to MWDs proposed to be kenneled in the area. Assessing impacts on noise entails a determination of noise levels that would be used as a result of the Proposed Action.

Proposed Action

Construction Noise. Construction work can cause an increase in sound that is well above the ambient level. A variety of sounds come from graders, pavers, trucks, welders, and other work processes. Table 3-1, Predicted Noise Levels for Construction Equipment, lists noise levels associated with common types of construction equipment that is likely to be used under the Proposed Action. Construction equipment usually exceeds the ambient sound levels by 20 to 25 A-weighted sound level measurements (dBA) in an urban environment and up to 30 to 35 dBA in a quiet suburban area. The construction of the

SPVA would likely cause noise impacts on the populations on the southwestern side of the installation. Populations 2,165 feet away from construction would experience noise levels of approximately 60 dBA.

Table 3-1. Predicted Noise Levels for Construction Equipment

Construction Category and Equipment	Predicted Noise Level at 50 feet (dBA)
Grading	
Bulldozer	87
Grader	85
Water Truck	88
Building Construction	
Generator Saw	81
Industrial Saw	83
Welder	74
Truck	80
Forklift	67
Crane	83

Source: COL 2001

Implementation of the Proposed Action would have temporary effects on the noise environment from the use of heavy equipment during construction activities. However, noise generation would last only for the duration of construction activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). Therefore, it is anticipated that implementation of the Proposed Action would have minor short-term adverse impacts as a result of the construction activities.

Noise impacts from increased traffic due to construction vehicles using the major access roads would also be temporary in nature. These impacts would also be confined to normal working hours, and would last only as long as the installation was undergoing construction activities. However, major access routes into Buckley AFB pass by several residential areas. It is anticipated that the Proposed Action would have short-term moderately adverse noise impacts as a result of the increase in traffic.

Transformer Noise. Transformer noise levels are regulated by International Electrotechnical Commission (IEC) 60076 Standards for Power Transformers. A transformer being energized produces hum or noise. Transformer noise is caused by magnetostriction. (http://hyperphysics.phy-astr.gsu.edu/Hbase/solids/magstrict.html, March 2009).

Noises from the transformers would not disturb people in the vicinity of the project, but have a potential to disturb dogs in the area. Military working dogs residing in the proposed kennel location north of the project site would not be disturbed by transformer noise because the kennel will be designed per AFI 31-202 and AR 190-12 (Army regulation) to reduce increased noise levels from surrounding aircraft. In addition, the transformers would be located at least 100 feet away from the kennel to further reduce potential disturbance from noise. Since the dogs would only notice the transformer noise when they are outside of the kennel facility and near the transformers, any noise impacts to dogs would be adverse, short term, and negligible.

No Action Alternative

Construction Noise. No SPVA would be constructed. No traffic increase would be anticipated due to construction vehicles. Therefore, the No Action Alternative would have no effect relative to construction noise.

Transformer Noise. No transformers would be sited as a component of the SPVA. No noise would be associated with new transformers. Therefore, the No Action Alternative would have no effect relative to transformer noise.

3.4 HAZARDOUS MATERIALS AND WASTES

3.4.1 Affected Environment

Reference the *EA of the Relocation and Construction of a MWD Kennel at Buckley AFB, Colorado* Section 3.5.1 for a description of the affected environment for HAZMAT and wastes, radon, storage tanks, pollution prevention, lead-based paint, mold, and ordnance. At Buckley AFB, all HAZMAT brought onto base for construction projects are required to be approved by (and respective manufacturer-specific MSDSs provided to) the HAZMAT Manager in the Buckley AFB Environmental Office (460 CES/CEV) prior to project start.

Environmental Restoration Program (ERP). ERP, became law under Superfund Amendments and Reauthorization Act (SARA). The ERP requires each DoD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The ERP at Buckley AFB began in the 1980s with an installation records search and has grown to now include 11IRP sites, 23 IRP areas of concern, and 15 Military Munitions Response Program (MMRP) sites. This number will likely grow as historic documents are continually searched (AFCEE 2005).

The Proposed Action involves construction initially adjacent to and eventually on IRP Site 3 (See Figure 3-1, Mapped Extent of IRP Site 3). IRP Site 3 (the former base dump) was reported to have received a variety of waste (municipal refuse, shop waste, rubble, etc.) from 1942 to 1982. Building materials, paint cans, solvent containers, pesticide containers, municipal refuse, fuel tank sludges, and construction rubble were disposed in the dump. Municipal refuse from Lowry AFB also was disposed of at Site 3 during the early 1960s. Landfill waste was burned periodically between 1947 and 1959, probably using used oil or other flammables to aid combustion. First identified during a preliminary assessment in 1982, the site has undergone a site investigation in 1987 and remedial investigation in 1994. The Air Force conducted an assessment of the adequacy of the existing soil cover over the refuse, and the results were reported as final in June 2007. The report recommended additional soil cover for about 12 acres and excavation of waste from East Toll Gate Creek (Spangler 2009).

Asbestos-Containing Material (ACM). Reference the *EA of the Relocation and Construction of a MWD Kennel at Buckley AFB, Colorado* Section 3.5 and the *EA for Capital Improvement Projects at Buckley AFB, Colorado* Sections 3.17 and 4.3.15 for detailed discussions of ACM at Buckley AFB. AFI 32-1052, *Facilities Asbestos Management,* provides the direction for asbestos management at USAF installations. This instruction incorporates by reference applicable requirements of 29 CFR Part 669 et seq., 29 CFR 1910.1025, 29 CFR 1926.58, 40 CFR 61.3.80, Section 112 of the CAA, and other applicable AFIs and DoD Directives. AFI 32-1052 requires installations to develop an asbestos management plan for the purpose of maintaining a permanent record of the status and condition of ACM in installation facilities, as well as documenting asbestos management efforts. In addition, the instruction requires installations to develop an asbestos operating plan detailing how the installation accomplishes asbestos-related projects. ACM is regulated by USEPA with the authority promulgated under the Occupational

Safety and Health Act, 29 U.S.C. Section 669, et seq. Section 112 of the CAA. CDPHE regulates emissions of asbestos fibers to ambient air under CDPHE Regulation 8 Part B, *Control of Hazardous Air Pollutants – Asbestos* (5 CCR 1001-10). ACM in soils is regulated under Title 6, Code of Colorado Regulations, Part 1007-2, *Solid Waste Regulations* (6 CCR 1007-2), Part 1, Section 5.5. USEPA policy is to leave asbestos in place if disturbance or removal could pose a health threat. Buckley AFB will comply with all applicable Federal, state, and local laws and regulations.

Asbestos at Buckley AFB is managed in accordance with the installation's *Asbestos Management Program Plan* and *Soils Management Plan.* The *Asbestos Management Program Plan* specifies procedures for the removal, encapsulation, enclosure, and repair activities associated with ACM-abatement projects. In addition, it is designed to protect personnel who live and work on Buckley AFB from exposure to airborne asbestos fibers as well as to ensure the installation remains in compliance with Federal, state, and local regulations pertaining to ACM. The location of the Proposed Action is initially adjacent to and eventually on top of the former landfill which likely has construction debris containing ACM. However, the Findings and Recommendations Report from 5 May 2006, indicated that all asbestos screening returned negative results from 12 borings between 20 and 35 feet in depth (Merrick & Company 2006).

3.4.2 Impacts

Issues and concerns regarding HAZMAT and waste are related to construction and operation activities initially adjacent to and eventually on IRP Site 3. Assessing impacts on HAZMAT and waste entails impacts to the integrity of the ERP site that would be caused as a result of the Proposed Action

Proposed Action

IRP Site 3 and ACM. The initial installation of the SPVA would be located east of IRP Site 3, the SPVA would be designed for future expansion to a 2+ MW which would then be located on IRP Site 3. There would be no construction on areas on IRP Site 3 where required additional cover work is pending and the SVPA would be located such that existing monitoring wells would not require closure and re-location. The Buckley AFB IRP Site 3 is subject to the following stipulations:

1) Coordination for all construction activities on the IRP site would occur with the CDPHE, Hazardous Materials and Waste Management Division which is responsible for overseeing the Air Force cleanup program, including asbestos-contaminated soil sites, to ensure compliance with State laws and regulations.

2) Coordination for construction activities on the IRP site would occur with the USEPA Region 8 which oversees cleanup activities to ensure compliance with federal laws and regulations.

3) Coordination for construction activities on the IRP site would occur with the USAF Remediation Project Manager.

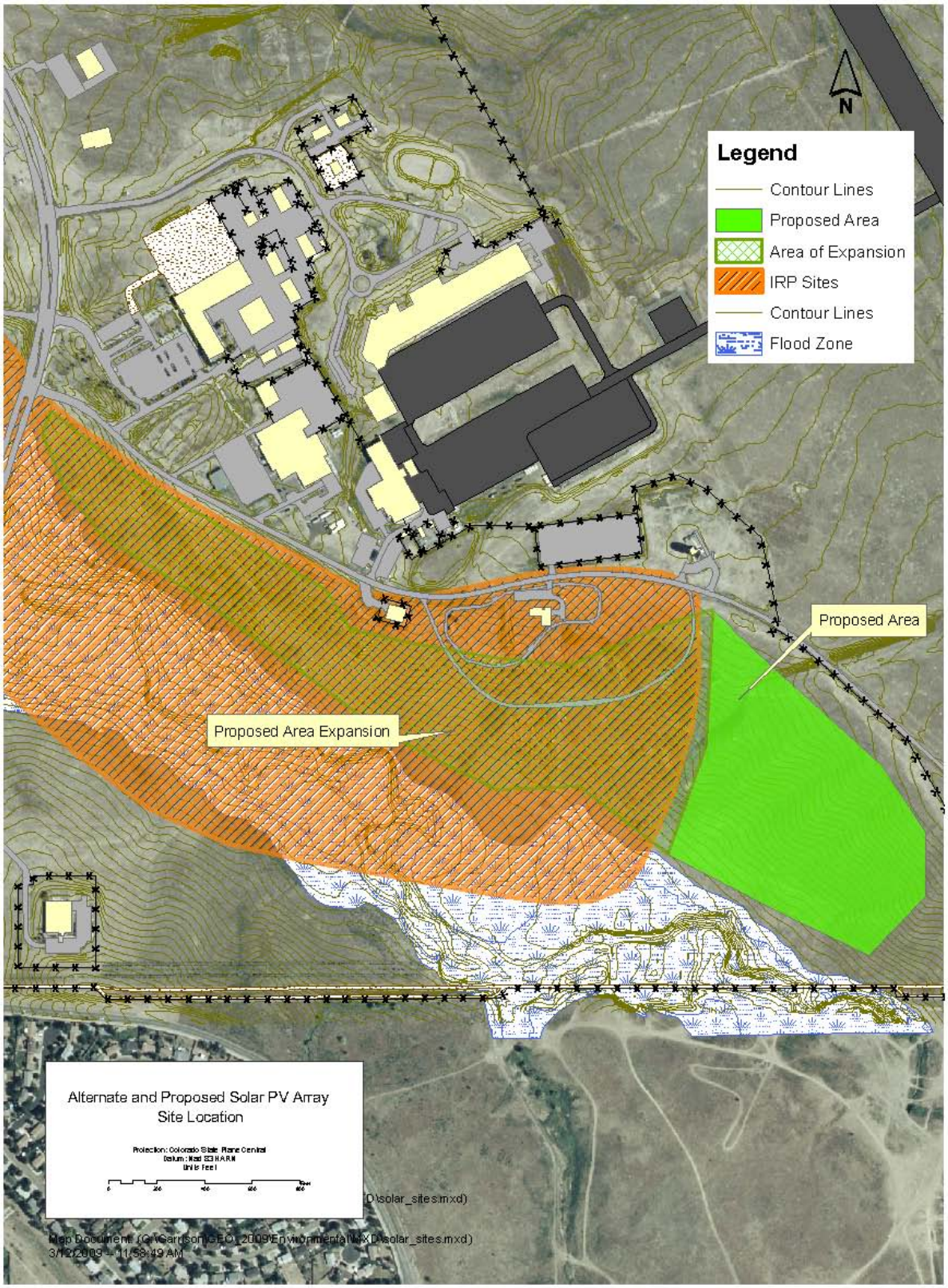

Figure 3-1. Proposed Site Detail on IRP Site 3

Although not anticipated, there is nominal potential that trenches or footings breaching the depth of the 24-inch (minimum) compacted-earth cap on the IRP site would be necessary. If this should become necessary, compliance with CDPHE guidance to ensure that the integrity of the cap is maintained would be mandatory. Compliance with CDPHE guidance would be mandatory in the event that construction activities necessitated the removal of contaminated soils and materials from the IRP site. All soils removed from the IRP site and the exposed remaining soil (new surface layer) would be sampled and analyzed to determine contamination levels. Sampling would be in accordance with the installation's *Soils Management Plan.* The Buckley AFB Restoration Program Manager (RPM) would assist in determining sampling requirements and supervise the efforts. Under supervision of the Buckley AFB RPM, any excavated area would be backfilled with clean fill, graded, and compacted to meet existing conditions. Construction activities under the proposed action would avoid impacts to groundwater monitoring wells and Buckley AFB operations associated with those wells. Buckley AFB would continue to monitor the groundwater wells until such time as a No Further Action Decision Document is approved by CDPHE. Once approved, Buckley AFB would abandon the monitoring wells in compliance with federal, state, and local regulations.

A site-specific soils management plan developed to address contaminates or ACM found during construction would be required. Construction contractors and site workers would be informed of the potential for encountering contaminated material on the IRP site. Safety observers currently certified with Occupational Safety and Health Administration (OSHA) 1910.120 Hazardous Waste Operation, Asbestos Certified Worker and Emergency Response (HAZWOPER) training would be on site during construction activities as necessary. The RPM would also ensure a monitoring program is in place during construction.

Oversight from the Buckley AFB RPM and compliance with CDPHE and USEPA would ensure no long term adverse effects from the Proposed Action. Due to the potential for trenches and footings to breach the compacted-earth cap on the IRP site, impacts would be adverse, short term, and minor.

No Action Alternative

No effects would be expected under the No Action Alternative. There would be no construction on IRP Site 3 and potential for Hazardous waste generation would remain unchanged and management and disposal of HAZMAT and wastes would continue according to procedures already in place.

3.5 WATER RESOURCES

3.5.1 Affected Environment

Reference the *EA of the Relocation and Construction of a MWD Kennel at Buckley AFB, Colorado* Section 3.8.1 for a description of the affected environment for groundwater, surface water, stormwater, and floodplains.

3.5.2 Impacts

Depth to groundwater is greater than 20 feet (6.1 meters) below ground surface, therefore, it is not expected that groundwater would be impacted during construction activities under the Proposed Action. Issues and concerns regarding water resources are related to impacts to floodplains and surface waters.

Proposed Action

Grading associated with the proposed action could potentially affect stormwater runoff. Potential impacts include disruption of natural drainage patterns, contamination entering stormwater discharge, or heavy sediment loading from construction activities. The two streams that could potentially receive stormwater runoff from the Proposed Action site are East Toll Gate Creek to the west and Sand Creek to the northeast. Preparing and implementing an SWPPP would minimize adverse impacts. These plans provide construction and post-construction BMPs intended to control and manage the loading of sediment and other pollutants to levels that would minimize degradation of downstream water quality. Compliance with Air Force Engineering Technical Letter (ETL) 03-1: *Storm Water Construction Standards*, requires implementation of BMPs to reduce site stormwater discharges and pollutant loadings to preconstruction levels or better. A stormwater control site plan would be required for the Proposed Action and must contain an NPDES permit declaration. Revegetation, which would ameliorate long-term sediment loading, is one of the requirements for the NPDES permit.

A negligible increase in stormwater volume would result from the reduction of pervious surfaces on the installation as a consequence of constructing the SPVA footings. BMPs would be implemented to reduce post-construction runoff peak flows from the increased impervious surfaces, including grading post-construction to restore original grade to those areas where solar panel arrays are placed and trenching for conduit occurs. No solar panel arrays or conduit would be located in drainages or within the 100-year floodplain.

Construction BMPs would also be implemented for the Proposed Action to decrease sedimentation by erosion. Common BMPs for construction activities would be followed to minimize erosion. Preventive BMPs include the following:

- Limit stockpiling of materials on-site
- Manage stockpiled materials to minimize the time between delivery and use
- Cover stockpiled materials with tarps
- Install snow or silt fences around material stockpiles, stormwater drainage routes, culverts, and drains
- Install hay or fabric filters, netting, and mulching around material stockpiles, stormwater drainage routes, culverts, and drains.

Construction of the new SPVA kennel under the Proposed Action would slightly increase impermeable surfaces. The construction activities and the associated slight increased amount of impervious surface would have adverse, negligible, short-term impacts on floodplains and surface waters at Buckley AFB.

No Action Alternative

The No Action Alternative would have no impacts on water resources of the installation.

3.6 BIOLOGICAL RESOURCES

3.6.1 Affected Environment

Biological resources include native or naturalized plants and animals, and the habitats, such as wetlands, forests, and grasslands, in which they exist. Sensitive and protected biological resources include plant and animal species listed as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) or the State of Colorado. Vegetation of the Proposed Action site is sparse and dominated by weedy species including Russian thistle and kochia. Because of substantial bare ground intercalated among the scattered plants, this area could provide foraging habitat for small birds. A pre-site survey would be conducted by the Buckley AFB Environmental office (460th CES/CEVP) prior to any earthmoving activities. These surveys would address any migratory birds (protected under the federal Migratory Bird Treaty Act) present and/or nesting in the area. Prairie dogs are known to occur in the area and therefore surveys for prairie dogs and burrowing owls would be conducted prior to construction. Otherwise, the site does not provide notable wildlife habitat.

Reference the *EA of the Relocation and Construction of a MWD Kennel at Buckley AFB, Colorado* Section 3.9.1 for a complete description of the affected environment biological resources.

3.6.2 Impacts

Impacts were assessed by comparison of the footprint of the proposed SPVA to the biological resources described under the Affected Environment section for each resource. The measures proposed to offset impacts are based on standard methods and actions recommended by wildlife management agencies and organizations.

Proposed Action

Under the Proposed Action, the SPVA would be constructed on a sparsely vegetated area dominated by weedy species. Given that the site is dominated by weedy vegetation and assuming revegetation of disturbed areas with native species, the impacts on the vegetative composition of the installation should be long-term, minor, and beneficial.

The distance and position within natural drainage patterns of the Proposed Action site makes it unlikely that the associated construction activities would have any impacts on wetlands along East Toll Gate Creek. Erosion- and sediment-control BMPs required by SWPPPs (e.g., silt fences), as well as spill prevention, control, and countermeasure procedures identified in the Buckley AFB Integrated Environmental Response Plan, would be implemented to further reduce the potential for impacts on these wetlands.

The Proposed Action would have adverse, negligible, short-term impacts to wildlife by temporarily reducing foraging habitat during construction. In the unlikely event that prairie dogs inhabit the area, impacts to prairie dogs would be adverse, long-term, and moderate due to approved transfer or lethal removal within the construction footprint prior to construction. Burrowing owls might be present during

the breeding season (between March 1 and October 31) at the Proposed Action site. To deter a burrowing owl from nesting in or near the construction site, prairie dogs should be removed and burrows destroyed prior to March 1. However, if this is not possible, and should construction occur during the burrowing owl nesting season, pre-construction surveys would be conducted to determine the presence or absence of nesting burrowing owls at the proposed site, in accordance with the *Wildlife Management Plan* (BAFB 2009c), and the *Integrated Natural Resource Management Plan* (BAFB 2009b). If nesting burrowing owls are present, a 150-foot (45.72-meter) buffer would be established around active nest sites during the breeding season to protect owls from disturbances associated with construction, especially increased noise. Given these measures, direct and short-term impacts on nesting individuals or young burrowing owls from construction-related activities would be adverse, short term, and negligible.

No Action Alternative

No impacts on vegetation, wetlands, wildlife or wildlife habitat including threatened, endangered, or other sensitive species would occur as a result of implementing the No Action Alternative.

3.7 SUMMARY

Table 3-2, Comparison of Environmental Effects, provides a summary comparison of the anticipated environmental effects of the Proposed Action and the No Action Alternative.

Table 3-2. Comparison of Environmental Effects

Environmental Resource Area	Proposed Action	No Action Alternative
Land Use	Beneficial, long-term and moderate	No effect
Utilities	Beneficial, long term and moderate	No effect
Noise	Adverse, short-term and moderate as a result of the increase in traffic. Adverse, short term and negligible operation impacts to military working dogs	No effect
Hazardous Materials/Waste	Adverse, short term and minor	No effect
Water Resources	No effect on groundwater; adverse, short-term and negligible, short-term impacts on surface waters and floodplains	No effect
Vegetation	Beneficial , long-term, and minor	No effect
Wetlands	No effect	No effect
Wildlife	Adverse, short-term, and negligible impacts by temporarily reducing foraging habitat during construction Impacts to prairie dogs could be adverse, long-term and moderate	No effect
Threatened, Endangered, and Special Concern Species	Adverse, short term and negligible	No effect

Table 3-3, BMPs or Plans Providing Applicable BMPs, provides a summary of the BMPs or the plans providing BMPS identified in this EA for each resource topic.

Table 3-3. BMPs or Plans Providing Applicable BMPs

Environmental Resource Area	BMPs or Plans Providing Applicable BMPs	
	Proposed Action	**No Action**
Land Use	None	None
Utilities	None	None
Noise	Construction activities limited to working hours (7am to 5pm). Transformer location 100 ft from kennel. Kennel design and use of noise-dampening materials in kennel.	None
Hazardous Materials/Waste	Hazardous Waste Management Plan; Solid Waste Management Plan; Spill Prevention, Control and Countermeasure Plan, Asbestos Management Program Plan.	None
Water Resources	CGP, SWPPP, MS4, SWMP, USAF ETL 03-01	None
Biological Resources		
Vegetation	Post-construction revegetation with native species	None
Wetlands	Soil erosion, sediment retention, and stormwater runoff BMPs	None
Wildlife	None	None
Threatened, Endangered, and Special Concern Species	Removal of prairie dogs; establishment of 150-ft buffer around burrowing owl nests	None

Table 3-4, Required Mitigation Measures, summarizes required mitigation measures identified for each resource in this EA.

Table 3-4. Required Mitigation Measures

Environmental Resource Area	Mitigation	
	Proposed	**No Action**
Land Use	None	None
Utilities	None	None
Noise	None	None
Hazardous Materials/Waste	None	None
Safety	None	None
Water Resources	None	None
Natural Resources		
Vegetation	None	None
Wetlands	None	None
Wildlife	None	None
Threatened, Endangered, and Special Concern Species	None	None

Conclusion.

The environmental consequences of the Proposed Action were analyzed and no significant impacts to human health or the natural environment, now or in the foreseeable future, were found.

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4. CUMULATIVE IMPACTS

Cumulative impacts on environmental resources result from incremental effects of proposed actions, when combined with other past, present, and reasonably foreseeable future projects in the area. Cumulative impacts can result from individually minor, but collectively substantial actions undertaken over a period of time by various agencies (Federal, state, and local) or individuals. Informed decisionmaking is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future. Past, present, and reasonable foreseeable future projects were assessed for Buckley AFB in the *Environmental Assessment for Capital Improvement Projects at Buckley AFB, Colorado* (FONSI signed September 2006) which detailed projects for all Area Development Plans (ADP), including ADP 7 which is the same general location as the Proposed Action site location. In this assessment, no significant impacts were associated with the full development of Buckley AFB. In addition, the more recent *EA of the Relocation and Construction of a MWD Kennel at Buckley AFB, Colorado* (FONSI signed February 2007) Section 4.0 updated cumulative impacts for the same general location as the Proposed Action and includes a comprehensive list of relevant past, present, and reasonably foreseeable future projects.

4.1 IMPACT ANALYSIS

Other projects evaluated in the cumulative impacts analysis include planned or reasonably foreseeable projects both on-installation and off-installation. Planned or reasonably foreseeable projects were identified through a review of public documents and coordination with multiple agencies, and include both on- and off-installation activities.

There are a number of recent, current, and planned Capital Improvement Projects to support Buckley AFB's continuing transition from an ANGB to an AFB and to facilitate future growth. Cumulative effects were evaluated based on calculations incorporating data from projects occurring since 2002, current projects, and projects planned out to 2012, and are tiered from the *Environmental Assessment for Capital Improvement Projects at Buckley AFB, Colorado*.

Table 4-1, Cumulative Effects on Resources, presents potential cumulative effects on resources from the Proposed Action, when combined with other past, present, and future activities.

Table 4-1. Cumulative Effects on Resources

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Land Use	Development of Aurora and Buckley AFB has extensively modified land use.	Military installation, commercial, residential, light industrial land uses.	Land use would be changed from un-developable Open Space IRP Site to light industrial.	Expansion of Aurora east of Buckley AFB.	Proposed Action would have short- and long-term, negligible to minor beneficial impact on further development on or around Buckley AFB as the IRP site would otherwise be un-developable.
Utilities	Buckley AFB has recognized the need to upgrade the potable water, electric, natural gas, and sanitary networks.	All required utilities are currently available to the Proposed Action site.	Operation of the SPVA would provide a source of renewable energy to Buckley AFB..	Continued development of Buckley AFB and Aurora would result in a continued increase in utility demands.	Moderate short- to long-term, beneficial impacts on utilities are anticipated from the Proposed Action.
Noise	Aircraft activities have been dominant noise source.	Aircraft activities are dominant noise source.	Short-term noise from construction activities.	Installation growth will result in increased traffic and noise.	Proposed Action would contribute negligible adverse, short-term, impacts as aircraft activities would be dominant noise source.
Hazardous Waste/Materials	Past activities on installation including demolition and burial of ACMs and other hazardous substances has resulted in contamination of some sites.	IRP site at the Proposed Action is currently undergoing feasibility study.	Proposed Action would eventually be located on IRP Site 3.	Continued development of Buckley AFB would incur use or generation of hazardous materials and wastes.	Negligible, short--term, adverse effect since all hazardous materials related to project construction would be disposed of in according to all applicable regulations.

Table 4-1. Cumulative Effects on Resources (continued)

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Water Resources	Surface water quality moderately impacted by development.	Surface water quality moderately impacted by development.	Potential increase in sedimentation from construction would be ameliorated through use of BMPs. Insignificant increase in area of impervious surfaces.	Continued development of Buckley AFB would result in sedimentation from construction activities, and further increase in impervious surface area.	Increased impervious surface area would have long-term, minor, adverse impacts on stormwater discharges and water quality.
Biological Resources	Degraded historic habitat of sensitive and common species.	Buckley AFB and Aurora operations and development impact plants and animals.	Negligible disturbance of vegetation by construction.	Continued development of Buckley AFB would impact biological resources.	Permanent, negligible to minor loss of weedy vegetation (beneficial impact), low-quality habitat, and potential black-tailed prairie dog habitat (adverse impacts).

As presented in Table 4-1, Cumulative Effects on Resources, cumulative impacts of the Proposed Action on resources within the ROI include short- and long-term, adverse impacts that range from negligible to minor in intensity. As also presented in Table 4-1, Cumulative Effects on Resources, the Proposed Action is anticipated to have short- to long-term, negligible to moderate, beneficial impacts on resources such as utilities and land use. The primary reasons for the beneficial and limited adverse impacts of the Proposed Action are the relatively small size of the SPVA footprint, the nature of the proposed facility (e.g., renewable energy source), and the location of the Proposed Action in an area that is previously disturbed. The proposed renewable energy source would decrease Buckley AFB reliance on non-renewable energy sources.

4.2 UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts would result from implementation of the Proposed Action.

Biological Resources. Under the Proposed Action, construction activities, such as grading, excavating, and recontouring of the soil, would result in vegetation removal and subsequent habitat loss for wildlife. Implementation of BMPs during and after construction, re-vegetation with native species and the limited footprint of the SPVA would limit potential effects resulting from construction. Although unavoidable, these impacts on wildlife at the installation are not considered significant.

4.3 COMPATIBILITY OF THE PROPOSED ACTION AND ALTERNATIVES WITH THE OBJECTIVES OF FEDERAL, REGIONAL, STATE, AND LOCAL LAND USE PLANS, POLICIES, AND CONTROLS

Impacts on the ground surface as a result of the Proposed Action would occur entirely within the boundaries of Buckley AFB. Construction of the new SPVA would not result in any incompatible land uses on or off installation. The proposed location of the SPVA was selected according to existing land use zones. Consequently, construction of the new SPVA would not conflict with installation land use policies or objectives. The Proposed Action would not conflict with any applicable off-installation land use ordinances or designated clear zones.

4.4 RELATIONSHIP BETWEEN THE SHORT-TERM USE OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

Short-term uses of the biophysical components of the human environment include direct construction-related disturbances and direct impacts associated with an increase in population and activity that occurs over a period of less than 2 years. Long-term uses of the human environment include those impacts that occur over a period of more than 2 years, including permanent resource loss.

Several kinds of activities could result in short-term resource uses that compromise long-term productivity. Filling of wetlands or loss of other especially important habitats and consumptive use of high-quality water at nonrenewable rates are examples of actions that affect long-term productivity.

The Proposed Action would not result in a significant intensification of land use at Buckley AFB and in the surrounding area. The Proposed Action does not represent a significant loss of open space. Therefore, it is anticipated that the Proposed Action would not result in any cumulative land use or aesthetic impacts. Long-term productivity of this site would be increased by the development of the Proposed Action.

4.5 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The irreversible environmental changes that would result from implementation of the Proposed Action involve the consumption of material, energy, land, biological, and human resources. The use of these resources is considered to be permanent. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that use of these resources would have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable time frame (e.g., energy and minerals). Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the Proposed Action.

Material Resources. Material resources irretrievably utilized for the Proposed Action include solar panels, concrete, and various material supplies (for infrastructure). Such materials are not in short supply, would not limit other unrelated construction activities, and their irretrievable use would not be considered significant.

Energy Resources. Energy resources utilized for the Proposed Action would be irreversibly lost. These include petroleum-based products (such as gasoline and diesel), natural gas, and electricity. During construction, gasoline and diesel would be used for the operation of construction vehicles. During operation, gasoline would be used for the operation of private and government-owned vehicles. Consumption of these energy resources would not place a significant demand on their availability in the

region. Therefore, no significant adverse impacts would be expected. The energy produced by the SPVA would provide a long term renewable energy source for the base, and is considered beneficial.

Biological Resources. The Proposed Action, due to its location on a previously disturbed site, would result in minimal, irretrievable loss of vegetation and wildlife habitat on the proposed construction site.

Human Resources. The use of human resources for construction and operation is considered an irretrievable loss, only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action represents employment opportunities, and is considered beneficial.

Floodplains. The Proposed Action would have no impact on the 100-year floodplain.

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5. LIST OF PREPARERS

This EA has been prepared under the direction of DoD and Buckley AFB. The individuals who contributed to the preparation of this document are listed below.

Buckley AFB, 460 CES/CEV

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Bruce James, Environmental Flight Chief
Jeff Lindquist, Attorney-Advisor, 460 SW/JA
Laurie Fisher, Deputy Environmental Flight Chief
Elise Sherva, Air/Tanks Program Manager
Mark Spangler, Restoration Program Manager
John Spann, Chief Public Affairs, 460 SW/PA

Consultants

Pamela McWharter, NEPA Specialist, URS Corporation
Sharon Gill, Resource Efficiency Manager, Sain Engineering Associates, LLC

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6. REFERENCES

BAFB 2001 BAFB. 2001. Supplement to Environmental Assessment of Proposed Prairie Dog Management Practices at Buckley Air Force Base. Prepared under the direction of the 821st Space Group by Geo-Marine, Inc.

BAFB 2002 BAFB. 2002. Archaeology Survey Review for Buckley Air Force Base, Aurora, Colorado. January 2002.

BAFB 2003 BAFB. 2003. Final Second Supplement The Environmental Assessment for Proposed Prairie Dog Management Practices at Buckley Air Force Base (Construct Fencing Around Airfield), Colorado. December 2003. FONSI Dec 1, 2003

BAFB 2004 BAFB. 2004. Buckley Air Force Base, Colorado Historic Building Inventory and Evaluation and Historic Landscape/Viewshed Evaluation. June 2004.

BAFB 2005 BAFB. 2005. Final Environmental Assessment for Proposed Construction III Projects, Buckley Air Force Base, Colorado. November 2005.

BAFB 2006a BAFB. 2006. Final Environmental Assessment for Capital Improvement Projects at Buckley Air Force Base, Colorado. March 2006.

BAFB 2006b BAFB. 2006. Final Environmental Assessment of the Relocation and Construction of the Military Working Dog (MWD) Kennel at Buckley Air Force Base, Colorado. December 2006.

BAFB 2009a Buckley Air Force Base. 2009. "Factsheet". http://www.buckley.af.mil/library/factsheets/factsheet.asp?id=4422. Accessed: 10 March 2009.

BAFB 2009b BAFB. 2009. Draft Integrated Natural Resource Management Plan for Buckley Air Force Base, Aurora, Colorado. March 2009

BAFB 2009c BAFB. 2009. Wildlife Management Plan for Buckley Air Force Base, Aurora, Colorado. March 2009

EERE 2006 Energy Efficiency and Renewable Energy (EERE). 2006. "U.S. Air Force, DOE Laboratory Among Climate Protection Leaders"

http://www.eere.energy.gov/news/news_detail.cfm/news_id=10029, June 2006

Merrick & Company 2006 Merrick and Company Engineers and Architects. 2006. Findings and Recommendations Report for the New Military Working Dog Kennel. Prepared for 460th Civil Engineer Squadron. May 05, 2006.

Spangler 2009 Mark Spangler. 2009. BAFB Environmental Restoration Program Manager. Personal communication with Pamela McWharter URS Corp. February 2009.

USDOT 1984 U.S. Department of Transportation (USDOT). 1984. Airport Noise Compatibility Planning; Development of Submission of Airport Operator's Noise Exposure Map and Noise Compatibility Program; Final Rule and Request for Comments. 14 CFR Parts 11 and 150, Federal Register 49(244). December 1984.

USEPA 2008 EPA. 2008. "Greenpower".

http://www.epa.gov/greenpower/partners/top25.htm, Accessed March 2008;

Xcel 2009 http://www.xcelenergy.com/Company/About_Energy_and_Rates/Power%20Generation/Pages/Power_Generation.aspx, Accessed 10 March 2009

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APPENDIX A

AIR FORCE FORM (AF) 813, REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS

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REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS

Report Control Symbol
RCS: A4693

INSTRUCTIONS: *Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate item number(s).*

SECTION I - PROPONENT INFORMATION

1. TO *(Environmental Planning Function)*	2. FROM *(Proponent organization and functional address symbol)*	2a. TELEPHONE NO.
460 CES/CEVP	460 CES/CEOE	7-9272

3. TITLE OF PROPOSED ACTION
Install 1 MegaWatt Solar Photovoltaic (PV) system.

4. PURPOSE AND NEED FOR ACTION *(Identify decision to be made and need date)*
Install a 1 MW Solar PV system with commercial power connection on the east side of BAFB; a minimum area of 7 to 10 acres is required for the system and future expansion should be considered to possibly double the system size; 31 March 2009

5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES *(DOPAA) (Provide sufficient details for evaluation of the total action.)*
Provide a recommended 7 to 20 acre location on the eastside of the base for a PV system that would consist of a field of PV panels and inverters and will require access to electric transmission lines. Alternative locations on base can be recommended.

6. PROPONENT APPROVAL *(Name and Grade)*	6a. SIGNATURE	6b. DATE
Capt Charles Christensen		26 JAN 09

SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY. *(Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect; - = adverse effect; U= unknown effect)*	+	0	-	U
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE *(Noise, accident potential, encroachment, etc.)*	☐	☑	☐	☐
8. AIR QUALITY *(Emissions, attainment status, state implementation plan, etc.)*	☐	☑	☐	☐
9. WATER RESOURCES *(Quality, quantity, source, etc.)*	☐	☑	☐	☐
10. SAFETY AND OCCUPATIONAL HEALTH *(Asbestos/radiation/chemical exposure, explosives safety quantity-distance, bird/wildlife aircraft hazard, etc.)* Potential depending on placement (BASH hazard, mmRP)	☐	☐	☑	☐
11. HAZARDOUS MATERIALS/WASTE *(Use/storage/generation, solid waste, etc.)*	☐	☑	☐	☐
12. BIOLOGICAL RESOURCES *(Wetlands/floodplains, threatened or endangered species, etc.)* Potential depending on placement	☐	☐	☑	☐
13. CULTURAL RESOURCES *(Native American burial sites, archaeological, historical, etc.)*	☐	☑	☐	☐
14. GEOLOGY AND SOILS *(Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)*	☐	☑	☐	☐
15. SOCIOECONOMIC *(Employment/population projections, school and local fiscal impacts, etc.)*	☑	☑	☐	☐
16. OTHER *(Potential impacts not addressed above.)*	☐	☐	☐	☐

SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION

17. ☐ PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) #_____ ; OR
☒ PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.

18. REMARKS

19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION *(Name and Grade)*	19a. SIGNATURE	19b. DATE
Bruce R. James, YF-2		MAR 25 2009

AF IMT 813, 19990901, V1 THIS FORM CONSOLIDATES AF FORMS 813 AND 814. PREVIOUS EDITIONS OF BOTH FORMS ARE OBSOLETE. PAGE 1 OF PAGE(S)

AF IMT 813, SEP 99, CONTINUATION SHEET

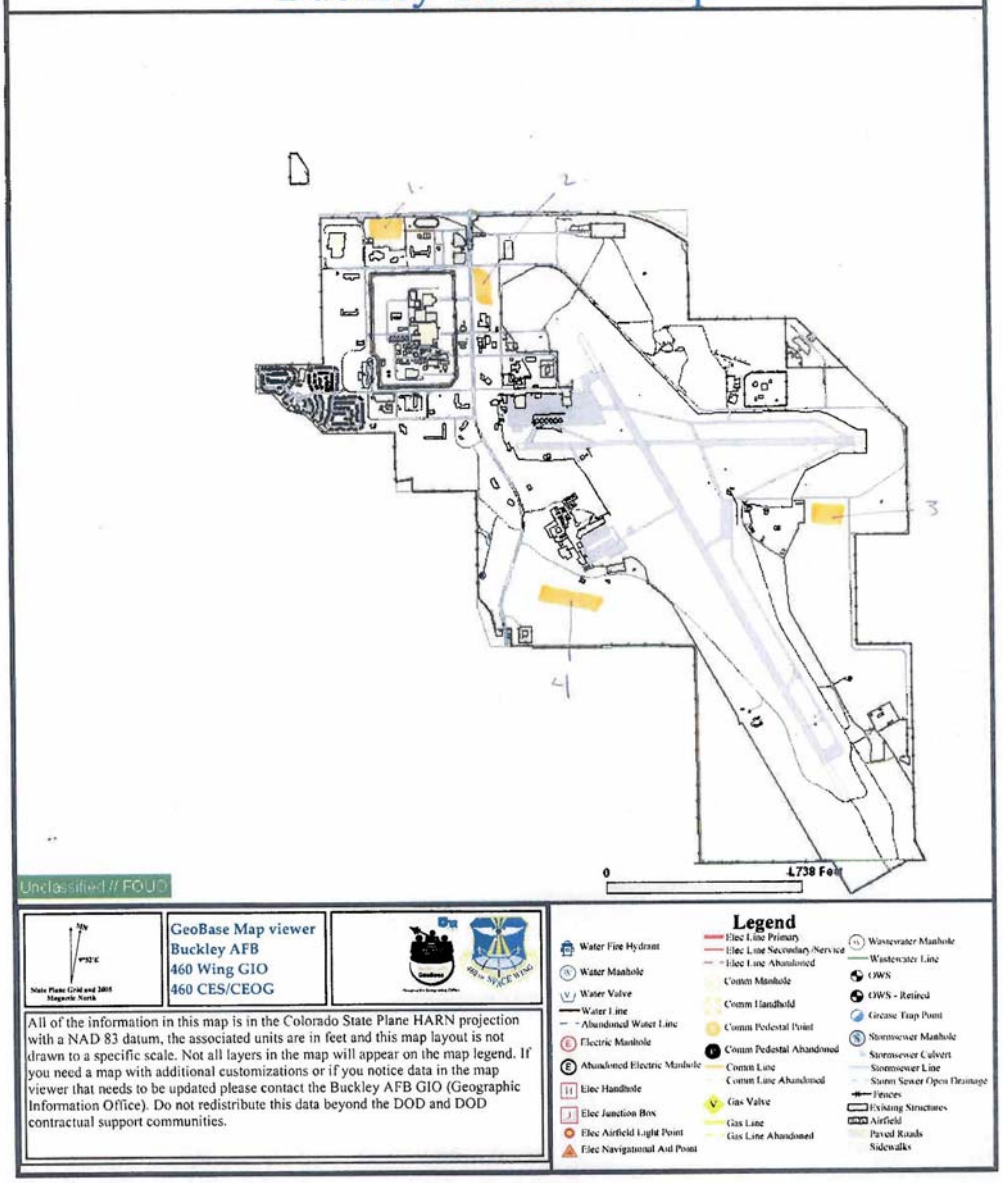
4. Continued - The AF Energy Strategy supports the Energy Policy Act of 2005, Energy & Independence and Security Act of 2007, Executive Order 13423 that require installation energy intensity reductions of 3% annually and increased facility renewable energy annual targets at: 5% by FY10, 7.5% by FY13, 25% by FY25. The renewable energy must come from new renewable energy sources and will double counted if developed within the constraint of the Base.

This solar photovoltaic system will help BAFB achieve the mandated annual renewable energy goals and provide for energy security and energy independence for the Base.

5. Continued - The interconnection to the electric transmission lines must be for BAFB usage only, not tied to Xcel Energy transmission lines

V1 PAGE OF PAGE(S)

Buckley GeoBase Map



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Form 813 Narrative

1 MW Solar – Photovoltaic system located on Buckley AFB

30 January 2009

Proposed Action:

Install 1 Megawatt of solar photovoltaic (PV) system on-site at BAFB. Approximately 5,600 solar panels will be mounted on racks, aligned in access rows, and will be positioned in a southerly direction. A small building, approximately 4,900sf or less will be built to house the inverters and battery storage; no heat or water will be required in the building. The PV System will be connected to the BAFB power distribution system. Security fencing will completely surround the PV system.

This will be the first AFSPC site to implement a large scale PV project so this project will be very positive and advantageous for BAFB.

Size: Approximately 7 acres is required for a 1 MW array, storage and the inverter building, i.e. the PV system. The location should take into consideration possible future expansion to a 2 MW system, so land availability of 14+ acres would be the most desirable. At this time funding is only for 1 MW.

Area and Alternate locations: Four areas have been identified as potential locations and are listed in ranking order -

1. North east corner of Telluride Street and Steamboat Avenue; north of the gas station, Building #4. High local visibility for visitors to BAFB, easy access to power distribution system, non-buildable location, and a soil management plan is being requested by CEC with available funding.
2. South-east corner of Aspen Street and Steamboat Avenue; retention pond area, north of Building 730. High local visibility area, easy access to power distribution system, non-buildable location due to 100 year flood area. Air National Guard supports the installation of solar panels in this area and identify that it is not a concern for the airfield restriction concerns (per Maj Wm Smith). Solar panels will be mounted on a racking system and will be approximately 4 ft off the ground. If the retention pond were to fill with water, the solar panels can withstand being underwater for several hours and will require any remaining mud or debris be rinsed off for the solar panels to function at their ideal operating levels.
3. East-side of the base, east of the run-way and south of Silver Creek Street. Area not visible to the daily visitors, no existing electrical power distribution system and no load requirements on the east side of the base. This would require bringing the electrical distribution system to the east side of the base at a cost of approximately $1million per mile, so cost is very prohibitive.

4. East of Aspen Street and South of Sunlight Way, drainage area. Pros - High local visibility area, easy access to power distribution system. Site contains landfill area and is not currently available for use but is redevelopable.

No Action: BAFB has been selected to receive this multi-million dollar large scale PV project, $9.8M under the AF ECIP (Energy Conservation Investment Program) call for projects. There are 2 major issues to taking no action are -

1 - To not take advantage of implementing this project and returning the 9.8 million dollars is not an ideal situation.

2 - Legislation requirements including Executive Order 13423 (EO 13423) and the Energy Policy Act of 2005 (EPAct 05) require that all Federal facilities:

Obtain 3% of electric energy from renewable sources 2007-2009 (EPAct05)

Obtain 5% of electric energy from renewable sources 2010-2012 (EPAct05)

Obtain 7.5% of electric energy from renewable sources 2013- (EPAct05)

Obtain half of the required renewable energy from new sources >1/1/99; on-site facilities is encouraged where feasible (EO).

DOD also has a goal to have 25% of all electrical power come from new renewable sources by 2025.

Currently BAFB has 20 kW of renewable power from the PV, and the systems are located on the roofs of Building 1005 and Building 26. This 1 MW PV project would help meet our renewable energy requirements.

Submitted by: Sharon Gill, Resource Efficiency Manager, BAFB, 7-7983.

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APPENDIX B

NOTICE OF AVAILABILITY AND AFFIDAVIT OF PUBLICATION

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APPENDIX C

DISTRIBUTION LIST AND AGENCIES CORRESPONDENCE

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DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

APR 03 2009

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

Dan Beley
Colorado Department of Public Health and Environment
Water Quality control Division
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WQCD-OA-B2Denver CO 80246-1530

Dear Mr. Beley

The Air Force has prepared a Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB. Under the Proposed Action a SPVA would be installed on-site at Buckley AFB on the southern portion of the installation. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. A small unmanned building, no larger than 1,500 square feet, would be built to house inverters and optional battery storage. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. This system would be designed to accommodate future expansion to a 2+ MW system.

The public comment period for this EA is 15 days. Public reviewers are asked to submit written comments by 5pm on Monday, 20 April 2009. Please provide any written comments to:

Ms. Pamela McWharter
460 CES/CEVP
660 South Aspen Street, Stop 86
Building 1005, Room 178
Buckley AFB, CO 80011-9551

If you have any questions please feel free to contact Pamela McWharter at 720-847-7159, or via e-mail: pamela.mcwharter@buckley.af.mil.

Bruce James

Mr. Bruce James
Chief, Environmental Planning & Conservation

GUARDIANS OF THE HIGH FRONTIER

DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

APR 0 3 2009

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

Brent Bibles
Colorado Division of Wildlife
Wildlife Research Center
317 W. Prospect RoadFort Collins CO 80526

Dear Mr. Bibles

The Air Force has prepared a Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB. Under the Proposed Action a SPVA would be installed on-site at Buckley AFB on the southern portion of the installation. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. A small unmanned building, no larger than 1,500 square feet, would be built to house inverters and optional battery storage. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. This system would be designed to accommodate future expansion to a 2+ MW system.

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If you have any questions please feel free to contact Pamela McWharter at 720-847-7159, or via e-mail: pamela.mcwharter@buckley.af.mil.

Bruce James

Mr. Bruce James
Chief, Environmental Planning & Conservation

GUARDIANS OF THE HIGH FRONTIER

DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

APR 03 2009

Mr. Bruce James
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Nancy Chick
Colorado Department of Public Health and Environment
Air Pollution Control Division
APCD-TS-B24300
Cherry Creek Drive, SouthDenver CO 80246-1530

Dear Ms. Chick

The Air Force has prepared a Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB. Under the Proposed Action a SPVA would be installed on-site at Buckley AFB on the southern portion of the installation. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. A small unmanned building, no larger than 1,500 square feet, would be built to house inverters and optional battery storage. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. This system would be designed to accommodate future expansion to a 2+ MW system.

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Ms. Pamela McWharter
460 CES/CEVP
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Building 1005, Room 178
Buckley AFB, CO 80011-9551

If you have any questions please feel free to contact Pamela McWharter at 720-847-7159, or via e-mail: pamela.mcwharter@buckley.af.mil.

Bruce James

Mr. Bruce James
Chief, Environmental Planning & Conservation

GUARDIANS OF THE HIGH FRONTIER

DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

APR 03 2009

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

John Fernandez
Planning, Environmental Division
City of Aurora
15151 E. AlamedaAurora CO 80012

Dear Mr. Fernandez

The Air Force has prepared a Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB. Under the Proposed Action a SPVA would be installed on-site at Buckley AFB on the southern portion of the installation. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. A small unmanned building, no larger than 1,500 square feet, would be built to house inverters and optional battery storage. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. This system would be designed to accommodate future expansion to a 2+ MW system.

The public comment period for this EA is 15 days. Public reviewers are asked to submit written comments by 5pm on Monday, 20 April 2009. Please provide any written comments to:

Ms. Pamela McWharter
460 CES/CEVP
660 South Aspen Street, Stop 86
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460TH SPACE WING (AFSPC)

APR 0 3 2009

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

Jane Hann
Environmental Project Manager
Colorado Department of Transportation
4201 East Arkansas Ave.Denver CO 80222

Dear Ms. Hann

The Air Force has prepared a Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB. Under the Proposed Action a SPVA would be installed on-site at Buckley AFB on the southern portion of the installation. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. A small unmanned building, no larger than 1,500 square feet, would be built to house inverters and optional battery storage. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. This system would be designed to accommodate future expansion to a 2+ MW system.

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Bruce James

Mr. Bruce James
Chief, Environmental Planning & Conservation

GUARDIANS OF THE HIGH FRONTIER

DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

APR 0 3 2009

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

Ms. Cynthia Holdeman
Government Publications
Denver Public Library
10 W. Fourteenth Ave. Pkwy.
Denver, CO 80204-2731

Dear Ms. Holdeman,
The Air Force is pleased to provide the Denver Public Library a review copy of the Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley Air Force Base (AFB), Colorado. We appreciate the Denver Public Library's contribution in making this document available to the public for review and comment.

Public reviewers are asked to submit written comments (referencing Section, page and line numbers to which comments apply) to the following address:

Ms. Pamela McWharter
460 CES/CEVP
660 South Aspen Street, Stop 86
Building 1005, Room 178
Buckley AFB, CO 80011-9551
e-mail: Pamela.mcwharter@buckley.af.mil.

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BRUCE JAMES
Chief, Environmental Flight

GUARDIANS OF THE HIGH FRONTIER

DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

APR 03 2009

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

Eliza Hunholz
Wildlife Manager
Colorado Division of Wildlife
6060 South BroadwayDenver CO 80216

Dear Ms. Hunholz

The Air Force has prepared a Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB. Under the Proposed Action a SPVA would be installed on-site at Buckley AFB on the southern portion of the installation. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. A small unmanned building, no larger than 1,500 square feet, would be built to house inverters and optional battery storage. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. This system would be designed to accommodate future expansion to a 2+ MW system.

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Bruce R James

Mr. Bruce James
Chief, Environmental Planning & Conservation

GUARDIANS OF THE HIGH FRONTIER

DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

APR 0 3 2009

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

Ed LaRock
Federal Facilities HMWM 2800
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive, SouthDenver CO 80246-1530

Dear Mr. LaRock

The Air Force has prepared a Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB. Under the Proposed Action a SPVA would be installed on-site at Buckley AFB on the southern portion of the installation. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. A small unmanned building, no larger than 1,500 square feet, would be built to house inverters and optional battery storage. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. This system would be designed to accommodate future expansion to a 2+ MW system.

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Bruce James

Mr. Bruce James
Chief, Environmental Planning & Conservation

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DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

APR 0 3 2009

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

Patricia Mehlhop
U.S. Fish and Wildlife Service
PO Box 25486Denver CO 80225-0486

Dear Ms. Mehlhop

The Air Force has prepared a Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB. Under the Proposed Action a SPVA would be installed on-site at Buckley AFB on the southern portion of the installation. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. A small unmanned building, no larger than 1,500 square feet, would be built to house inverters and optional battery storage. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. This system would be designed to accommodate future expansion to a 2+ MW system.

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Bruce James

Mr. Bruce James
Chief, Environmental Planning & Conservation

GUARDIANS OF THE HIGH FRONTIER

DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

APR 0 3 2009

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

Ed Nichols
State Historic Preservation Officer
Colorado History Museum
1300 BroadwayDenver CO 80203-2137

Dear Mr. Nichols

The Air Force has prepared a Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB. Under the Proposed Action a SPVA would be installed on-site at Buckley AFB on the southern portion of the installation. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. A small unmanned building, no larger than 1,500 square feet, would be built to house inverters and optional battery storage. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. This system would be designed to accommodate future expansion to a 2+ MW system.

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Bruce James

Mr. Bruce James
Chief, Environmental Planning & Conservation

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DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

APR 0 3 2009

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

David Rathke
U.S. Environmental Protection Agency, Region 8
999 18th Street, Suite 500Denver CO 80202

Dear Mr Rathke

The Air Force has prepared a Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB. Under the Proposed Action a SPVA would be installed on-site at Buckley AFB on the southern portion of the installation. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. A small unmanned building, no larger than 1,500 square feet, would be built to house inverters and optional battery storage. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. This system would be designed to accommodate future expansion to a 2+ MW system.

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Mr. Bruce James
Chief, Environmental Planning & Conservation

GUARDIANS OF THE HIGH FRONTIER

DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

APR 03 2009

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

Bruce Rosenlund
Colorado Field Supervisor
U.S. Fish and Wildlife Service
134 Union Blvd., Suite 675Lakewood CO 80228

Dear Mr. Rosenlund

The Air Force has prepared a Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB. Under the Proposed Action a SPVA would be installed on-site at Buckley AFB on the southern portion of the installation. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. A small unmanned building, no larger than 1,500 square feet, would be built to house inverters and optional battery storage. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. This system would be designed to accommodate future expansion to a 2+ MW system.

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Bruce James

Mr. Bruce James
Chief, Environmental Planning & Conservation

GUARDIANS OF THE HIGH FRONTIER

APR 0 3 2009

DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

Larry Svoboda
NEPA Unit Chief
U.S. Environmental Protection Agency, Region 8
999 18th Street, Suite 500Denver CO 80202

Dear Mr. Svoboda

The Air Force has prepared a Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB. Under the Proposed Action a SPVA would be installed on-site at Buckley AFB on the southern portion of the installation. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. A small unmanned building, no larger than 1,500 square feet, would be built to house inverters and optional battery storage. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. This system would be designed to accommodate future expansion to a 2+ MW system.

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Mr. Bruce James
Chief, Environmental Planning & Conservation

GUARDIANS OF THE HIGH FRONTIER

DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

APR 0 3 2009

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

Robert Watkins
Director of Planning
City of Aurora
15151 E. AlamedaAurora CO 80012

Dear Mr. Watkins

The Air Force has prepared a Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley AFB. Under the Proposed Action a SPVA would be installed on-site at Buckley AFB on the southern portion of the installation. Design of the SPVA would comply with 2008 National Electric Code (NEC) and NFPA-70 criteria. Initially, a 1 MW system encompassing approximately 5,600 solar panels mounted on racks, aligned in access rows, and positioned in a southerly direction would be located on approximately 10 acres. A small unmanned building, no larger than 1,500 square feet, would be built to house inverters and optional battery storage. Transformers would be installed to step up voltage so that it is compatible with the Buckley AFB system. The stepped up power would then be connected to the Buckley AFB power distribution system. This system would be designed to accommodate future expansion to a 2+ MW system.

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Mr. Bruce James
Chief, Environmental Planning & Conservation

GUARDIANS OF THE HIGH FRONTIER

DEPARTMENT OF THE AIR FORCE
460TH SPACE WING (AFSPC)

DELIVERED APR 0 3 2009

Mr. Bruce James
Environmental Flight
460th Civil Engineering Squadron
660 South Aspen Street
Buckley AFB, CO 80011-9551

Ms. Carol Foreman
Central Library Reference Supervisor
Aurora Public Library Administrative Offices
14949 E. Alameda Pkwy.
Aurora, CO 80012

Dear Ms. Foreman,

The Air Force is pleased to provide the Aurora Public Library a review copy of the Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the proposed construction and operation of a Solar Photovoltaic Array (SPVA) at Buckley Air Force Base (AFB), Colorado. We appreciate the Aurora Public Library's contribution in making this document available to the public for review and comment.

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BRUCE JAMES
Chief, Environmental Flight

GUARDIANS OF THE HIGH FRONTIER

APPENDIX D

GENERAL CONFORMITY AIR QUALITY EMISSIONS ESTIMATES

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Detailed Emissions Report

Solar Photovoltaic Array Phase I — *Project Emissions (in Tons per Year)*

Operation	*2010*	CO	NOx	PM10	PM2.5	SOx	VOC
Petroleum Fuel Evaporation		--	--	--	--	--	--
Personnel Emissions		--	--	--	--	--	--
On-road Base Support Vehicles		--	--	--	--	--	--
Off-road Base Support Vehicles		--	--	--	--	--	--
Operation Totals:		0.000	0.000	0.000	0.000	0.000	0.000

Construction	*2009*	CO	NOx	PM10	PM2.5	SOx	VOC
Building Demolition		--	--	--	--	--	--
Grading Equipment Emissions		0.041	0.155	0.013	--	0.016	0.017
Grading Operations Emissions		--	--	4.553	--	--	--
Asphalt Paving Emissions		--	--	--	--	--	0.000
Stationary Equipment Emissions		0.238	0.006	0.000	--	0.000	0.009
Mobile Equipment Emissions		0.035	0.084	0.007	--	0.010	0.008
Construction Worker Trip Emissions		0.005	0.000	0.000	--	0.000	0.000
Architectural Coatings Emissions		--	--	--	--	--	0.032
Construction Totals:		0.319	0.245	4.572	0.000	0.026	0.065
Threshold:	Conformity	100.00	100.00	100.00	0.00	100.00	100.00

Total Yearly Emissions (in Tons per Year)

Year	CO	NOx	PM10	PM2.5	SOx	VOC
2010 - beyond	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2009	0.3194	0.2454	4.5723	0.0000	0.0264	0.0649

Numbers in red indicate a threshold value that has been exceeded.

Detailed Emissions Report

Solar Photovoltaic Array Phase II — *Project Emissions (in Tons per Year)*

Operation	*2011*	CO	NOx	PM10	PM2.5	SOx	VOC
Petroleum Fuel Evaporation		--	--	--	--	--	--
Personnel Emissions		--	--	--	--	--	--
On-road Base Support Vehicles		--	--	--	--	--	--
Off-road Base Support Vehicles		--	--	--	--	--	--
Operation Totals:		0.000	0.000	0.000	0.000	0.000	0.000

Construction	*2010*	CO	NOx	PM10	PM2.5	SOx	VOC
Building Demolition		--	--	--	--	--	--
Grading Equipment Emissions		0.330	1.242	0.102	--	0.126	0.132
Grading Operations Emissions		--	--	36.420	--	--	--
Asphalt Paving Emissions		--	--	--	--	--	0.000
Stationary Equipment Emissions		0.000	0.000	0.000	--	0.000	0.000
Mobile Equipment Emissions		0.000	0.000	0.000	--	0.000	0.000
Construction Worker Trip Emissions		0.000	0.000	0.000	--	0.000	0.000
Architectural Coatings Emissions		--	--	--	--	--	0.000
Construction Totals:		0.330	1.242	36.522	0.000	0.126	0.132
Threshold:	Conformity	100.00	100.00	100.00	0.00	100.00	100.00

Total Yearly Emissions (in Tons per Year)

Year	CO	NOx	PM10	PM2.5	SOx	VOC
2011 - beyond	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2010	0.3300	1.2420	36.5225	0.0000	0.1260	0.1320

Numbers in red indicate a threshold value that has been exceeded.

APPENDIX E

CALIFORNIA DEPARTMENT OF TRANSPORTATION LETTER SUMMARIZING OVERFLY STUDIES OF SOLAR ARRAY PANELS

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DEPARTMENT OF TRANSPORTATION
DIVISION OF AERONAUTICS – M.S.#40
1120 N STREET
P. O. BOX 942873
SACRAMENTO, CA 94273-0001
PHONE (916) 654-4959
FAX (916) 653-9531
TTY 711

Flex your power!
Be energy efficient!

DOCKET
07-AFC-1
DATE DEC 1 1 2007
RECD. DEC 1 1 2007

December 11, 2007

Mr. Jim Adams, MA, Planner II
Environmental Office, MS 40
California Energy Commission
1516 9th Street
Sacramento, California 95814-5504

Dear Mr. Adams:

The California Department of Transportation (Caltrans), Division of Aeronautics (Division), reviewed the proposed Victorville 2 Hybrid Power Project (Victorville 2) Site Plan and proposed site on October 4, 2007 with Peter Soderquist, manager of the Southern California Logistics Airport (VCV). We also conducted overflights of two similar existing sites, known as Kramer Junction and Harper Lake, respectively, located between Edwards Air Force Base and Barstow, California.

The Division has technical expertise in the areas of airport operations safety, noise, and airport land use compatibility. We are a funding agency for airport projects, and we have permit authority for public-use and special-use airports and heliports. We offer the following comments:

The proposal is for the construction a 250-acre solar array and support infrastructure near the approach end of Runway 17 at VCV. As part of our review, the Division relies on Federal Aviation Administration (FAA) aeronautical studies to evaluate whether proposed structures near airports are flight hazards. The studies are required by Federal Aviation Regulation (FAR) Part 77, "Objects Affecting Navigable Airspace." FAR Part 77 is a FAA regulation and is available on-line at https://oeaaa.faa.gov/oeaaa/external/portal.jsp. FAR Part 77, does address hazards to flight; however, it does not address other types of hazardous material, features, or affects created by similar projects. Therefore, we conducted overflights, both at low altitude and traffic pattern altitude, to simulate conditions approximate to those that might be found at Victorville 2. At approach altitudes of 200 to 300 feet, we found no unusual turbulence or thermal plume rising from the surface of the solar array. The consistency of the surface at the two existing facilities and the turbulence directly above and downwind of the surfaces was roughly similar to overflight of a smooth water surface. We found the reflections to be somewhat sharper and cleaner than those compared at the same time over water; however, the flash and distraction level appeared to be the same by four observers, in two separate light aircraft. (See enclosed photographs.)

The Division has no objection to the proposed project, based on aircraft operational safety, provided:

- The project sponsor submits a Notice of Proposed Construction or Alteration (Form 7460-1) to the FAA and then obtains a no-hazard determination from the FAA prior to beginning construction.

- The VCV Airport has no objection to the facility.
- The project is compliant with the provisions of the California Environmental Quality Act.

These comments reflect the areas of concern to the Division with respect to airport safety impacts and regional airport land use planning issues. We advise you to contact our Caltrans District 8 San Bernardino office concerning surface transportation issues.

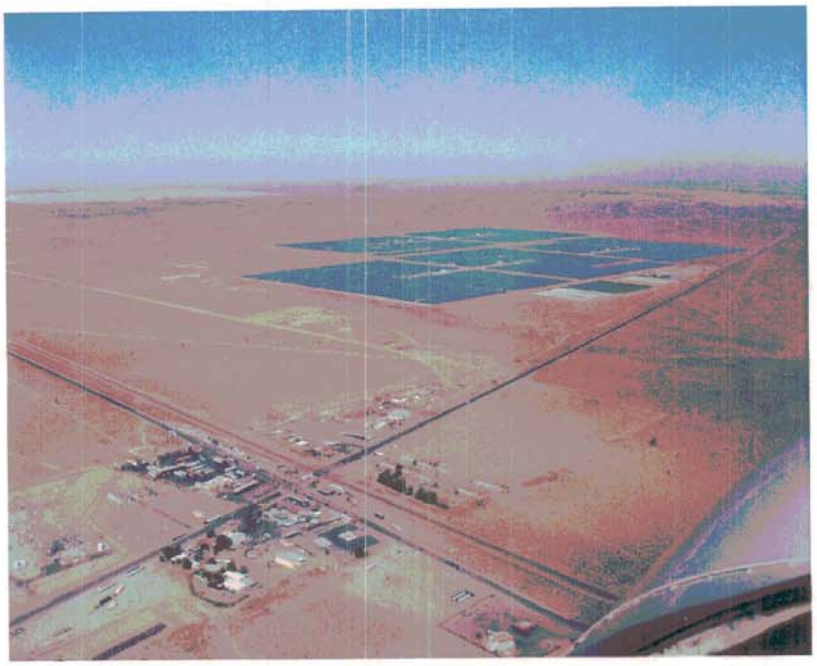
Thank you for the opportunity to review and comment on this proposal. If you have any questions, please call me at (916) 654-4565.

Sincerely,

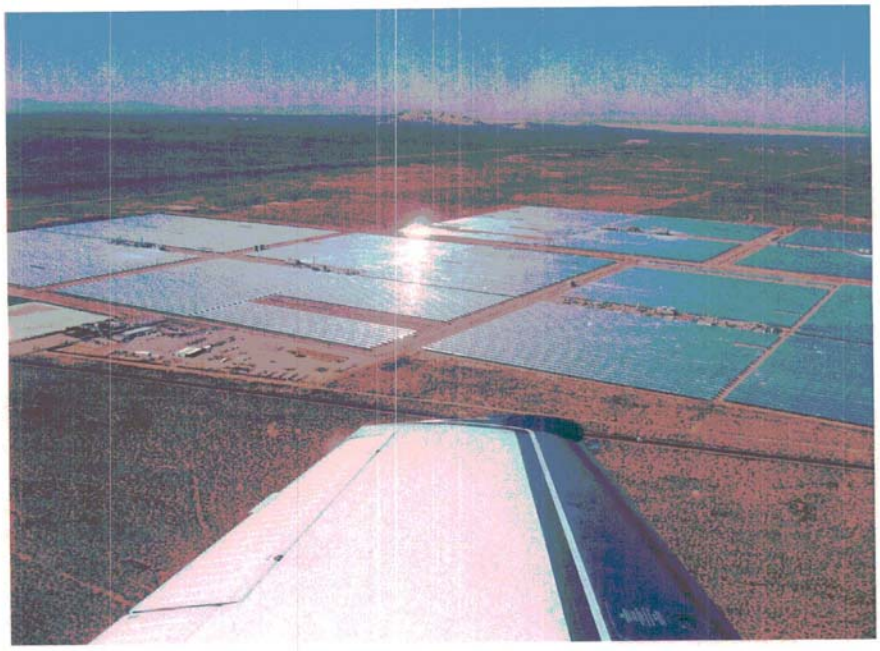
JEFF R. BROWN
Aviation Safety Consultant

Enclosures

c: Peter Soderquist, Airport Manager
John S. Kessler, CEC Project Manager
FAA, AWP-622



"Caltrans improves mobility across California"



"Caltrans improves mobility across California"