FINAL ENVIRONMENTAL ASSESSMENT

AND FINDING OF NO SIGNIFICANT IMPACT

FOR
IMPLEMENTATION OF SOLAR

PHOTOVOLTAIC GENERATING SYSTEMS

AT
FORT STEWART, GEORGIA

JULY 2014

In compliance with the National Environmental Policy Act of 1969

FINAL ENVIRONMENTAL ASSESSMENT &

FINDING OF NO SIGNIFICANT IMPACT FOR THE

IMPLEMENTATION OF PHOTOVOLTAIC GENERATING SYSTEMS

AT FORT STEWART, GEORGIA

Environmental Review:

Thomas C. Fry

Date: 07/11/2014

THOMAS C. FRY
Chief, Environmental Division
Directorate of Public Works

Reviewed by:

Robert R. Baumgardt

Date: 2014-07-15

ROBERT R. BAUMGARDT
Director, Public Works

Approval:

Date: 21 Jul 14

KEVIN F. GREGORY
Colonel, U.S. Army
Commanding

FINAL FINDING OF NO SIGNIFICANT IMPACT

1.0 INTRODUCTION

In August 2012, the Assistant Secretary of the Army (Installations, Energy and Environment) established energy goal attainment policy for all Active Army Installations, with a target of 1 gigawatt (GW) of renewable energy by 2025. This aggressive renewable energy target responds to rising energy costs, potential energy supply disruptions, and the need for more secure and clean energy generation and distribution. Although there are many renewable energy sources (solar, wind, biomass, landfill gas, etc.), the Army has increasingly turned to solar energy to meet its renewable energy target. At Fort Stewart, the Army will work with the Georgia Power Company (Georgia Power) to generate renewable energy via solar photovoltaic (PV) generating systems.

2.0 PURPOSE AND NEED

The purpose of the Proposed Action is to: (a) Achieve renewable electrical energy production on Army land in accordance with 10 United States Code (USC) 2911(e), as amended, which requires that the Army produce or procure not less than 25 percent of the total quantity of facility electrical energy it consumes within its facilities during fiscal year 2025 and each fiscal year thereafter from renewable energy sources; (b) Contribute to the Army's goal of generating 1 gigawatt (GW) of renewable electrical energy on Army land by 2025; and (c) Contribute to the Energy Policy Act (EP Act) of 2005 requiring the Army's consumption of not less than 7.5 percent of the total quantity of facility electrical energy it consumes within its facilities during fiscal year 2013 and each fiscal year thereafter from renewable energy sources.

3.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Proposed Action: The proposed action is twofold, and is discussed in the Final EA/FNSI as Proposed Action A and Proposed Action B.

First, under Proposed Action A, the Army proposes to offer land for a 21-year lease and the "in-kind" construction, operation, and maintenance of three PV generating systems to a developer qualified through the Georgia Power Advanced Solar Initiative, totaling up to 25MWs Lease and land development will occur at three separate sites within or adjacent to the Installation cantonment area, totaling approximately 150 acres. Construction will include a utility corridor to connect to and utilize Georgia Power's existing on-Post distribution grid on Hero Road. Second, under Proposed Action B, the Army proposes to enter into a 35-year easement with Georgia Power, in which it will allow Georgia Power the use of 200 acres of land on Fort Stewart to construct, operate, and maintain one 30MW PV system and utility corridor (connecting the PV system to the existing substation on Hero Road). These PV systems, once operational, will generate up to 55MWs towards the Army's renewable energy goals.

Alternatives Considered and Evaluated. The Army conducted a thorough screening process and siting analysis to identify alternative locations on Fort Stewart at which the purpose and need for the proposed action could be met. This resulted in some potential sites moving forward for detailed consideration (as discussed below) and in other sites being dismissed from further consideration (as discussed in Section

2.5 and Appendix B of the Final EA). All potential alternatives were analyzed for suitability using screening criteria developed specifically for this proposed action.

Alternative I: No Action/Status Quo. The Council on Environmental Quality (CEQ) regulations that implement NEPA require a clear basis for choice among options by the decision maker and the public, and a no action alternative must be included and analyzed (40 CFR 1502.14[d]). Under the No Action Alternative, the Army will not enter into an outgrant agreement to construct, operate, and maintain a solar PV generating system on Fort Stewart.

Alternative II: Proposed Action. Under this alternative, Fort Stewart will implement Proposed Action A and Proposed Action B at the preferred locations. Timber harvest will be conducted by the Installation Forestry Branch, followed by secondary harvest and site cleanup by the construction contractor. Woody, non-contaminated debris shall be made available to the Forestry Branch for use as chipping into mulch and use as fuel in the Installation Central Energy Power Plant. Site development includes grubbing, grading, and site stabilization, installation and connection of required utilities, and establishment of the PV System and its associated access road and fencing. Operations, monitoring, and maintenance, as well as repair of the PV System will follow on an as-needed basis.

The preferred location for Proposed Action A is the Small Arms Impact Area (SAIA) Site, Wastewater Treatment Plant (WWTP) Site, and Southwest Quadrant Site (Figure 4 of the Final EA), at which the Army proposes to construct one PV System each. Although briefly discussed below, a full discussion is presented in the Final EA.

- The SAIA Site consists of 70 acres. This alternative meets the Purpose and Need of the Proposed Action, as well as the screening criteria for Parcel Size and Topography, Grid Access/Electrical Tie in Potential, and Mission Compatibility/Land Use, and Safety, and has minimal Environmental Factor concern. This site is approximately four miles from the substation on Hero Road, and its nearly zero percent slope is suited for PV System development. Boundaries to the north will not extend past range surface danger zones (SDZs). An unexploded ordnance (UXO) survey was completed and the SAIA Site was determined to have a low risk of encountering UXO. An undisturbed 25-foot vegetative buffer will be maintained around all nearby wetlands and streams.
- The WWTP Site consists of 41 acres. This alternative meets the Purpose and Need of the Proposed Action, as well as the screening criteria for Parcel Size and Topography, Grid Access/Electrical Tie in Potential, and Mission Compatibility/Land Use, and Safety, and has minimal Environmental Factor concern. It is 0.4 miles from the Fort Stewart substation, and is also suitably sloped. Although there is a military munitions response site to the south of the parcel, it will not be disturbed, and no UXO surveys, characterization, and avoidance measures are required. As with the SAIA site, a buffer will be provided to prevent trees from shading the solar panels, and a 25-foot vegetative buffer will be maintained around all wetlands and streams.
- The southwest Quadrant Site consists of 19 acres. This alternative meets the Purpose and Need of the Proposed Action, as well as the screening criteria for Parcel Size and Topography, Grid Access/Electrical Tie in Potential, and Mission Compatibility/Land Use, and Safety, and has minimal Environmental Factor concern. The area is currently developed with temporary barracks; however, these are in the process of being removed and will result in an evenly sloped open area

for the PV System. To the west of the site, an existing parking lot and walking path provide a pre-existing barrier to panel shadowing issues. To the southwest, south, and east of the site, the buffer will extend to the edge of existing retention ponds and up to 25 feet from nearby wetlands.

The preferred location for Proposed Action B (Figure 8 of the Final EA) is at a 200 acre site within Training Area A-18 that avoids wetlands and minimizes protected species impacts. The Army proposes to construct a 30MW PV System, including construction of a utility corridor to connect the PV System to the existing Georgia Power Substation on Hero Road (Figure 5 of the Final EA). This alternative meets the Purpose and Need of the Proposed Action, as well as the screening criteria for Parcel Size and Topography, Grid Access/Electrical Tie in Potential, and Mission Compatibility/Land Use, and Safety, and has minimal Environmental Factor concerns. There is a potential to impact wetland areas, and habitat for the federally-listed Red-cockaded woodpecker (RCW) and the frosted flatwoods salamander (FFS), all of which will require impact minimization to wetland areas (if avoidance measures are unsuccessful) and consultation efforts for RCW and FFS habitat impacts (already in progress). Although the site is not within the footprint of any former ranges or range fans itself, its adjacency to a former Skeet Range and Rifle Grenade and Rocket Launcher Site requires UXO avoidance measures.

4.0 ENVIRONMENTAL ANALYSIS

Chapter 3 of the Final EA discusses the potential environmental consequences associated with implementing either the No Action or the Proposed Action Alternative on Fort Stewart, Georgia. Preliminary analysis determined that the implementation of either alternative has the potential to result in impacts to Water Quality and Resources, Biological Resources, Cultural Resources, Health and Safety, and Utilities, and they are discussed in detail in Chapter 3 of the Final EA. Preliminary analysis predicted no impacts to Land Use, Air Quality, Noise, Socioeconomics, Transportation, and Hazardous and Toxic Substances; accordingly, these resources are not discussed in detail in the main body of the Final EA, but are instead briefly discussed in Appendix B of the Final EA.

Type of Impact	Alternative I (No Action)	Alternative II (Preferred) Proposed Action
Water Quality and Resources		
Direct / Indirect	No Impact	Minor Adverse
Cumulative	None	Minor
Biological Resources		
Direct / Indirect	No Impact	Minor Adverse
Cumulative	None	Minor Adverse
Cultural Resources		
Direct / Indirect	No Impact	No Impact
Cumulative	None	None
Health and Safety		
Direct/Indirect	No Impact	Minor Adverse
Cumulative	None	Negligible Adverse
Utilities		
Direct / Indirect	Moderate Adverse	Minor Beneficial
Cumulative	Minor Adverse	Minor Beneficial

Table ES 1. Summary of Environmental Impacts

5.0 PUBLIC REVIEW AND COMMENTS

The *Draft EA for Implementation of Solar Photovoltaic (PV) Generating Systems at Fort Stewart, Georgia* was available for a 30-day public review period (June 9-July 8, 2014) at the local public libraries in Hinesville and Savannah and at the Post Library on Fort Stewart. Notification of the availability (NOA) of the Draft EA/FNSI was made known to the public via publication of an NOA in the *Savannah Morning News*, *Coastal Courier*, and *The Frontline* in the Savannah/Fort Stewart area (Appendix G of the Final EA). Notification of the Draft EA/FNSI's availability was also mailed to the regulatory community and joint land use partners with whom the Installation consults (Appendix G of the Final EA). No comments and/or correspondence on the draft documents were received from any of these stakeholders.

6.0 DRAFT FINDING OF NO SIGNIFICANT IMPACT

The *EA for Implementation of Solar PV Generating Systems at Fort Stewart, Georgia,* was prepared to analyze the potential environmental impacts associated with the construction, operation, and maintenance of PV Systems on Army lands at Fort Stewart. Following an analysis and comparison of impacts of the no action and action alternative, it was determined that none of the alternatives would result in significant impacts, and that the preparation of a FNSI by the Army for the proposed action was appropriate.

Kevin F. Gregory
Colonel, U.S. Army
Commanding

21 Jul 14
Date

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1.0 INTRODUCTION

In August 2012, the Assistant Secretary of the Army (Installations, Energy and Environment) established energy goal attainment policy for all Active Army Installations, with a target of 1 gigawatt (GW) of renewable energy by 2025. This aggressive renewable energy target responds to rising energy costs, potential energy supply disruptions and the need for more secure and clean energy generation and distribution. Renewable energy is defined as energy generated from renewable sources, including the following: solar, wind, biomass, landfill gas, ocean (including tidal, wave, current, and thermal), geothermal (including electricity and heat pumps), municipal solid waste, new hydroelectric generation capacity (placed in service on or after January 1, 1999) achieved from increased efficiency or additions of new capacity at an existing hydroelectric project, and thermal energy generated by any preceding sources.

The Army has increasingly turned to solar energy to meet its renewable energy target. As of early 2013, there are more than 36 megawatts (MWs) of solar photovoltaic (PV) installed on Army installations in at least 16 states. Solar comprises a third of the Army's planned renewable generating capacity from 2012 to 2017, and the Army has plans for additional solar projects throughout its military Installations (SEIA, 2013). At Fort Stewart, the Army will work with the Georgia Power Company (Georgia Power) to generate renewable energy via solar PV generating systems.

The PV technology converts sunlight directly into electric current through the use of semiconductors, which are usually composed of crystalline silicon wafers, either single crystal or polycrystalline, and thin film amorphous silicon. When semiconducting materials are exposed to light, they absorb some of the sun's energy in the form of photons and emit electrons in the form of electricity. The electricity produced is direct current (DC). The basic PV cell produces only a small amount of power. To produce more power, PV cells are wired in a series to form panels that can range in output from 10 to 300 watts.

PV panels are commonly installed on racks and can be mounted to the ground, rooftops, poles, or carports. Several PV panels are installed in a rack to form a PV array. Arrays should be mounted at a fixed angle facing true south or mounted on a mechanical track that auto-corrects to follow the sun's path, which travels true south along the equator each day. The orientation of the arrays is vital, as their southern orientation towards the sun optimizes both the amount of sunlight received on the panels and the amount of power accordingly produced by the PV System (GFPS, 2014). The power-producing components of a PV System consist of the solar array field (the PV panels), the power conditioning system, which contains an inverter to convert the energy produced from DC to alternating current (AC) for use on the electrical grid, and a transformer to boost voltage for feeding the power into the electrical grid. The power conditioning system also contains devices that can sense grid destabilization and automatically disconnect the PV System from the grid, if needed.

This EA will analyze the potential environmental impacts associated with the construction, operation, and maintenance of PV Systems at Fort Stewart and was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] Section 4321 *et seq.*); the Council on Environmental Quality (CEQ) regulations that implement NEPA (Title 40 Code of Federal Regulations [CFR], Parts 1500 to 1508); and Army Regulation 200-2, *Environmental Effects of Army Actions*, as promulgated in 32 CFR 651.

1.1 INSTALLATION BACKGROUND

Fort Stewart, Georgia (FSGA) is the largest Army Installation east of the Mississippi River, covering approximately 279,270 acres in parts of Liberty, Long, Bryan, Evans, and Tattnall counties (Figure 1). The Installation is approximately 39 miles across from east to west and approximately 19 miles from north to south. Fort Stewart was established in 1940 to train Soldiers inducted into the General Infantry by Regular Army in anticipation of the United States entering World War II. The Army named the new Post, Camp Stewart, in honor of Daniel Stewart, a local Revolutionary War veteran and state political leader who rose to the rank of Brigadier General in the Georgia Militia. After World War II ended, the Army deactivated Camp Stewart, but reopened it four years later during the early stages of the Korean Conflict.

In 1953, the Army authorized construction of tank unit firing ranges and maneuver areas. The following year, the Post was renamed Camp Stewart Anti-Aircraft Artillery and Tank Training Center. The Army decided that Camp Stewart will play an integral role in training that force, and in 1956, the Post became a permanent Army Installation and was renamed Fort Stewart. With the activation of the 1st Brigade, 24th Infantry Division in 1974, the Post entered a new era. In June 1996, the 24th Infantry Division was reflagged the 3rd Infantry Division (Mechanized), also known as the Marne Division or "Rock of the Marne." Today, Fort Stewart and Hunter Army Airfield are the home of the 3rd Infantry Division and are the Army's Premier Power Projecting Platform on the Atlantic Coast.

The primary mission of Fort Stewart is to provide support for mission readiness and execution through extensive training of Soldiers on the Installation. Training lands on Post support a wide array of training tasks for tanks, field artillery, helicopter gunnery, small arms, drop zones, and landing zones, all actively utilized by both resident and tenant active duty and Reserve/Guard units within the Department of Defense.

1.2 PURPOSE AND NEED

The purpose and need of the Proposed Action is to: (a) achieve renewable electrical energy production on Army land in accordance with 10 United States Code (USC) 2911(e), as amended, which requires that the Army produce or procure not less than 25 percent of the total quantity of electrical energy it consumes within its facilities during fiscal year 2025 and each fiscal year thereafter from renewable energy sources; (b) contribute to the Army's goal of generating 1 gigawatt (GW) of renewable electrical energy on Army land by 2025; and (c) contribute to the Energy Policy Act (EP Act) of 2005, requiring the Army's consumption of not less than 7.5 percent of the total quantity of facility electrical energy it consumes within its facilities during fiscal year 2013 and each fiscal year thereafter from renewable energy sources.

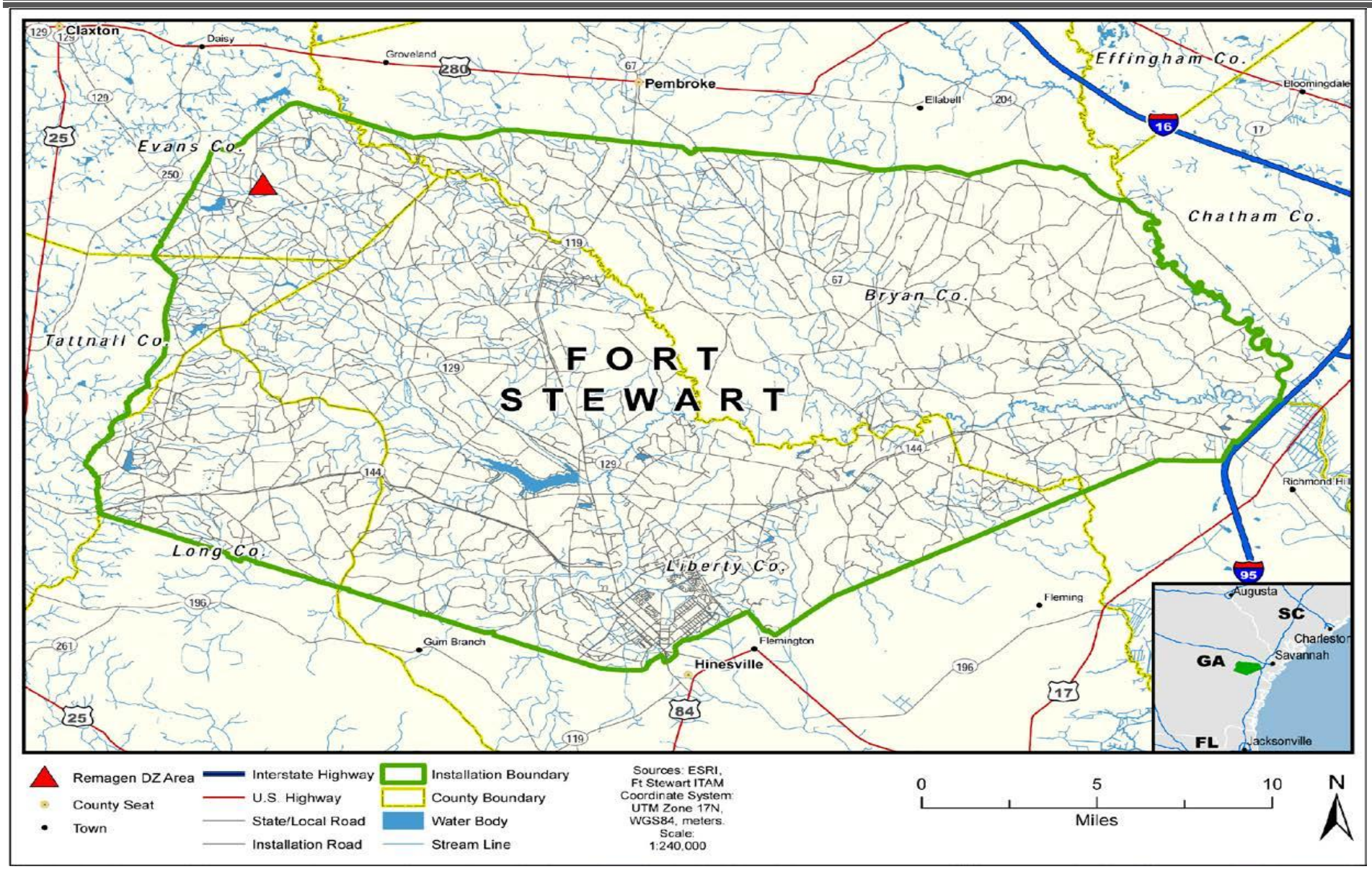

Figure 1. Location of Fort Stewart.

1.3 SCOPE OF THE DECISION TO BE MADE

This Draft Environmental Assessment (EA) considers the potential direct, indirect, and cumulative effects of the Proposed Action and its Alternatives, to include the No Action Alternative. It was prepared in accordance with the NEPA of 1969 [42 USC 4321 *et seq*.], CEQ Regulations 40 CFR Parts 1500-1508, and the Army's implementing procedures published in 32 CFR Part 651 (*Environmental Analysis of Army Actions*). A specific requirement for this EA is an appraisal of impacts of the proposed project, including a determination of a Finding of No Significant Impact (FNSI) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS).

The development and operation of renewable energy initiatives, as mentioned above, is the focus of this EA, which provides a discussion of the affected environment and the potential impacts to physical, natural, and socioeconomic resources. The following resources were identified as having potential impacts in association with implementation of the Proposed Action:

- Water Quality and Resources
- Biological Resources
- Cultural Resources
- Health and Safety
- Utilities

1.4 PUBLIC REVIEW PROCESS

As required by NEPA regulations, Fort Stewart invites public participation in the NEPA process. Comments from all interested persons promote open communication and enable better decision-making. All agencies, organizations, and members of the public with a potential interest in the Proposed Action, will be provided the opportunity to participate in this process.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

Fort Stewart utilized a collaborative interdisciplinary (ID) team process to evaluate site alternatives in order to meet the purpose and need of the proposed action. This collaborative process involved personnel from Army Energy Initiatives Task Force (EITF), Army Environmental Command, the FS Range Control, Airfield Division, Master Planning Division, Environmental Division, and Staff Judge Advocate's Office. The team collected and evaluated project-specific information and mission requirements to develop alternatives that meet the purpose and need of the proposed action.

2.2 PROPOSED ACTION

The proposed action is twofold, and shall be discussed in this document as Proposed Action A and Proposed Action B.

First, under Proposed Action A, the Army proposes to offer land for a 21-year lease and the "in-kind" construction, operation, and maintenance of three solar photovoltaic (PV) generating systems to a developer qualified through the Georgia Power Advanced Solar Initiative. Lease and land development will occur at three separate sites within or adjacent to the Installation cantonment area, totaling approximately 150 acres. A PV System is an arrangement of components designed to produce electric power using the sun as a power source. The power-producing components of the PV System consist of a series of networked solar arrays (Figure 2), often called an array field, an example of which is at Figure 3; the power conditioning system, which contains an inverter to convert the energy produced from DC to AC for use on the electrical grid; and a transformer to boost voltage for feeding the power into the electrical grid. Appendix A contains a sample PV System schematic. A site-specific design for the Fort Stewart systems is pending. These PV Systems, once operational, will generate up to 25MWs towards the Army's renewable energy goals.

Figure 2: PV Solar Array (Solular, 2014).

Second, under Proposed Action B, the Army proposes to enter into a 35-year easement with Georgia Power, in which it will allow the use of approximately 200 acres of land on Fort Stewart for the developer to construct, operate, and maintain one 30MW PV System, whose components will be consistent to those

discussed under Proposed Action A. A secondary substation may also be constructed at this location, and will also connect to Georgia Power's primary substation at Hero Road via a utility corridor and right of way (ROW).

A potential route for the utility corridor and ROW is identified as "transmission easement" in yellow on the figures in this EA, and is an existing easement currently operated by Canoochee EMC. Although Georgia Power may elect to follow this existing easement, they may also elect to follow their own, new path to avoid potential conflicts; final determinations are pending initiation of the site-specific design. If a new path is chosen by Georgia Power, supplemental NEPA analysis will be initiated. Either way, construction of the utility corridor and its associated ROW will be along existing roads and within existing ROWs to the greatest extent possible, to minimize ground disturbance.

Figure 3: Typical PV System Setup (Guelph, 2013).

Construction of the PV Systems under both Proposed Actions A and B will involve site disturbance via the clearing, grubbing, and grading necessary to establish a level surface for the placement of the solar PV arrays, followed by the construction of security fencing, equipment shelters(s), an access road, and a site-specific stormwater drainage system. Routine maintenance, equipment monitoring, and as-needed repairs, will follow, including vegetation control, solar panel washing, and periodic panel/other equipment replacement.

2.3 Screening Criteria

The Army conducted a thorough screening process and siting analysis to identify alternative locations on Fort Stewart at which the purpose and need for the proposed action could be met. This resulted in some alternative locations moving forward for detailed consideration (as discussed in Section 2.4) and in other alternative locations being dismissed from further consideration (as discussed in Section 2.5 and shown in Appendix B). All potential alternatives were analyzed for suitability using the following screening criteria.

- **Parcel Size and Topography:** Approximately 6-10 acres of PV array is required to generate 1MW of energy. Accordingly, generating 25MW of energy requires a minimum of 150 acres, and generating 30MW of energy requires a minimum of 180 acres. A generally flat or (at most) gently rolling terrain is required so shading and/or shadowing on the arrays will not be an issue and the arrays must face due south to maximize sunlight absorption and power production. It is preferred that the minimum acreage amount for each action be contiguous land, unless the timeline to implement environmental mitigation prevents the action from moving forward.

- **Mission Compatibility/ Land Use.** The location should be compatible with the military mission at Fort Stewart, and should not conflict with military or civilian actions on adjacent properties (i.e., result in range/maneuver areas closure, military or civilian road closures, and/or impact recreational resources). This may include changing a location's existing compatible Land Use category code from Operational to Non-Operational, in accordance with Army Regulation (AR) 350-19 (DA, 2005). Resulting site development and operations of the PV Systems, secondary substation, and utility corridor, once complete, may not adversely impact military training or future planned development activities.
- **Grid Access and Electrical Tie-in Potential (Renewable Energy).** The location should be within four miles of existing electrical transmission facilities (substations) or have technical viability and economic justification for building new electrical lines for interconnection to Fort Stewart distribution system or the grid. Close proximity to existing facilities is preferred for economic viability of the project, as transmission lines may cost up to one million dollars per mile. The infrastructure must be capable of transporting, or being upgraded to transport, electricity generated by the alternative.
- **Environmental Factors.** The location should have minimal environmental constraints, to include presence of/impacts to wetlands, removal of threatened and endangered species habitat, presence of unexploded ordnance, etc. This will decrease up-front mitigation costs, avoid and minimize mitigation/permitting requirements, lessen improvement time, and minimize cumulative impacts. Existing Fort Stewart environmental documentation and range planners provided information used to screen areas for these constraints.
- **Safety.** The location should present minimal exposure of workers and/or site personnel to unexploded ordnance (UXO) and other site hazards, to include potential violations of the Army Safety Program and the Occupational Safety and Health Act. The solar panels are minimally glare-producing, to ensure they are safe to site near airfields or other facilities where reflections and/or glare will be a safety concern.

2.4 ALTERNATIVES

2.4.1 ALTERNATIVE I: NO ACTION / STATUS QUO

The CEQ regulations that implement NEPA require a clear basis for choice among options by the decision maker and the public, and a no action alternative must be included and analyzed (40 CFR 1502.14[d]). Under the No Action Alternative, the Army will not enter into an outgrant agreement to construct, operate, and maintain solar PV generating systems on Fort Stewart.

2.4.2 ALTERNATIVE II: PROPOSED ACTION

Under this alternative, Fort Stewart will implement Proposed Action A and Proposed Action B at the preferred locations, as shown overall on Figure 4 and in depth at Figures 5-8 (*see Section 2.5 of this EA for non-preferred locations*). Where applicable, timber harvest will be conducted by the Installation's Forestry Branch, followed by secondary harvest and site cleanup by the construction contractor. Woody, non-contaminated debris shall be made available to the Forestry Branch for use as chipping into mulch and use as fuel in the Installation Central Energy Power Plant. Site development includes grubbing, grading, and site stabilization, installation and connection of required utilities, establishment of the PV System and its associated access road, and fencing, construction of the secondary substation at the Proposed Action B location, and construction of the utility corridor connecting all with the primary

Georgia Power substation at Hero Road. Operations, monitoring, maintenance, and repair of the PV Systems, utility corridor, and secondary substation will follow, on an as-needed basis.

The preferred location for the three PV Systems under Proposed Action A is the SAIA, WWTP, and Southwest Quadrant Sites (Figure 4).

- The SAIA Site consists of 70 acres (Figure 5). This alternative meets the Purpose and Need of the Proposed Action, as well as the screening criteria for Parcel Size and Topography, Grid Access/Electrical Tie in Potential, and Mission Compatibility/Land Use, and Safety, and has minimal Environmental Factor concern. This site is approximately four miles from the existing Georgia Power substation on Hero Road (GA Power Substation), and its nearly zero percent slope is well-suited for PV System development. There is also an existing buffer zone located behind the firing ranges' observation towers, which currently serves as a safety zone in which vehicles and Soldiers may safely access the firing ranges. As no development/vegetation is permitted in this buffer area, it will also prevent shading of the solar panels at this site. Although this site is located near Small Arms ranges, it is on their non-firing sides, existing boundaries to the north will not extend past existing range safety danger zones (SDZs), and a survey for the presence of unexploded ordnance (UXO) determined the site to be a" low risk" area (USAIC, 2013). An undisturbed vegetative buffer will be maintained a minimum of 25 feet from all nearby wetlands areas, and there are no additional known environmental concerns.
- The WWTP Site consists of 41 acres (Figure 6). This alternative meets the Purpose and Need of the Proposed Action, as well as the screening criteria for Parcel Size and Topography, Grid Access/Electrical Tie in Potential, and Mission Compatibility/Land Use, and Safety, and has minimal Environmental Factor concerns. It is 0.4 miles from the GA Power Substation, and is also suitably sloped. Although there is a military munitions response site to the south of the footprint, it will not be utilized for the PV System development, and no UXO surveys, characterization, and avoidance measures are required. As with the SAIA Site, a surrounding 150 foot buffer will prevent trees from shading the solar panels, and an undisturbed vegetative buffer will be maintained from all wetland areas, canals, and streams. There are no additional known environmental concerns.
- The southwest Quadrant Site consists of 19 acres (Figure 7). This alternative meets the Purpose and Need of the Proposed Action, as well as the screening criteria for Parcel Size and Topography, Grid Access/Electrical Tie in Potential, and Mission Compatibility/Land Use, and Safety, and has minimal Environmental Factor concerns. The area is currently developed with temporary barracks; however, these are in the process of being removed and will result in an evenly sloped open area for the PV System. Previously, this site was intended to be used for a Supply Support Activity Warehouse and a Tactical Vehicle Facility for the 2nd Brigade Combat Team (BCT); however, these facilities are no longer required due to the pending deactivation of the 2nd BCT in January 2015. To the west of the site, an existing parking lot and walking path provide a preexisting barrier/buffer to prevent solar panel shadowing issues. To the southwest, south, and east of the site, the buffer will extend to the edge of existing retention ponds and up to 25 ft from the wetlands to prevent tree shading. There are no additional known environmental concerns.

The preferred location for the 30MW PV System under Proposed Action B is on 200 acres within Training Area A-18 that avoids wetlands and minimizes protected species impacts, and may consist of Option 1, Option 2, or portions of both, as depicted on Figure 8. This will include construction of a utility corridor to connect the PV System to the existing Georgia Power Substation on Hero Road. This alternative meets the Purpose and Need of the Proposed Action, as well as the screening criteria for Parcel Size and Topography, Grid Access/Electrical Tie in Potential, and Mission Compatibility/Land Use, and Safety, and has minimal Environmental Factor concerns. There is a potential to impact wetland areas, and habitat for the federally-listed Red-cockaded woodpecker (RCW) and the Frosted flatwoods salamander (FFS), all of which will require impact minimization to wetland areas (if avoidance measures are unsuccessful) and consultation efforts for RCW and FFS habitat impacts (already in progress). The site is located adjacent to a former Skeet Range and Rifle Grenade and Rocket Launcher Site, although it is not within the footprint of any former ranges or range fans. Due to this adjacency, however, UXO survey and characterization is recommended, and avoidance measures will be required.

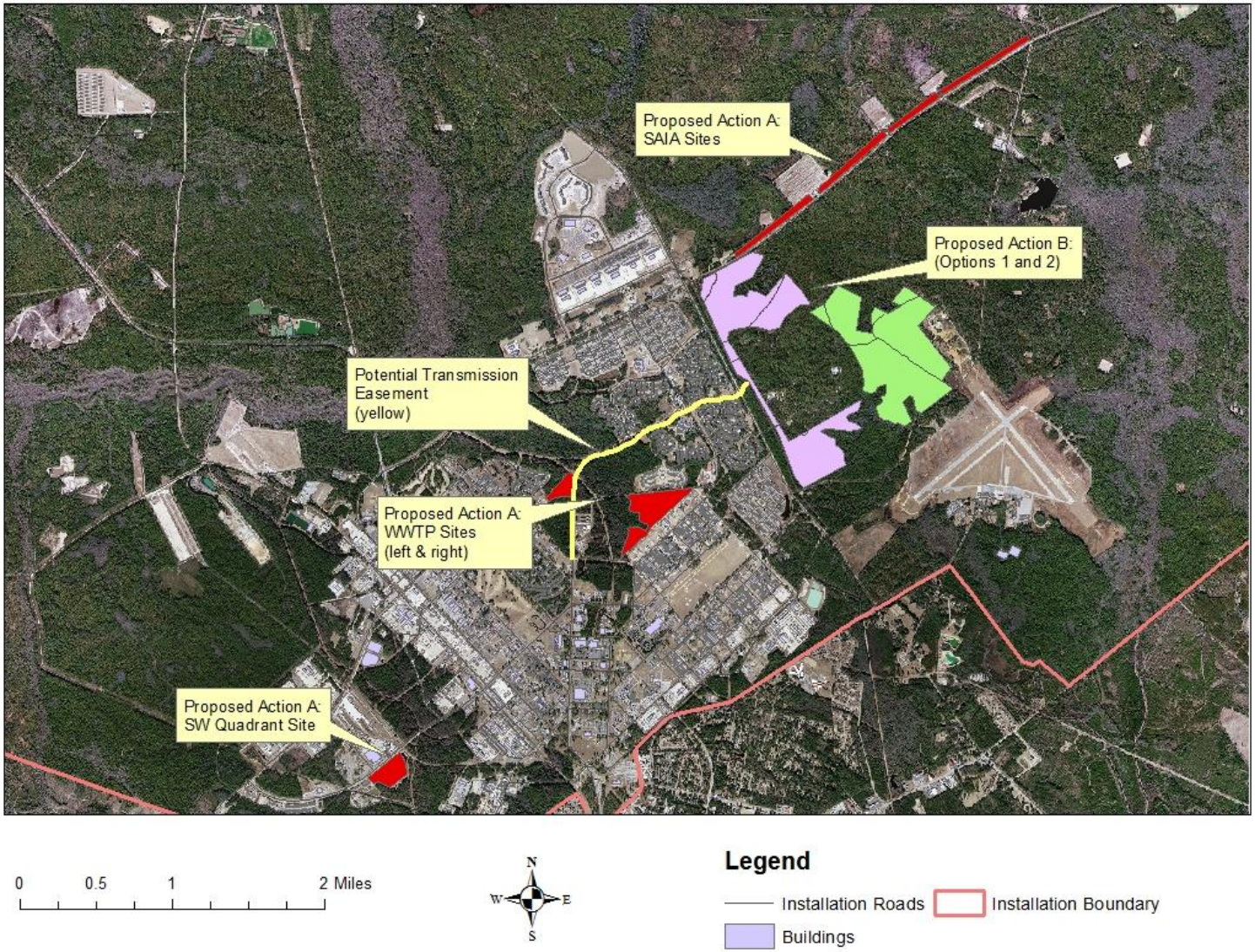

Figure 4: Proposed Action Sites.

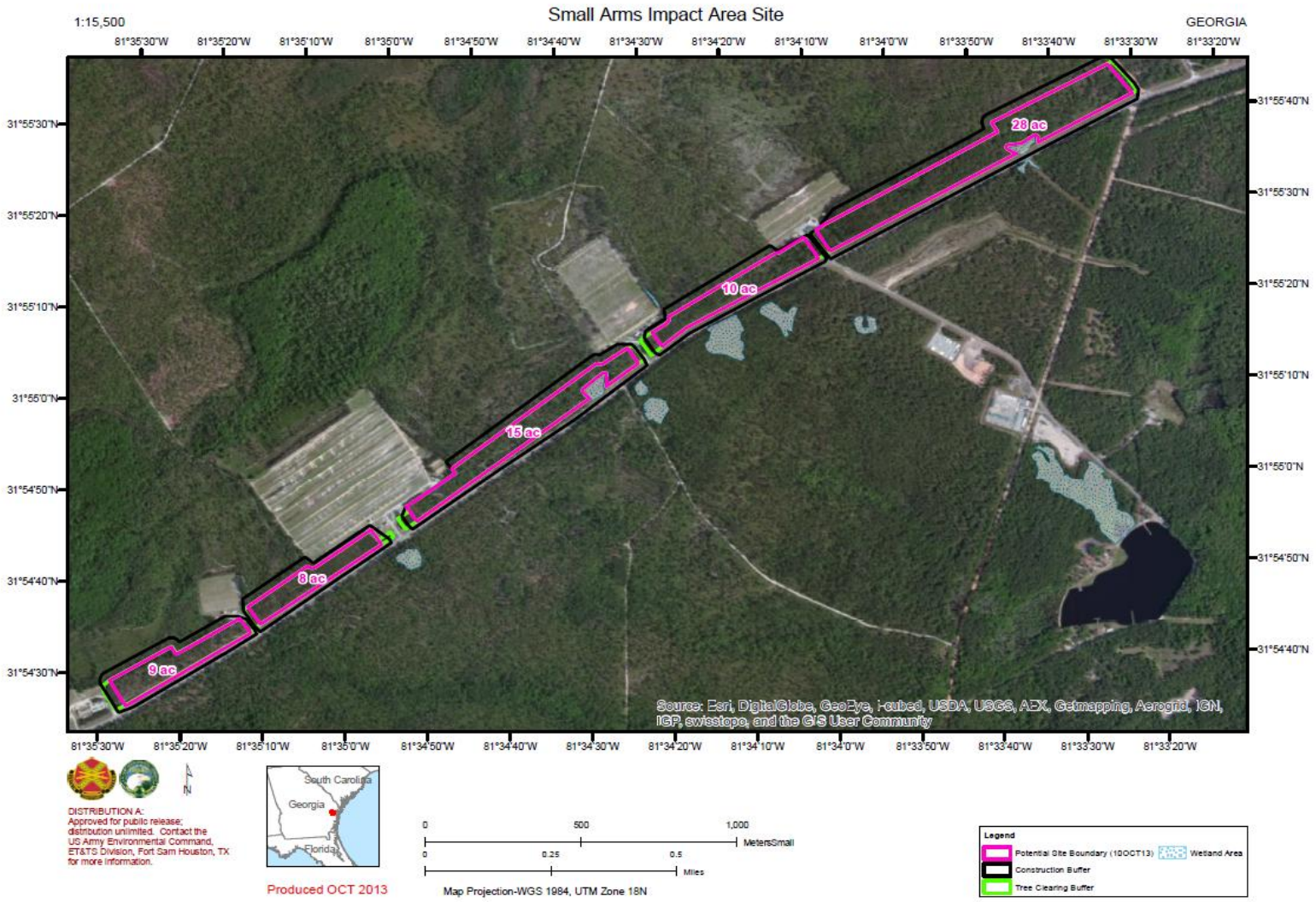

Figure 5: Proposed Action A: SAIA Site.

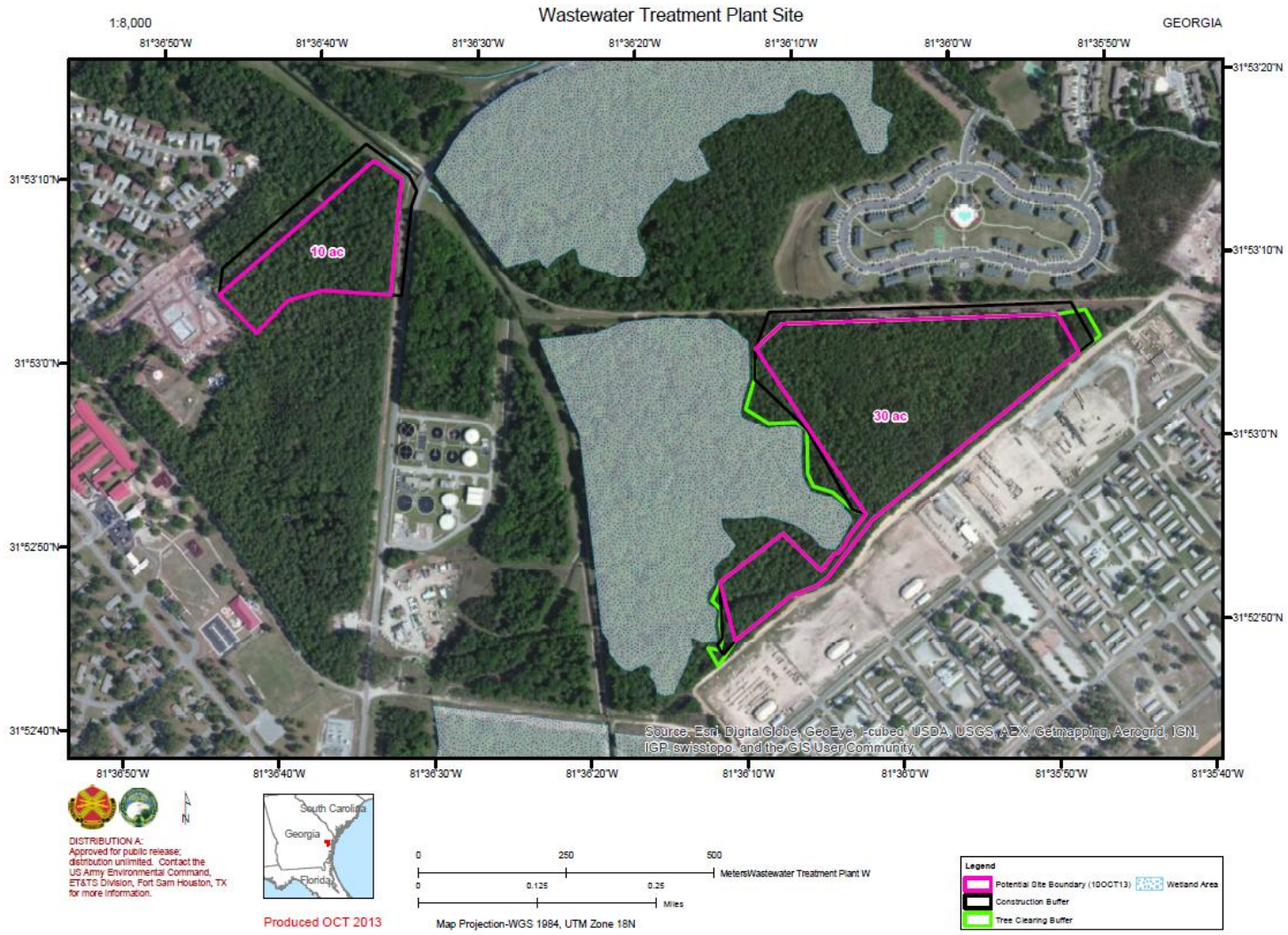

Figure 6: Proposed Action A: WWTP Site.

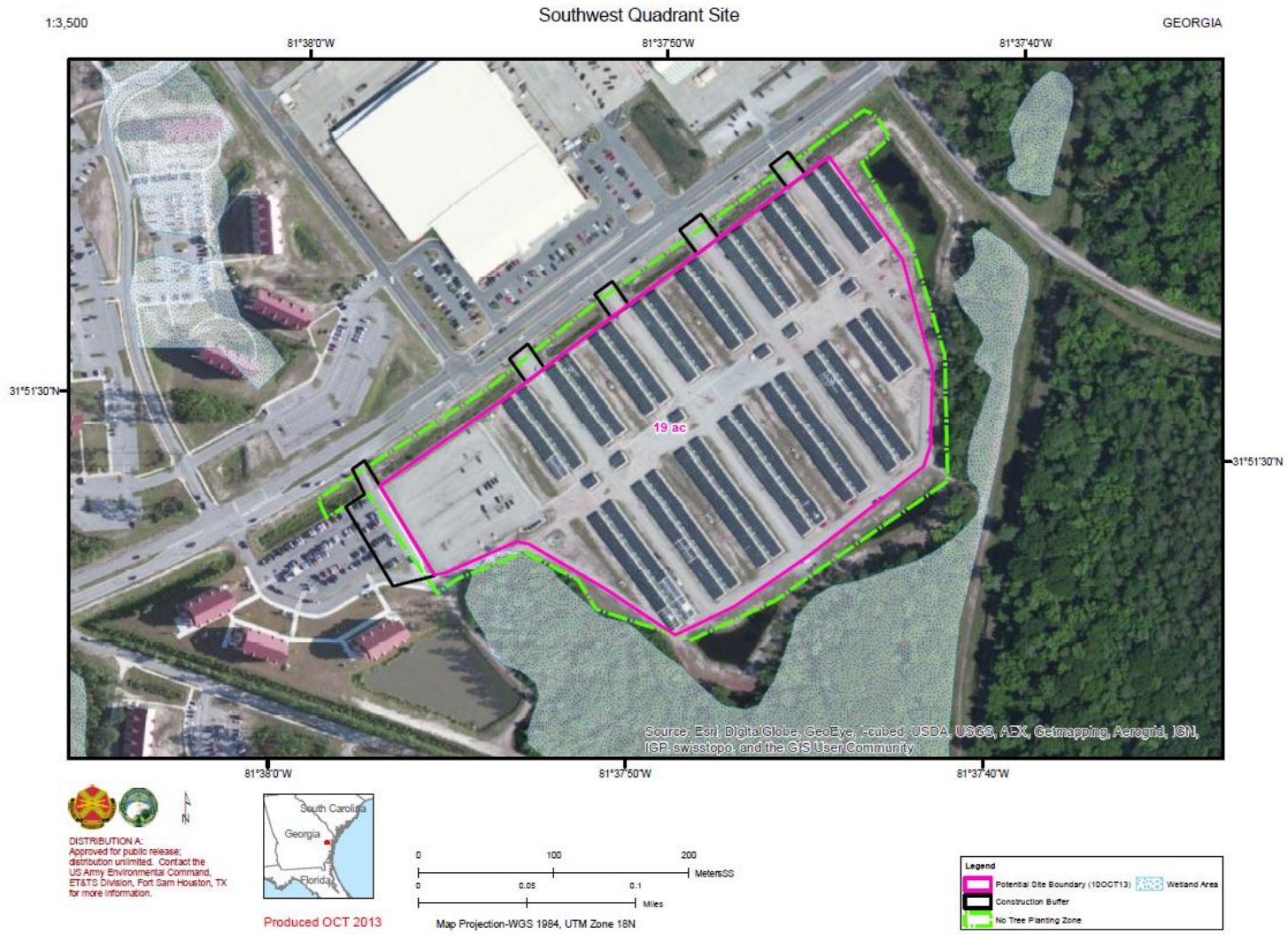

Figure 7: Proposed Action A: Southwest Quadrant Site.

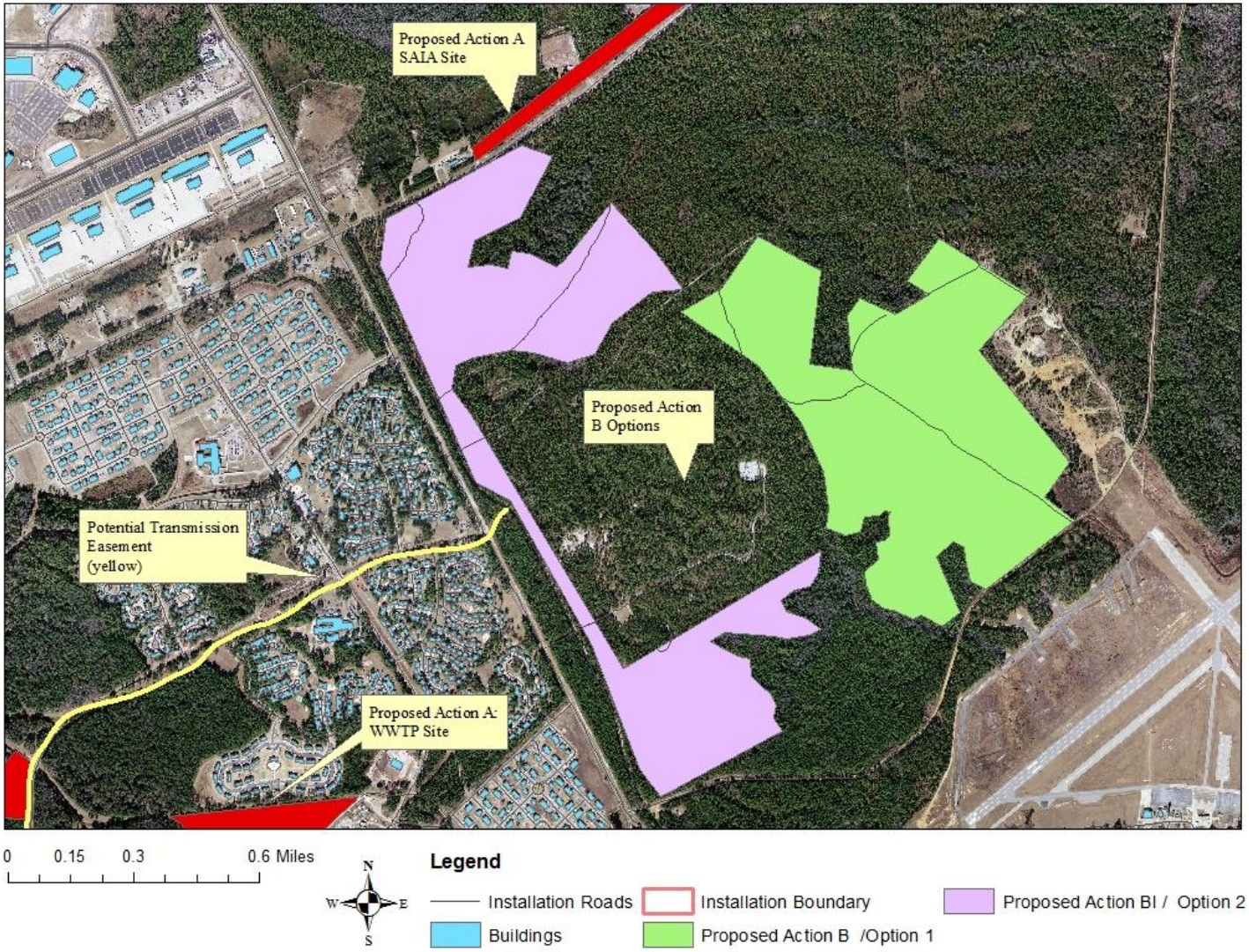

Figure 8: Proposed Action B Site (Training Area A-18).

2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FUTHER CONSIDERATION (*See figures at Appendix C*)

2.5.1 Other Parcels Within Training Area A-18 *(near FS Road 47)*.

Fort Stewart identified and considered several 150-200 acre contiguous parcels within TA A-18 near FS Road 47 that met the criteria for Parcel Size and Topography, Grid Access/Electrical Tie in Potential, Environmental Factors (minimal), and Safety. However, unlike the Preferred Alternative Locations in A-18 (discussed under Section 2.4.2 of this EA), implementation of the proposed alternative at these other locations will result in the elimination of several key tank trails (47, 48, 48C, and 48E) and thus disrupt the Installation's training mission, failing the Mission Compatibility/Land Use criteria. Therefore, none of these parcels were carried forward as a viable alternative and removed from further consideration.

2.5.2 Training Areas B-7 and E-1

Fort Stewart identified and considered 200 acre contiguous parcels in TAs B-7 and E-1, which met the screening criteria for Parcel Size and Topography, Mission Compatibility/Land Use, and Grid Access/Electrical Tie in Potential. Both, however, failed the criteria for Environmental Factors and Safety. Specifically, implementation of the proposed action at these locations has the potential to fragment the Installation's population of the federally-listed RCW, as well as involve a lengthy military munitions removal and remediation/cleanup process.

The RCW is a highly social species that lives in extended family groups known as colonies or clusters. It been federally listed as endangered since 1968, mainly as a result of the reduction and fragmentation of its habitat, the southeastern longleaf pine forests. TA B-7 is a main flight corridor of the RCW population at Fort Stewart, and construction at this location will fragment that corridor. While Fort Stewart contains a mature forest with large home ranges for the RCW, dispersing young may have greater difficulty finding a mate if numerous or extensive patches of non-forest (fragmented spaces) exist within the general forest landscape. Removal of 200 acres within TA B-7, or the closely adjacent location in TA E-1, could create potentially significant dispersal concerns to RCW population connectivity as they travel east and west across the Installation's forest. Recent construction, to include the 4th Infantry Brigade Combat Team Complex, 10th Engineering Battalion Complex, and Military Working Dog Complex, removed approximately 500 acres of this vital B-7 RCW corridor in 2011; therefore, the removal of an additional 200 acres for this proposed action may result in potentially significant cumulative impacts to the RCW population. Although RCW habitat will also be removed under Alternatives II and III (which were carried forward for additional analysis), there will be no potentially significant impacts as a result of their implementation. Under this alternative, however, significant impacts are quite likely, thus the reason for its dismissal as a viable alternative when compared to other possible alternatives.

Both locations are also in an area previously utilized as a 90mm tank range. The selection of either location as preferred will require clean up through the military munitions response program (MMRP) as the sites will no longer be considered a military operation area. The MMRP process addresses the potential explosives safety hazards presented by munitions and explosives concentrations high enough to pose an explosive hazard and potential environmental contamination. Following cleanup, and in accordance with AR 350-19, the chosen alternative location could then proceed with the Land Use Change process from Operational (range and training lands) to Non-Operational (non-range and training

lands). For these reasons, in addition to the fact that there are other, more reasonable alternatives at which the proposed action may be implemented, this alternative was removed from further consideration.

2.5.3 Training Area A-17

Fort Stewart identified and considered a 200 acre contiguous parcel in TA A-17 that met the screening criteria for Parcel Size and Topography, Mission Compatibility/Land Use, Grid Access/Electrical Tie in Potential, and Safety. However, it failed the criteria for Environmental Factors. Specifically, although construction of the PV System at the site will likely avoid adverse wetland impacts, it will require the removal of a RCW cluster and involve formal consultation with the U.S. Fish and Wildlife Service (USFWS). As there were other alternative locations that will avoid both the removal of an RCW cluster and adverse impacts to wetlands, Fort Stewart dismissed TA A-17 as viable alternative and removed it from further consideration.

2.5.4 Training Area D-1

Fort Stewart identified and considered a 200 acre contiguous parcel in TA D-1 that met the screening criteria for Parcel Size and Topography, Mission Compatibility/Land Use, and Grid Access/Electrical Tie in Potential. Although it failed the criteria for Environmental Factors (containing significantly more wetlands than other areas of Fort Stewart), construction has previously occurred nearby, and Fort Stewart evaluated the possibility of developing 200 acres in the vicinity of this existing construction. However, Fort Stewart could not find 200 contiguous acres that avoided and minimized additional wetland impacts to the greatest extent practicable, given the possibility of other upland areas. Approximately 30% of any 200-acre site in this area will contain wetlands. In addition, there were also Safety criteria concerns at this location, as some of the land within TA D-1 is a former anti-aircraft range, requiring the same lengthy MMRP process, as previously discussed in *2.5.2 Training Areas B-7 and E-1*. For these reasons, it was dismissed as a viable alternative and removed from further consideration.

2.5.5 WAAF Site

Fort Stewart identified and considered a 200 acre parcel near the joint-use development facilities of Wright Army Airfield and the MidCoast Regional Airport. Initially, the site seemed feasible as it met the criteria for Parcel Size and Topography, Mission Compatibility/Land Use, Safety, and Grid Access/Electrical Tie in Potential. The site, however, is segmented into several small upland parcels which would allow for the introduction of fill material into surrounding wetland areas so that each upland parcel could be accessed for maintenance purposes. Impacting the adjacent wetland systems is not feasible considering the action alternatives avoid / minimize impacts. For this reason, it was dismissed as a viable alternative and removed from further consideration.

2.5.6 Landfill Site

Fort Stewart identified and considered a 130 acre portion of the South Central Landfill facility, even though the location only met the screening criteria for Grid Access/Electrical Tie in Potential. Initial investigations determined that construction could interfere with ongoing methane monitoring investigations at the landfill, and that construction must be preceded by completion of the MMRP process, failing the Safety and Mission Compatibility/Land Use criteria. For these reasons, it was dismissed as a viable alternative and removed from further consideration.

2.5.7 Small Arms Impact Area (SAIA)

Fort Stewart identified and considered a 200 acre contiguous parcel within the SAIA in TA B-4 that met the screening criteria for Parcel Size and Topography, Mission Compatibility/Land Use, and Grid Access/Electrical Tie in Potential. Initial analysis indicated avoidance of sensitive environmental resources, to include wetlands; however, upon further evaluation, it was determined that the use of this site will remove several RCW clusters which will necessitate formal USFWS consultation. The site is also located in the surface danger zones of the small arms ranges that comprise this impact area, failing the criteria for Safety, and increasing the potential for damage to the solar panels if they were constructed at this site. For these reasons, it was dismissed as a viable alternative and removed from further consideration.

2.5.8 Off-Site Location (Army Compatible Use Buffer)

Fort Stewart initially considered the "Hook" parcel as a viable alternative, which is located in the Installation's Army Compatible Use Buffer, as its 240 acres of upland acreage met the screening criteria for Parcel Size and Topography, Mission Compatibility/Land Use, Safety, and Environmental Factors. However, the parcel is five miles from the Fort Stewart substation and outside of the criteria's four mile radius, failing the Grid Access/Electrical Tie in Potential criteria.

2.5.9 Donavan Field Site

The Army considered using Donavan Field, a Georgia Army National Guard area used as a parade field and a running track, met the screening criteria for Grid Access/Electrical Tie in Potential and Environmental Factors, as it is located within the cantonment area and avoids all sensitive environmental resources. However, it does not meet the criteria for Mission Compatibility/Land Use, as the site is a multiuse recreational area in support of troop morale, whose loss will be deemed detrimental. For these reasons, it was dismissed as a viable alternative and removed from further consideration.

2.5.10 Taylor's Creek Golf Course Site

The Army also considered the possibility of converting its golf course in support of the proposed action, as this location met the criteria for Grid Access/Electrical Tie in Potential, Safety, and Environmental Factors. The site lacks sensitive environmental resources and will not remove vital training land. However, the golf course is a recreational facility used by many Soldiers, Family Members, Civilians, and Retirees which will necessitate additional socioeconomic impact analysis to determine the level of impact to the Fort Stewart community if it were no longer available. For these reasons, it was dismissed as a reasonable alternative and removed from further consideration

2.5.11 Cantonment Area Parking Lot Site

Fort Stewart identified and considered a 75 acre parcel originally identified for potential future development as parking space in the Installation's northern cantonment area, which included 36 acres of existing parking lots (*not shown in Appendix C*). Under this alternative, the project would have entailed constructing canopies over the parking lot and installing the solar PV arrays on top of the canopies, in addition to constructing the PV System on the additional, adjacent 38 acres of land south of the existing

parking lot. This site was eliminated from further analysis early due to personnel safety concerns associated with the canopies.

2.5.12 Highway 144/Interstate 95 Site

Fort Stewart identified and considered three 94 acre parcels in TAs A-1 and C-18, just inside the Installation boundary near Interstate 95 (*not shown in Appendix C*). This alternative was eliminated early in the process because it is located approximately 18 miles from the Georgia Power substation on Fort Stewart.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter focuses on only those resources within the affected environment potentially impacted by the proposed action. Potential direct, indirect, and cumulative impacts to the affected environment are discussed as they relate to the action and no action alternatives. Direct impacts are those caused specifically by the proposed action and that occur at the same time and place. Indirect impacts are also caused by the proposed action, but later in time or farther in distance. The levels of intensity of potential impacts are described as follows:

- *Negligible.* This term indicates the environmental impact is barely perceptible or measurable; remains confined to a single location; and will not result in a sustained recovery time for the resource impacts (days to months).

- *Minor.* This term indicates the environmental impact is readily perceptible and measureable; however, the impact will be temporary and the resource should recover in a relatively short period of time (days to months).

- *Moderate.* The term indicates the environmental impact is perceptible, measurable, and may not remain localized, thus also impacting areas adjacent to the proposed action. Under the impact, recovery of the resource may require several years or decades.

- *Significant.* This term indicates the threshold of intensity associated with an environmental impact has been exceeded (i.e. TLS). This threshold is defined by a potentially substantial and permanent adverse change in or loss of resources within the context of the project. In the absence of mitigation or avoidance, a significant impact will trigger the dismissal of the alternative or preparation of an Environmental Impact Statement.

Cumulative impacts "result from the incremental impact of the action" when added to "other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or what person undertakes such other actions" (Canter et. al, 2007). Impacts occur within a specified region of influence (ROI). Resources that receive no direct, indirect, or only a negligible impact as a result of the no action or action alternatives, will not result in cumulative impacts.

The **ROI for Proposed Action A** consists of the areas surrounding the Small Arms Impact Area (SAIA), Wastewater Treatment Plant (WWTP), and Southwest Quadrant Sites on Fort Stewart.

- The SAIA Site is primarily forested and undeveloped, and parallels Georgia State Highway 144, as shown on Figure 5. Past actions at the site include the construction/repairs/maintenance of the highway, as well as of the various ranges at/in the vicinity of this location. Many of these ranges are currently inactive, identifiable primarily through their historic safety fans, as shown on Figure 6, and are either sitting dormant or are in the process of remediation.
- The WWTP Site is forested and undeveloped, as shown on Figure 6. Past actions in its vicinity include the construction/operation/maintenance of the WWTP itself, as well as other components of the cantonment area to its south.

- The Southwest Quadrant Site is developed and unforested, as shown on Figure 7. Past actions in its vicinity consist of the construction/operation/maintenance of the temporary barracks/other cantonment area development surrounding the site.
- Present and future activities at all three sites include the continued operation/maintenance of the identified facilities at these locations, and there are no known future activities identified for these sites.

The **ROI for Proposed Action B** consists of the area within and surrounding Training Area (TA) A-18, as shown on Figure 8.

- The ROI itself is composed of training lands, to include several former (now inactive) training ranges. Land to the east is primarily forested and undisturbed.
- Past actions within the ROI include construction of WAAF, its civilian component (MidCoast Regional Airport Complex/Joint Use Area, or MRAC), the Air Support Operations Complex (ASOC), and the Unmanned Aerial Vehicle (UAV) Complex-Phase I to the south; construction of an Army Family Housing Area and Georgia Army National Guard (GARNG) Complex to the West; construction of the Brigade Combat Team Complex to the north-northwest; and construction of Range Division facilities and training ranges to the north.
- Current/ongoing actions within the ROI include construction of the UAV Complex Phase II, vegetation obstruction removal, and joint use operations at WAAF/MRAC to the south; and ongoing use of existing facilities to the south, west, north-northwest, and east.
- Planned future activities in the ROI include construction of a Ground Based Sense and Avoid Radar, additions to the ASOC, a Runway Extension, and new civilian facilities within WAAF/MRAC's Enhanced Use Area to the south.

3.1 RESOURCES ANALYZED

Preliminary analysis determined that the implementation of either alternative has the potential to result in impacts to Water Quality and Resources, Biological Resources, Cultural Resources, Health and Safety, and Utilities, and they are discussed in detail in the remainder of this chapter. Preliminary analysis predicted no impacts to Land Use, Air Quality, Noise, Socioeconomics, Transportation, and Hazardous and Toxic Substances; accordingly, these resources are not discussed in detail in the main body of the EA, but are instead briefly summarized in Appendix B.

3.2 WATER QUALITY AND RESOURCES

3.2.1 AFFECTED ENVIRONMENT

Analysis of water quality focuses on the physical, chemical, and biological characteristics of water resources. The Clean Water Act (CWA) (33 USC § 1251 et seq.) is the primary Federal law that protects the nation's water, including lakes, rivers, aquifers, and wetlands. Disturbance to Jurisdictional Waters of the U.S., including navigable waters, impoundments, tributary streams, and wetlands, is regulated and subject to Federal permits under Section 404 of the CWA.

Surface Waters. Within the greater Fort Stewart watershed, surface water resources are diverse and include over 265 miles of freshwater rivers, streams, and creeks, numerous ponds and lakes, and over 12 miles of brackish streams (FSGA, 2005) (Figure 9). Although Fort Stewart occupies parts of four separate watersheds, the majority of the Installation lies within the Canoochee and Ogeechee Coastal Watersheds. The Canoochee River crosses the Installation from its northwest corner to its eastern side. Taylor's Creek is a major tributary of the Canoochee and flows through the ROI for Proposed Action A, including the SAIA, WWTP, and Northwest Quadrant sites. There are no navigable waters, impoundments, or tributary streams on the actual site of Proposed Action A.

The Ogeechee River forms the eastern boundary of the Installation, which includes the ROI for Proposed Action B. In this area, surface water sources drain into the Goshen Swamp, which ultimately discharges into Peacock Creek, a 303(d) impaired water body designated by the Georgia Department of Natural Resources (DNR) as impaired due to high levels of fecal coliform and low levels of dissolved oxygen. As there are navigable waters and streams present, additional specific requirements will apply to timber harvest and construction at this location.

The Clean Water Act (CWA) (33 USC § 1251 et seq.), Georgia Water Quality Act (GWQA) (Official Code of Georgia [OCGA] § 12-5-20), and Georgia Erosion and Sedimentation Control Act (OCGA § 12-7-1) permitting require implementation of erosion controls during site disturbing activities.

- Construction permitting requires fees in the amount of $80.00/disturbed acre and must be paid to the Georgia Environmental Protection Division (EPD). A copy of the fee submission must be provided to the FS/HAAF Environmental Division along with a prepared and initialed Notice of Intent (NOI) for coverage under the State's National Pollutant Discharge Elimination System (NPDES) Permit for Stormwater Discharges Associated with Construction Activities and the project's approved Erosion Sedimentation Pollution Control (ESPC) Plan. The FS/HAAF Environmental Division will complete the Notice of Intent (NOI) and process it for submittal to the State (approximately 14 days from submittal). Land disturbance, inclusive of timber harvesting and/or grubbing/grading activities may not commence until 14 days from the date of certified mailing of the NOI packet. The total acre shall include material laydown areas, muck out/soil fill sites, stockpile and equipment storage areas, work-site entrance/exits, utility rights-of-way, demolition works sites, and timber harvest sites.

- Sites with an NOI require continuous maintenance of BMPs until submittal of the Notice of Termination (NOT) to the Georgia EPD. The NOT can be processed and submitted to the State upon 70% site stabilization of 100% disturbed acreage with pervious surfaces and/or permanent vegetation and requires concurrence from the Installation.

- The proposed action must comply with Energy Independence Security Act (EISA) Section 438, which requires maintaining or restoring the site's predevelopment hydrology with regard to the temperature, rate, volume and duration of flow. Low Impact Development (LID) techniques must be used to implement EISA Section 438, as required by the DoD United Facilities Code (UFC)-3-210-10. E&S control best management practices (BMPs) must be utilized during land disturbance. These technical requirements and BMP recommendations can be found in greater detail at the following web link: http://www.stewart.army.mil/dpw/EN_Downloads.aspx).

- At a minimum, a Level 1A E&S Control State Certified trained individual is to be on the site during ANY land disturbance activity.
- Site dewatering requires prior approval from the Fort Stewart Environmental Office. If approved, dewatering must incorporate BMPs to dissipate or disperse the flows.
- Ensure all washouts of trucks and equipment is controlled and is discharged with E&S BMPs. Waste material and/or debris is required to be disposed of properly, and not into streams, ditches, or stormwater conveyance systems.
- For spill prevention, ensure proper drip pans and secondary containment are utilized with construction and demolition equipment.

Wetlands. 33 CFR Part 328.3(b) of the CWA (33 USC § 1251 et seq.) defines wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." Approximately one-third of Fort Stewart's 279,000 acres is wetlands of one type or another, based on the National Wetlands Inventory (NWI), a map-based planning tool first initiated by the U.S. Fish and Wildlife Service (USFWS) in 1974. Given their prevalence on the Installation, Fort Stewart has made avoidance and minimization of wetlands impacts a top priority and wetlands are one of the primary factors to be considered when siting a new project. In this manner, much of the avoidance and minimization of wetlands impacts takes place before actual site selection actually occurs.

Effective implementation of timber harvest erosion and sedimentation control best management practices (BMPs), National Pollutant Discharge Elimination System (NPDES) permit requirements, site-specific erosion and sedimentation (E&S) pollution control (ESPC) plan, and pre- and post-construction BMPs reduce the potential adverse impacts to surface water bodies. The Installation has a resident Natural Resource Conservation Service (NRCS) advisor who provides technical expertise during preparation of ESPC plans. During this process, the Installation's stormwater specialist and NRCS advisor review ESPC plans for compliance with the Clean Water Act (CWA) and Georgia Erosion Sedimentation Control Act. These technical experts consistently inspect and monitor on-going construction projects to assure compliance and that BMPs are maintained. There are no wetlands within the Proposed Action A sites, although the WWTP Site and Southwest Quadrant Sites are located adjacent to wetlands. Proposed Action B has wetlands running through its acreage; therefore, additional specific requirements will apply to timber harvest and construction at this location (Figure 9).

Floodplains. The Federal Emergency Management Agency maps flood-prone areas and lands, to include those lying within the 100-year floodplain in Fort Stewart. There are approximately 120,000 acres of 100-year floodplain on Fort Stewart and approximately 90,000 acres of wetlands, based on the National Wetlands Inventory (NWI), a map-based planning tool first initiated by the U.S. Fish and Wildlife Service (USFWS) in 1974. Although wetlands are adjacent to Proposed Action B neither Proposed Action A or B is sited within a floodplain.

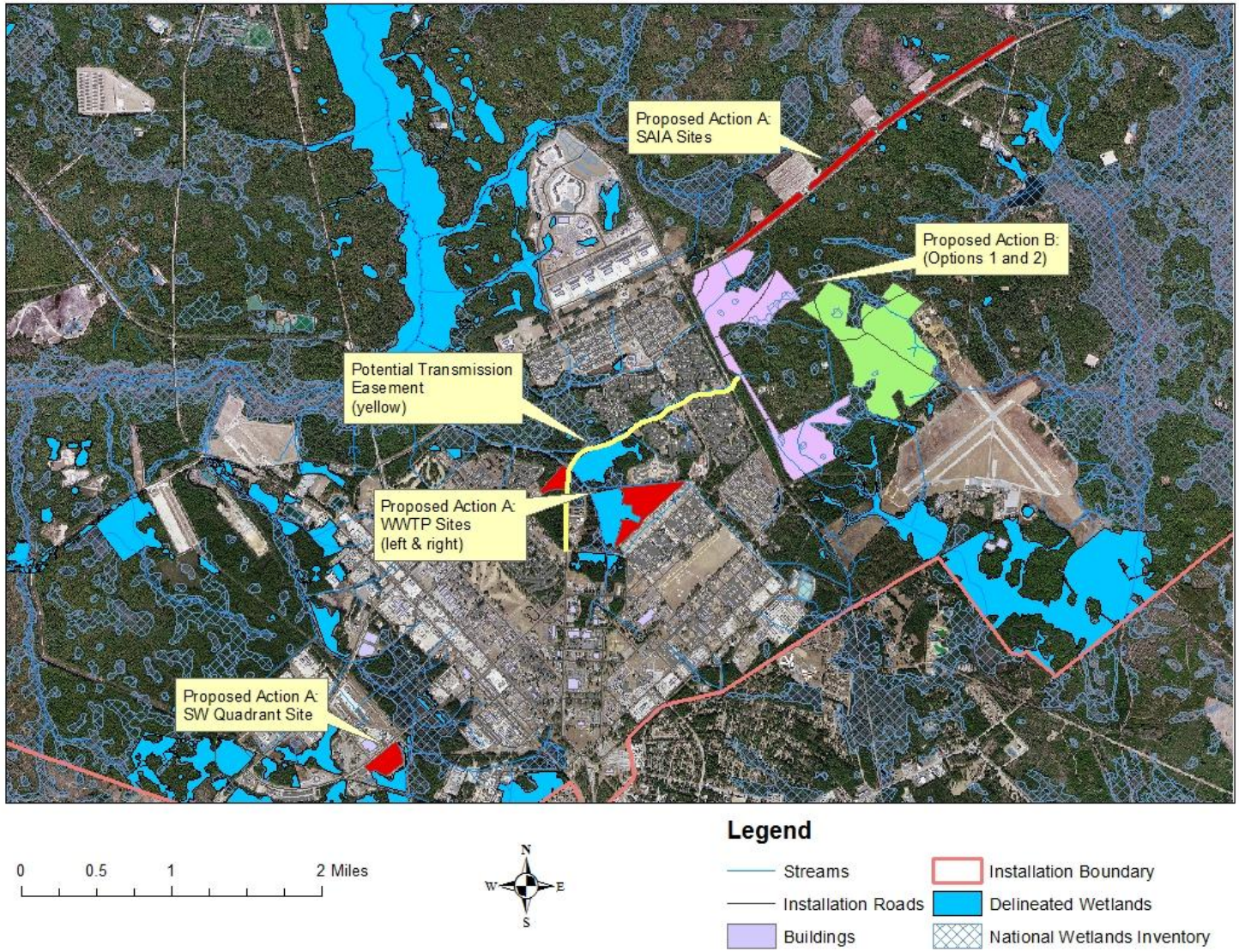

Figure 9: Water Resources at Proposed Actions A and B Sites.

3.2.2 ENVIRONMENTAL CONSEQUENCES

3.2.2.1 Alternative I: No Action/Status Quo.

This alternative will have no impacts to water quality and resources, as there will be no timber harvest, grading, grubbing, or other land disturbance on site associated with the construction of a PV System.

3.2.2.2 Alternative II: Proposed Action.

Under this alternative, Proposed Actions A and B will be implemented and will result in overall minor adverse impacts to Water Quality and Resources.

Proposed Action Overall. Soil disturbance during timber harvest, site preparation, and construction of the PV Systems at Proposed Action A and B sites may result in erosion and the overland transportation of sediments to surface waters, streams, and/or wetlands. However, effective implementation of timber harvest E&S control BMPs, NPDES permit requirements, site-specific ESPC plans, and pre- and post-construction BMPs will reduce the potential adverse impacts to surface waters. All plans shall be developed in association with the Installation's resident soils expert and stormwater specialist, who collectively provide technical expertise during the preparation of all ESPC plans for projects conducted on Installation lands. During this process, ESPC plans will be reviewed for compliance with both the CWA and Georgia Erosion Sedimentation Control Act. These experts will also inspect and monitor the construction project to ensure compliance and that all agreed-upon BMPs in the ESPC Plan are being implemented and maintained.

Construction shall adhere to an ESPC plan that will require an undisturbed 25 ft vegetative buffer around all surface waters. Periodic inspections will include verification of compliance through turbidity sampling, E&S BMP checks, and maintaining required buffer areas of Federal and State waters. The Installation will mandate that violations be corrected by the contractor.

Impacts to water sources as a result of operations and maintenance will be negligible, as new facilities will be required to implement an Integrated Pest Management approach (e.g., mowing) with limited use of pesticides, in accordance with Department of Defense Instruction 4150.07, *Pest Managemen*t. The facilities' manager must coordinate with the Installation Pest Management Coordinator for all necessary requirements prior to any chemical application, and pesticide usage must be compliant with all applicable laws and regulations. Surface water impacts during operation and maintenance will therefore be negligible

Proposed Action A. There are no streams, wetlands, or floodplains within the Proposed Action A Locations, and all adjacent wetland system will be avoided during the construction process at these sites. Therefore, there are no impacts to Water Quality and Resources.

Proposed Action B. Although there are streams and wetlands running through TA A-18, impacts to wetlands will be avoided to the extent possible during construction of the PV System, utility corridor, and secondary substation. Prior to any site disturbance, on-site boundaries of all wetlands and 25-foot stream

buffers shall be marked. Periodic inspections shall be conducted during site disturbance to ensure no work occurs beyond the permitted area.

Selective tree removal within wetlands may be required at some locations, to prevent shading of solar panels; however, no fill of wetlands is anticipated. Should tree clearing in wetland areas become necessary, only hand-clearing of vegetation (without grubbing) is permitted. If grubbing cannot be avoided, additional coordination with the Installation's Environmental Office is required and may include obtaining a CWA Section 404 permit from the U.S. Army Corps of Engineers for impacts to jurisdictional wetlands that cannot be avoided during the design process, of which documentation of avoidance, minimization, and mitigation measures is included, as well as acceptable compensatory wetland mitigation.

3.2.3 CUMULATIVE IMPACTS

Alternative I: No Action/Status Quo.

No cumulative impacts to Water Quality and Resources are anticipated as a result of implementation of this alternative, as no direct or indirect impacts are expected.

Alternative II: Proposed Action.

Although no cumulative impacts to Water Quality and Resources are anticipated as a result of implementation of actions in the Proposed Action A locations, impacts to contiguous wetland systems are unavoidable in the Proposed Action B location, as indicated on Figure 10, and minor adverse cumulative impacts may occur. Areas of WAAF have undergone tree removal in wetland areas as well as permitted (in accordance with Section 404 of the CWA) filling in portions of contiguous wetland areas that connect within TA A-18. Efforts to reduce such impacts to contiguous wetland systems include allowing only the use of hand-held mechanical equipment to remove trees blocking sunlight to the PV Systems, while not removing the root systems within the wetland and not allowing the introduction of fill material into any wetland system (contiguous or isolated). All wetland impacts would be subject to prior approval by the U.S. Army Corps of Engineers and involve a permitting process proving avoidance and minimization measures were taken to the extent practicable with acceptable compensatory mitigation by the Army.

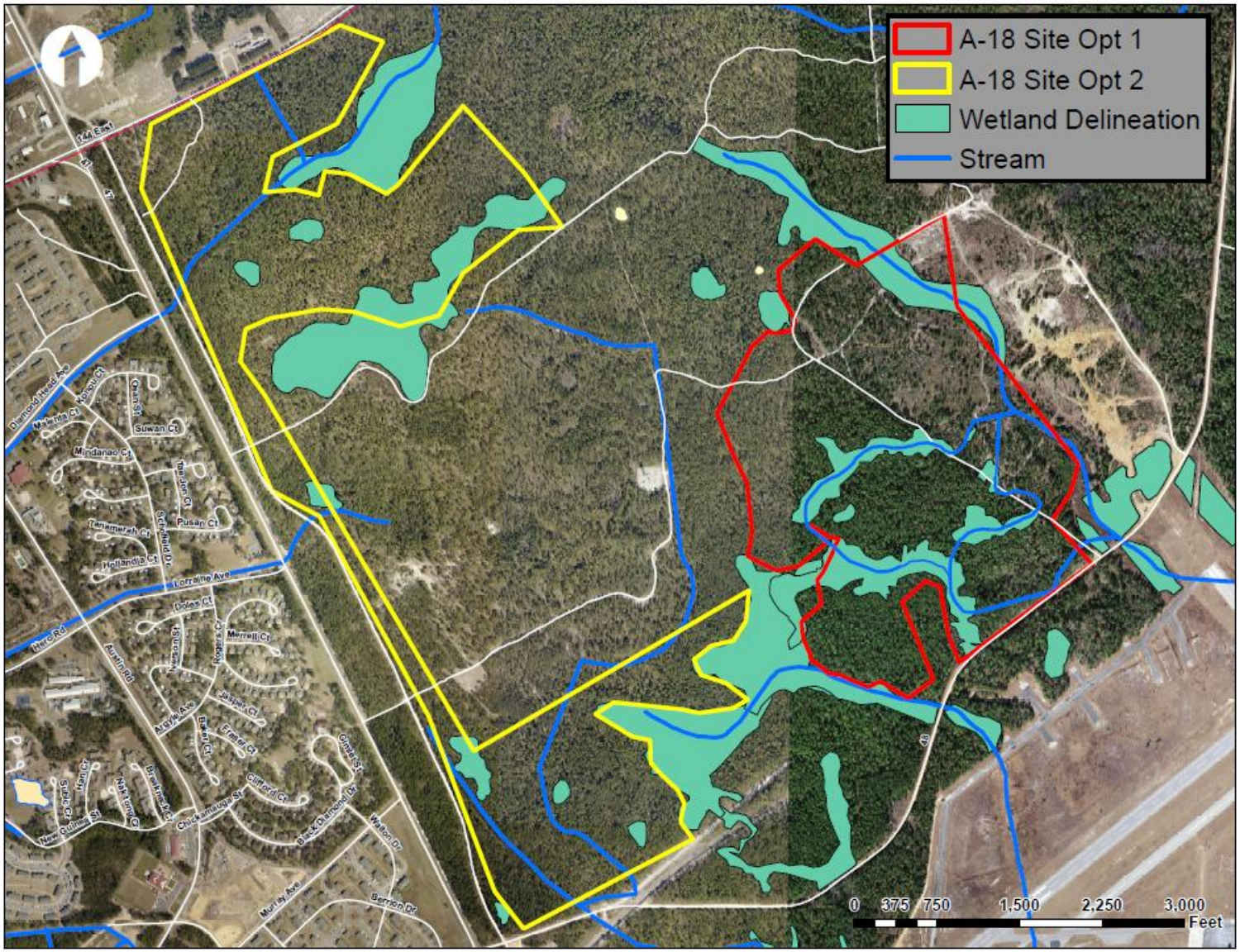

Figure 10: Contiguous Wetland Systems at Proposed Action B Site.

3.3 BIOLOGICAL RESOURCES

3.3.1 AFFECTED ENVIRONMENT

Biological resources include native and naturalized plants, animals, and habitants in which they occur. Habitat is defined as the area of environment where the resources and conditions are present that cause or allow a plant or animal to live there. Biological resources addressed in this EA include plants, animals, and wildlife habitat.

Common wildlife on Fort Stewart includes white-tailed deer (*Odocoileus virginianus*), wild boar (*Sus scrofa*), fox (*Vulpes* and *Urocyon* spp.), bobcat (*Lynx rufus*), rabbit (*Sylvilagus* spp.), squirrel (*Sciurus* spp.), and other small mammals. In addition to a diverse assemblage of forest songbirds, game birds such as eastern wild turkey (*Meleagris gallopavo silvestris*) and northern bobwhite quail (*Colinus virginianus*) occur on the Installation (FSGA, 2005).

Approximately 170 species of birds protected under the Migratory Bird Treaty Act (MBTA) occur on Fort Stewart, either seasonally or year-round, and many of these species can be expected to occur in the areas affected by the action alternatives. Fort Stewart complies with the MBTA by implementing Army Policy Guidance (17 August 2001) and EO 13186, *Responsibilities of Federal Agencies to Migratory Bird Treaty Act*. Wildlife and Migratory Birds are not further discussed in this section, as impacts will be temporary, with the species flushing from the area during construction, and returning to the area once its ceases.

There are seven Federally-listed species known to occur on Fort Stewart; red-cockaded woodpecker (RCW) (*Picoides borealis*), shortnose sturgeon (*Acipenser brevirostrum*), Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), wood stork (*Mycteria americana*), Eastern indigo snake (*Drymarchon couperi*), frosted flatwoods salamander (*Ambystoma cingulatum*), and smooth coneflower (*Echinacea laevigata*).

The RCW is listed by the United States Fish and Wildlife Service (USFWS) and state of Georgia as endangered. The quality of RCW foraging habitat varies depending upon vegetation in the understory, weather, soils, season, and fire frequency and intensity. The highest populations of RCWs occur on areas with active prescribed burning programs that control hardwoods (frequency of every 2-3 years). Fort Stewart reached its RCW recovery goal of 350 potential breeding groups during the breeding season of 2012 and has enough suitable or potentially suitable HMU to support 657 RCW clusters.

The frosted flatwoods salamander (FFS) is listed by the USFWS and the state of Georgia list as threatened. Terrestrial adult FFS inhabit low areas in pine flatwoods, where they live in underground burrows that they excavate or in crayfish tunnels. The FFS have been found more than one mile from their breeding ponds. A protective buffer of 492 yards from a wetland's edge is a recommended by USFWS and used by Fort Stewart. Isolated pools have been ranked according to their suitability as FFS breeding sites, and protective buffers have been assigned to minimize impacts to the potential breeding sites. The Installation's conservation goal is to maintain five existing populations of FFS; currently, 25 breeding sites are known to exist on Fort Stewart.

Two of the three sites analyzed in Proposed Action A are located within the cantonment area (WWTP and Southwest Quadrant) and therefore not managed for plants, animals, and wildlife habitat. The SAIA site is located north-northeast of the cantonment area and contains RCW and FFS habitat management units (HMU) and this one site is managed for biological resources. The entire A-18 area associated with Proposed Action B is forested, contains RCW and FFS HMU, and is managed for biological resources.

3.3.2 ENVIRONMENTAL CONSEQUENCES

3.3.2.1 Alternative I: No Action/Status Quo.

Under this alternative, there will be no impacts to biological resources. Installation lands will continue to be managed in accordance with existing Installation management plans, such as the INRMP, and in accordance with existing reasonable and prudent measures identified in BOs issued by the USFWS for recently completed EAs.

3.3.2.2 Alternative II: Proposed Action.

Under this alternative, Proposed Actions A and B will be implemented and will result in overall minor adverse impacts to biological resources.

Proposed Action A. The Installation prepared a Biological Assessment (BA) and conducted informal consultation with the USFWS to address potential impacts at the SAIA site (Appendix D), at which RCW and FFS habitat was identified. The USFWS issued their concurrence with the Installation's findings on February 25, 2014 (Appendix D). Surveys conducted by Fort Stewart in support of the BA's preparation did not identify any RCWs on site, but did contain one RCW cavity tree; however, a records search determined that this RCW cavity tree had been inactive since at least 1994.

Development of the PV System at the SAIA site will result in the loss of approximately 85 acres of RCW foraging habitat (Figure 11; *Note: site indicated as Solar Photovoltaic Array, or SPVA, on Figure*); however, all affected clusters will maintain adequate foraging resources post-project and will continue to meet the Managed Stability Standard (MSS) for RCWs. Based on the abundance of habitat and cavity trees and the fact that the RCW population reached its recovery goal of 350 potential breeding groups, impacts to the RCW associated with the clearing of habitat and the loss of one inactive cavity tree are expected to be minor. No impacts to this species are anticipated associated with operations and maintenance of the PV System, once constructed.

HMU for the FFS was also identified at the SAIA site, including a highly likely breeding site and a potential breeding site (Figure 12). These adjoin the project area, but these wetland ponds will be delineated, excluded from project construction, and a 25 foot vegetative buffer will be left in place to further protect these ponds. The proposed project impacts 28.7 acres of primary buffer and 43.2 acres of secondary buffer for potential FFS breeding ponds. Records indicate 1 historical (1970's) road-crossing sighting within the project area and one historical (1970's) sighting within a confirmed breeding pond located 0.5 miles north-northeast of the project area. To ensure protection of on-site FFS ponds and their primary and secondary buffers, the site-specific design for the SAIA Site will incorporate protection measures as required by the CWA, the GA ESCA, and the ESA. Due to the historic nature of the FFS sighting within the SAIA Site, the distance of the project area from any confirmed breeding pond, and the

implementation of erosion and sedimentation control measures, construction and operations at this site should have a negligible impact on the FFS.

The WWTP Site does not contain special species habitat, as it is located within the cantonment area, within the community land use category portion. It is, however, designated as green space, consisting of portions of developed land (such as the adjacent WWTP) and portions of an undisturbed natural forest characterized by a closed-canopy of loblolly pine (*Pinus taeda*), with an understory of sand laurel oak (*Quercus hemispharrica*), water oak (*Q. nigra*), sweet-gum (*Liquidambar styraciflua*), southern magnolia (*Magnolia grandiflora*), blueberries (*Vaccinium* spp.), and brachen fern (*Pteridium aquilinum*). Wildlife will be temporarily impacted by the removal of vegetation, and will likely disperse to vegetated areas nearby, returning once timber harvest and construction activities cease. As such, negligible impacts to biological resources are expected at this location.

The Southwest Quadrant Site does not contain special species or wildlife habitat, and has vegetation associated with landscaped areas only. It is within the cantonment area is in an already disturbed area that is developed and contains temporary barracks. No impacts to biological resources will occur at this site as a result of site preparation, construction, operations, or maintenance activities.

Proposed Action B. The Installation prepared a BA and submitted it to the USFWS to address potential impacts to the RCW and FFS at this location; the USFWS issued their concurrence with the Installation's findings on June 5, 2014 (Appendix D). The analysis in the BA analysis is broken down into Site A and Site B, which correspond to Option 1 and Option 2, respectively, as shown on Figure 8 and as discussed in Chapter 2. The PV System may be constructed on Option 1, Option 2, or a parcel consisting of land from both options. Additional coordination will be required to accommodate changes due to final siting and design, to include the utility corridor and ROW.

Surveys conducted by the Installation in support of the BA's preparation identified no RCW cavity trees on either site. Development on Site A will result in the loss of approximately 164 acres of existing RCW HMU and will impact the foraging partitions of four RCW Clusters (Figure 11). Development on Site B will result in the loss of approximately 194 acres of existing RCW HMU, but will not impact any RCW foraging partitions (Figure 13). Development within a parcel consisting of parts of Sites A and B will likely result in the loss of HMU in amounts somewhere between the two options (164-194 acres), although no exact acreage can be determined until a design/project footprint is provided. The Installation will notify the USFWS of the final amount of HMU removed under any decision that is implemented. Analysis indicates that all potentially affected clusters in TA A-18 will maintain adequate foraging resources post-project, will continue to meet the MSS for RCWs, and potential impacts are expected to be minor. No impacts are anticipated due to operations and maintenance of the PV System, once constructed. Prescribed burns in the vicinity are not anticipated to increase, due to the potential for the resulting smoke from these fires to impact the amount of sunlight received by the PV Systems, once established.

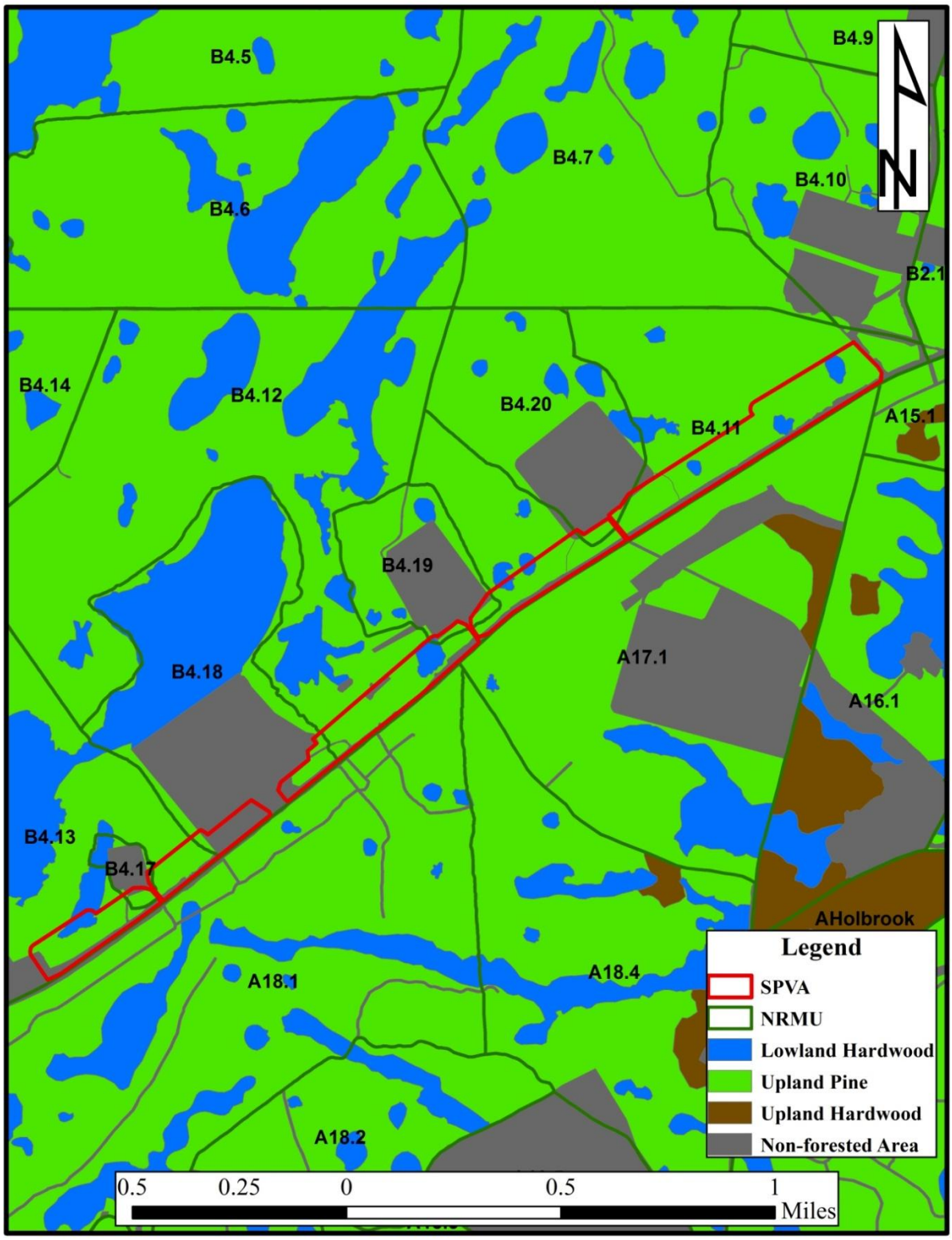

Figure 11: RCW HMU at Proposed Action A SAIA Site (Fort Stewart, 2013).

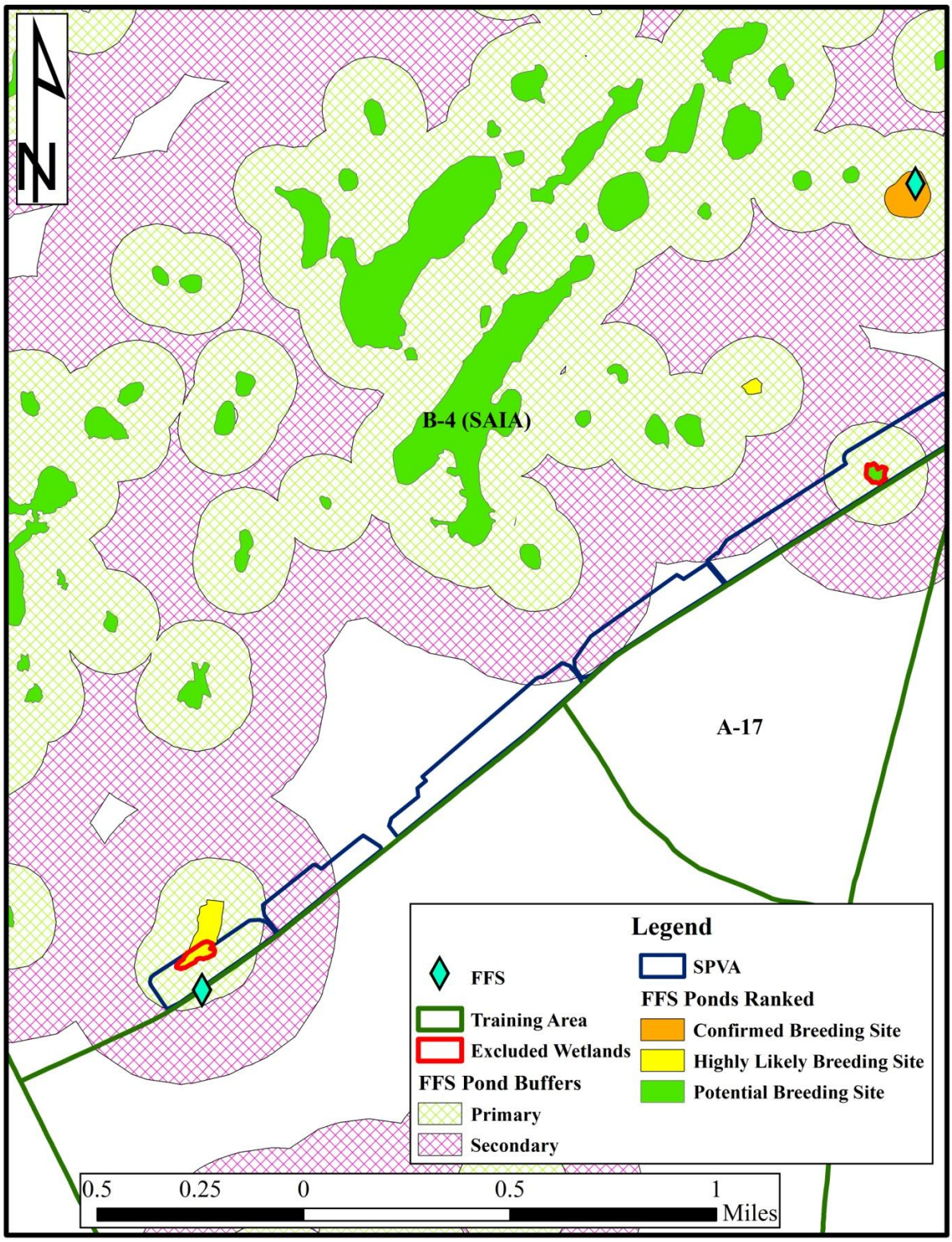

Figure 12: FFS HMU at Proposed Action A SAIA Site (Fort Stewart, 2013).

Development of Site A may impact the buffers of three potential dry FFS breeding ponds, Development on Site B may impact the buffer of one highly likely FFS breeding pond and the buffers of five 5 potential dry FFS breeding ponds. If Site B is selected, development may also require the possible clear-cut of 14.3% of the secondary buffer for the highly likely FFS breeding pond (Figure 14). These impacts may be minimized if a combination of the two sites is selected, which would allow for further avoidance of these buffer areas. In addition, a ground survey of the potential breeding ponds and their surrounding buffers conducted by the Installation determined it unlikely that any FFS are actually associated with these ponds. Historic records also indicate only one (1970's) road-crossing sighting of a FFS near the project area (in TA B-4, across Georgia Highway 144). The project design will incorporate delineation of wetland areas, maintenance of a 25 foot vegetative buffer around all wetlands, and implementation of protection measures as required by the CWA and GA ESCA, to ensure appropriate wetland protection and minimize potential impacts to FFS and their habitat. For these reasons, only minor adverse impacts to the FFS are anticipated and it is not expected to impact the Installation's ability to support FFS. Subsequent operations and maintenance of the PV System will not impact the FFS.

Impacts to wildlife in the area of the project footprint are expected to be negligible, as they typically flush from the area, then return once activities cease. Wooded areas to the south of Proposed Action B are not actively prescribed-burned due to smoke concerns around the airfield that could increase aircraft safety risks. There would be similar concerns for the wooded areas surrounding the solar arrays and will be addressed as part of their operations plan, once constructed.

3.3.3 CUMULATIVE IMPACTS

Alternative I: No Action/Status Quo.

No cumulative impacts to biological resources are anticipated as a result of implementation of this alternative, as no direct or indirect impacts are expected.

Alternative II: Proposed Action.

There are no known reasonably foreseeable future actions occurring in the Proposed Action A ROI that will result in the substantial removal of vegetation and/or adverse impacts to protected species or their habitat. However, actions are occurring within the Proposed Action B ROI with the potential to result in cumulative impacts, to include the ongoing and future construction of the Gray Eagle UAV facilities, Ground Based Sense and Avoid Radar, and Runway Extension, all at nearby WAAF. These projects will remove additional acreage from protected species HMU, although none are anticipated to permanently impact any RCW foraging partitions or cavity trees, or to infringe upon any FFS breeding/potential breeding ponds. Therefore, overall, cumulative minor adverse impacts to Biological Resources are anticipated as a result of this alternative.

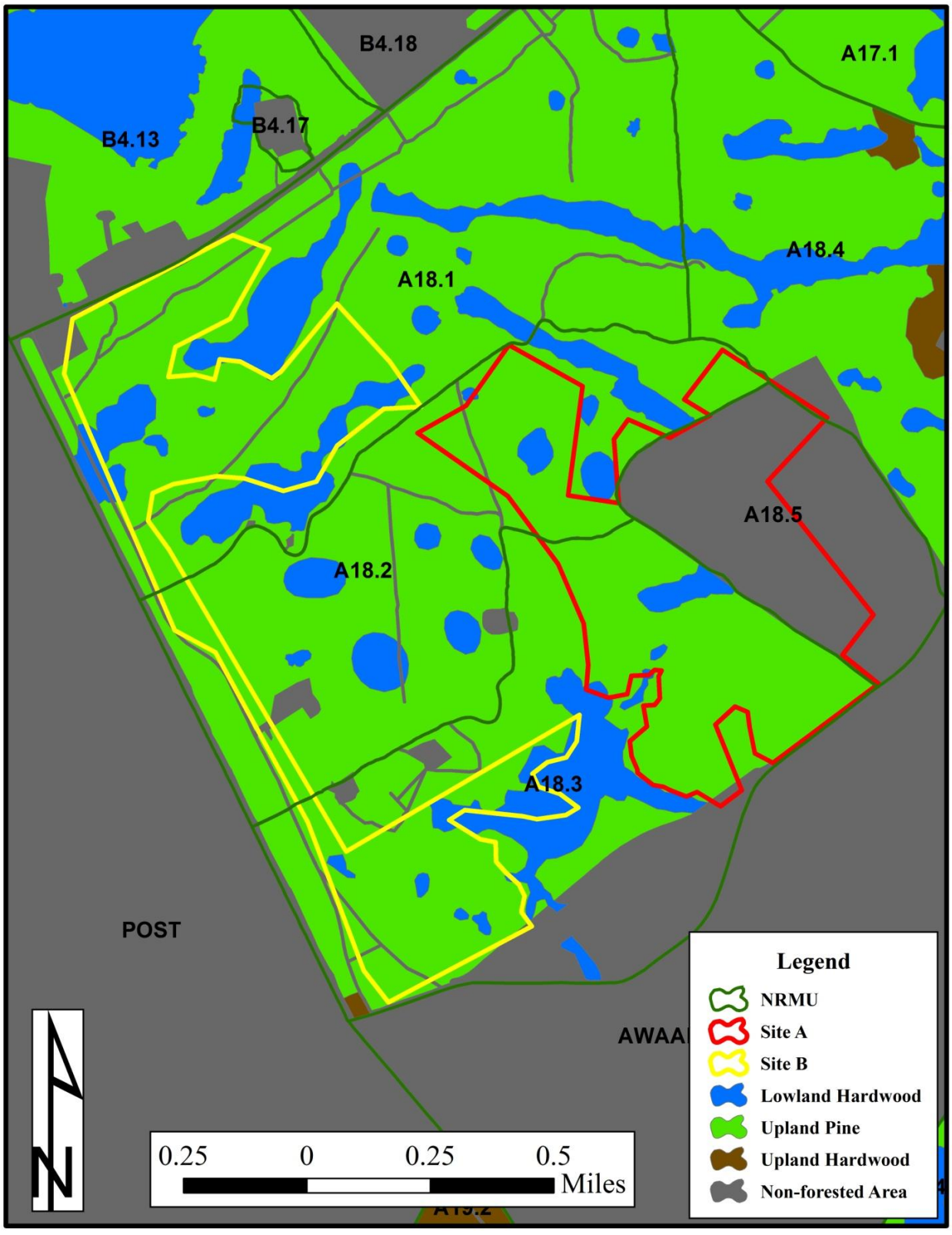

Figure 13: RCW HMU at Proposed Action B Site (Fort Stewart, 2014a).

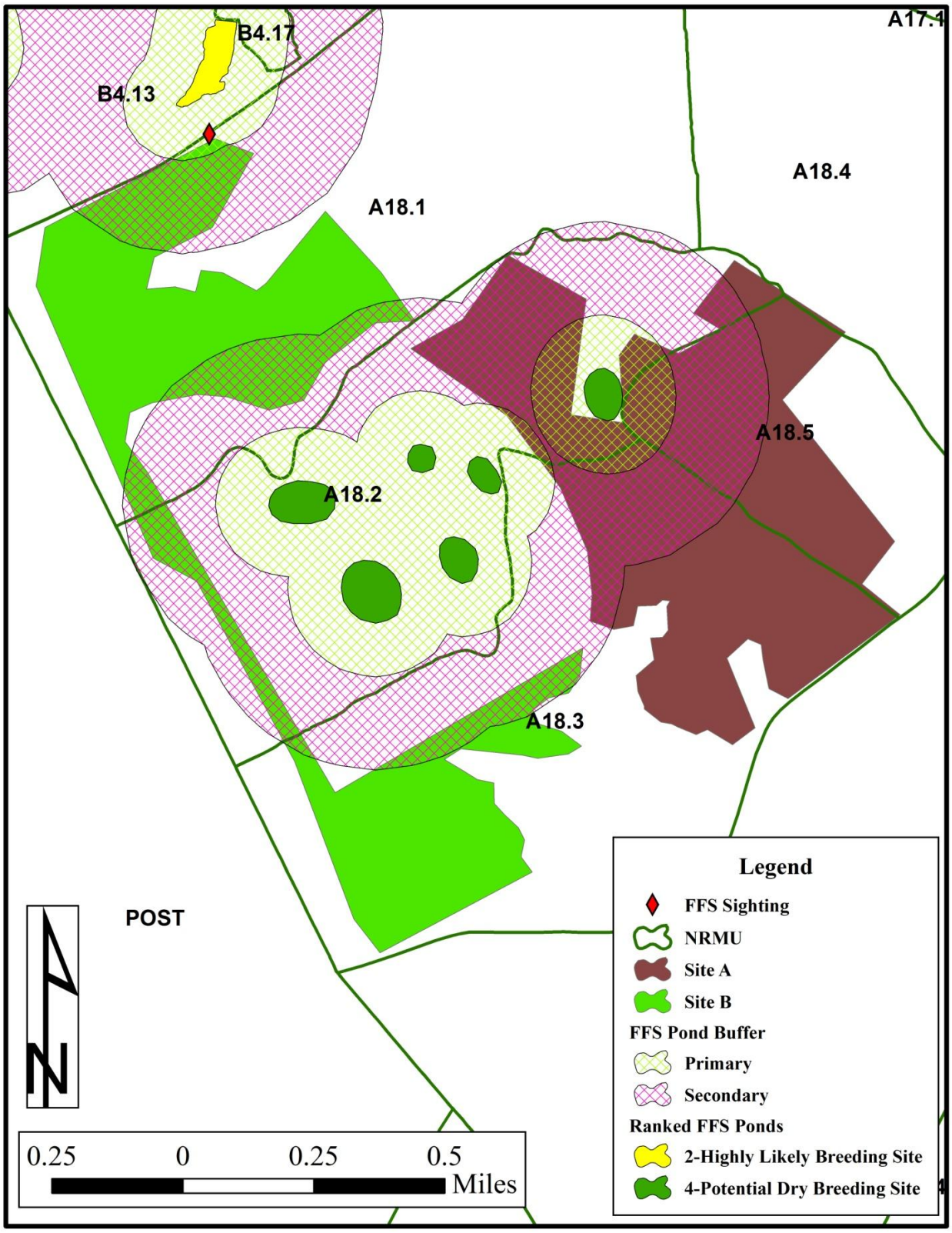

Figure 14: FFS HMU at Proposed Action B Site (Fort Stewart, 2014a).

3.4 CULTURAL RESOURCES

3.4.1 AFFECTED ENVIRONMENT

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. The Installation's Integrated Cultural Resources Management Plan (ICRMP) incorporates cultural resource laws and regulations into an internal document outlining how Fort Stewart manages its cultural resources. The Installation and the Georgia State Historic Preservation Office (SHPO) developed a Programmatic Agreement (PA) to provide the Installation with a flexible tool to manage its cultural resources, meeting the requirements of cultural resource review of undertakings with no effect or no adverse effect without waiting for the 30-day response from the SHPO. In short, the PA is the cultural resource program's regulatory backbone, guiding and streamlining the program's compliance with Federal laws and regulations while providing a timely, effective method of managing Fort Stewart's cultural resources.

***Archaeological Resources*.** The affected environment for archaeological resources includes any cultural resources eligible or potentially eligible for inclusion in the National Register of Historic Places (NRHP) identified within the ROI of Proposed Action A and B.

Architectural Resources. The affected environment for architectural resources includes any facilities within the ROI of Proposed Action A and B, all of which have been part of a building inventory since 2002.

Tribal Resources. Specific American Indian Tribal resources or sacred sites or areas on Fort Stewart where such sites may be situated have not all been identified to date. Fort Stewart consults with American Indian Tribes having an ancestral affiliation with the Fort Stewart area on a case-by-case basis, specifically when projects arise with the potential to affect Tribal resources.

3.4.2 ENVIRONMENTAL CONSEQUENCES

3.4.2.1 Alternative I: No Action/Status Quo.

Under this alternative, there will be no adverse impacts to cultural resources, as there will be no new construction and operation of a PV System and accordingly no associated physical intrusion into any archaeological, architectural, or tribal resources.

3.4.2.2 Alternative II: Proposed Action.

Under this alternative, no adverse impacts to cultural resources are anticipated, as no NRHP-eligible archaeological/cultural resources, architectural resources, and/or tribal resources have been identified within the ROI of Proposed Action A or B (see CRM Memorandum for the Record, Appendix E).

Proposed Action A. Timber harvest will be required to establish the PV Systems within the SAIA Site, will be minimal within the WWTP Site, and will not be required for construction within the Southwest Quadrant Site. Surveys for cultural resources are complete at these locations, with no sites eligible for the NRHP identified. Operations and maintenance of the PV Systems at these locations, once initiated, are not anticipated to result in impacts to cultural resources. Therefore, Proposed Action A will not require cultural resource mitigation prior to or during implementation. In the unlikely event of inadvertent

discovery of any historical, archaeological, architectural, or other cultural artifacts, relics, remains, or objects of antiquity that have not been previously identified, the contractor is required to immediately notify the Installation's Environmental Office and protect the site and the material from further disturbance in accordance with the ICRMP's Standard Operating Procedure #3 (Accidental Discovery of Archaeological Deposits, Paleontological Deposits, and Human Remains), found in Appendix E.

Proposed Action B. Surveys for cultural resources within the potentially impacted portions of TA A-18 are either complete, with no sites eligible for the NRHP identified, or are excluded from survey requirements (in accordance with the PA) due to their location within a "Special Use Facility." This includes areas lying within the Approach Area associated with the adjacent WAAF/MRAC and/or areas associated with the SAIA and the former Rifle-Grenade Range to the west of WAAF/MRAC, in which there is an elevated risk of finding UXO.

Although 1941 Government Acquisition maps indicate an unmarked cemetery (J. O. Rahn Cemetery) may be located adjacent to the north-northwest boundary of WAAF/MRAC, prior surface and subsurface investigations at this location failed to find evidence of the cemetery, which, according to archival records, was not managed in accordance with standard fencing and signage. It is unknown if the cemetery was moved during the 1941 government acquisition or if the markers have deteriorated. As an extra measure of protection, however, ground disturbing activities located near the site of the potential cemetery location shall be monitored by Installation CRM personnel. As with Proposed Action A, should evidence of the cemetery or any other cultural resource be encountered, work must cease immediately and the Installation's Environmental Office must be contacted. Overall, utilizing these precautions, there will be no adverse impacts to cultural resources.

3.4.3 CUMULATIVE IMPACTS

Alternative I: No Action/Status Quo.

No cumulative impacts to cultural resources are anticipated as a result of implementation of this alternative, as no direct or indirect impacts will occur.

Alternative II: Proposed Action Site.

No cumulative impacts to cultural resources are anticipated as a result of implementation of this alternative, as no direct or indirect impacts are expected.

3.5 HEALTH AND SAFETY

3.5.1 AFFECTED ENVIRONMENT

Health and Safety includes the evaluation of fire and police protection, healthcare services availability, traffic hazards, and safety danger zones (SDZ) associated with on-Post training ranges and airfields, as well as worker safety issues during construction, operations, and repairs/maintenance on Installation job sites and facilities. Occupational health and safety applies to on-the-job safety and implements the requirements of 29 CFR 1926 *et seq*, the Occupational Safety and Health Act (OSHA). All construction

and demolition on Post is performed in accordance with applicable OSHA regulations to protect human health and minimize safety risks.

The "Army Safety Program," implemented under Army Regulation (AR) 385-10, governs Army policies, responsibilities, and procedures to protect and preserve Army personnel and property against accident loss. This provides for operational safety and mandates compliance with applicable safety laws and regulations. Related key impacts include aviation safety (meeting Federal Aviation Administration and United Facilities Criteria requirements) and construction safety. To ensure worker health, compliance with OSHA standards and the Army Safety Program is required and only authorized personnel will be allowed within the footprint for construction; in addition, all workers must adhere to safety standards established by OSHA. Due to the nature of Proposed Action A and B, no impacts are anticipated to fire and police protection, healthcare services availability, and aviation; therefore, they are not discussed in the remainder of this section.

The Army prepared an environmental condition of property (ECP) report to document the current and physical environmental conditions at the SAIA and WWTP sites, as required by Department of Defense (DoD) policy before the sale, lease, transfer or acquisition of any Army-owned real property, to assist the Army in meeting its obligations under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 120(h), as amended by the Community Environmental Response Facilitation Act (CERFA; Public Law 102-426). Unless otherwise cited, the information in Section 3.5.2 pertaining to the SAIA and WWTP is from this ECP Report (Fort Stewart, 2014). An ECP Report will also be prepared for the Proposed Action B Site, once limits of construction are identified, to document its current and physical environmental conditions. Without benefit of this report, the information presented in this section is gathered from Installation subject matter experts and pertinent databases.

3.5.2 ENVIRONMENTAL CONSEQUENCES

3.5.2.1 Alternative I: No Action/Status Quo.

Under this alternative, there will be no adverse impacts to Health and Safety on Post as no new construction will occur. Compliance with existing health and safety requirements on present and ongoing actions, to include OSHA and AR 385-10, will continue.

3.5.2.2 Alternative II: Proposed Action.

Under this alternative, there will be minor adverse impacts to Health and Safety.

Proposed Action Overall. Implementation of the Proposed Action will result in a negligible increase in traffic hazards, as a result of logging operations and construction at the four work sites (SAIA, WWTP, Southwest Quadrant, and WAAF/MCRA) and the associated utility corridor and ROW.

Traffic hazards will likely be more prevalent along Highway 144 and at/around WAAF/MCRA, where the majority of the timber harvest will occur and, accordingly, where the logging trucks will be entering/exiting the traffic network, causing potential traffic delays and hazards. Negligible traffic increases associated with construction personnel will follow, but will be more equally scattered amongst the four work sites and during utility corridor/ROW work, and will consist of both smaller personally-owned vehicles (POV)/Civilian/Military vehicles, as well as construction-related larger vehicles. In

addition, these larger vehicles are only allowed entry at certain Access Control Point, which will assist in maintaining a more even traffic flow and not interfering with the POV/other traffic flow. These impacts will cease once the PV Systems become operational and traffic to the four sites is reduced to routine maintenance/repair.

To minimize impacts to worker safety, in the event a worker should encounter or suspect they have encountered military explosives constituents on the project, they shall not attempt to disturb, remove or destroy it, but shall cease any intrusive or ground disturbing activities being conducted at the project and immediately notify the local Range Control Office. The Army will dispose of the MEC at no expense to the contractor. Before commencing, all activity must be coordinated between the site contractor and the Installation Safety Office. The contractor must have a Health and Safety plan that is approved by the Installation Safety Office prior to land disturbance. The plan must sufficiently address potential safety risks and response actions, including the discovery of potential MEC. It is recommended that all personnel working on site attend MEC awareness training / safety briefings.

Proposed Action A.

- The SAIA site is within the footprint of a former 90-mm Anti-aircraft Range (1943-1960), which was one of the earliest ranges to be constructed on Fort Stewart. This range was used for training antiaircraft artillery units. Research also identified two additional former ranges within or near this site. Range F was used as an antitank course for overhead artillery (50 caliber Machine Gun, 105-mm Squad Defense-Night, 1952-54), had firing points on both the south and north sides of Highway 144, which parallels the SAIA to its southern border, and was used as an antitank course for overhead artillery. Munitions used on the range included .50 caliber machine gun ammunition and 105-mm artillery ammunition. A former Target Detection Range (1960-1975) consisted of four separate firing lines and was used as a rifle marksmanship course and train-fire range. Small arms ammunition was used on this range. All Range Fans are shown at Figure 15.
- The SAIA site was also used as an impact/range area in the past, and is considered an operational range area. Accordingly, the site must undergo a change in its Land Use Category from Operational to Non-Operational prior to any land disturbing activities on this site, in accordance with AR 350-19, *The Army Sustainable Range Program* (see additional information in Appendix F). Although there are no known incidents of finding ammunition, explosives, or chemical weapons on this property itself, unexploded ordnance (UXO) was discovered on adjacent properties to the west; specifically during construction of the 4th Infantry Brigade Combat Team Complex and the 10th Engineering Battalion Complex. The Huntsville District Army Corps of Engineers conducted a UXO survey on November 25 and 26, 2013, and determined the site to be a" low risk" area (USAIC, 2013; Appendix F); however, UXO awareness training is recommended for all workers at this site.
- The WWTP Site is located adjacent to a Military Munitions Response Program Site (MMRP), known as the Hero Road Trench Area, adjacent to the WWTP site (Figure 16). This MRS was identified in January 2003 when a retired employee reported to the Installation's Environmental Office that materials (i.e., mustard gas) had been buried in a maintenance parking lot located on Hero Road. Initially, the MRS was identified to be a 10-acre parcel. A confirmatory sampling report increased the MRS from 10 to 34.5 acres. There is anecdotal evidence that dilute agent Chemical Agent Identification Sets (CAIS) kits, considered a hazardous waste, may have been

disposed of in burial trenches within this MRS. Specific potential constituents associated with the dilute agent CAIS kits include mustard agent (5% solution), lewisite (5% solution), chloropicrin (50% solution), and pure phosgene agent. As this is an adjacent property, it can be avoided during the siting and design phase of the proposed action, minimizing potential impacts to workers associated with timber harvest, construction, operations, and maintenance.

- Located in-between the two sites of Parcel 2 is a former Solid Waste Management Unit (SWMU) 19 (SWMU 19) (Figure 16), which developed as a result of the deposition of non-hazardous sludge from dewatering operations at the WWTP from the 1960s to 1985. The drying beds were reportedly constructed of concrete and were approximately four to six feet deep, and were taken out of commission in 1989 prior to the existing requirements for closing a potentially contaminated site. Fort Stewart completed investigation of this SWMU, reported its finding in a Phase II RCRA Facility Investigation Report in April 2000, and was granted a No Further Action required status on the SWMU from the Georgia Environmental Protection Division in July 2004. No additional remedial actions required at this location, and no potential adverse impacts associated with the construction of the PV System at this location.
- There is no known history of the WWTP site's use as a former range area and it is not within the footprint of or adjacent to any former range fans (Figure 15). However, there is always the possibility that UXO, discarded ammunition, or other training devices may be encountered during site disturbing activities. As such, a Health and Safety plan will also be required of the contractor for this location.
- The SW Quadrant Site is located within the Installation cantonment area. There are no known former ranges or industrial uses at this location and it does not lie within any former range fans.

Proposed Action B.

- This site is adjacent to, but not within, the footprint of three former Skeet Ranges and former Rifle Grenade and Rocket Launcher Range "D," all of which present MEC and lead contamination in the soil (Figure 15). Accordingly, although there are no known incidents of finding ammunition, explosives, or chemical weapons on the site of Proposed Action B, it is possible for UXO to be present on site. As stated previously, adherence to the site-specific safety plan is required and all on-site workers must receive and adhere to UXO awareness training. Therefore, although minor impacts to Health and Safety are anticipated, these may be minimized via adherence to a Health and Safety plan approved by the Installation Safety Office.
- There are no other known Health and Safety issues of concern at this site, to include SWMUs.
- There is no known history of this site's use as an impact or range firing area, although it's Land Use Category is Operational and a category change is required. This will be confirmed by the Installation Real Property Office prior to any land disturbing activities on this site, in accordance with AR 350-19.

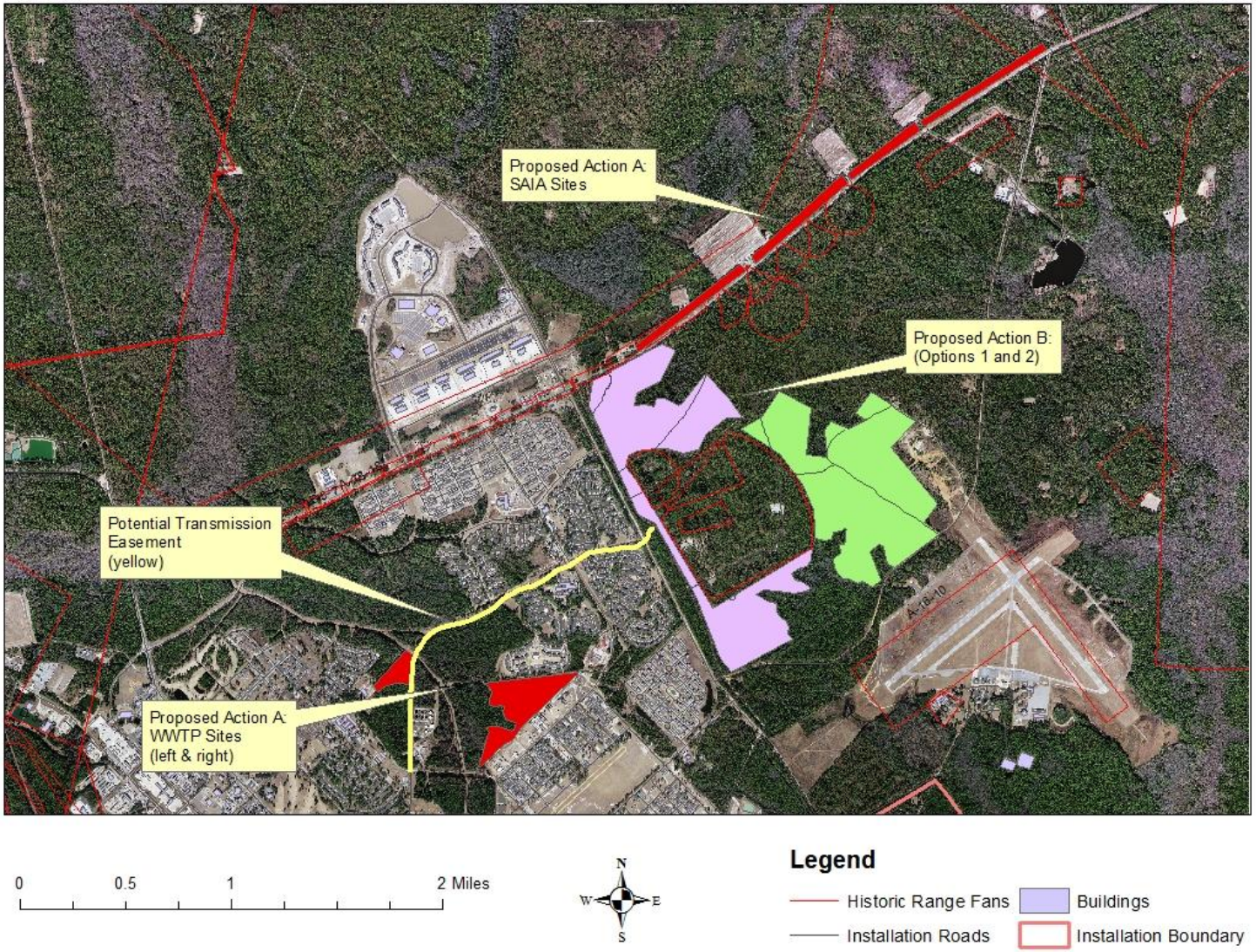

Figure 15: Range Fans Associated With Proposed Action A and B Sites.

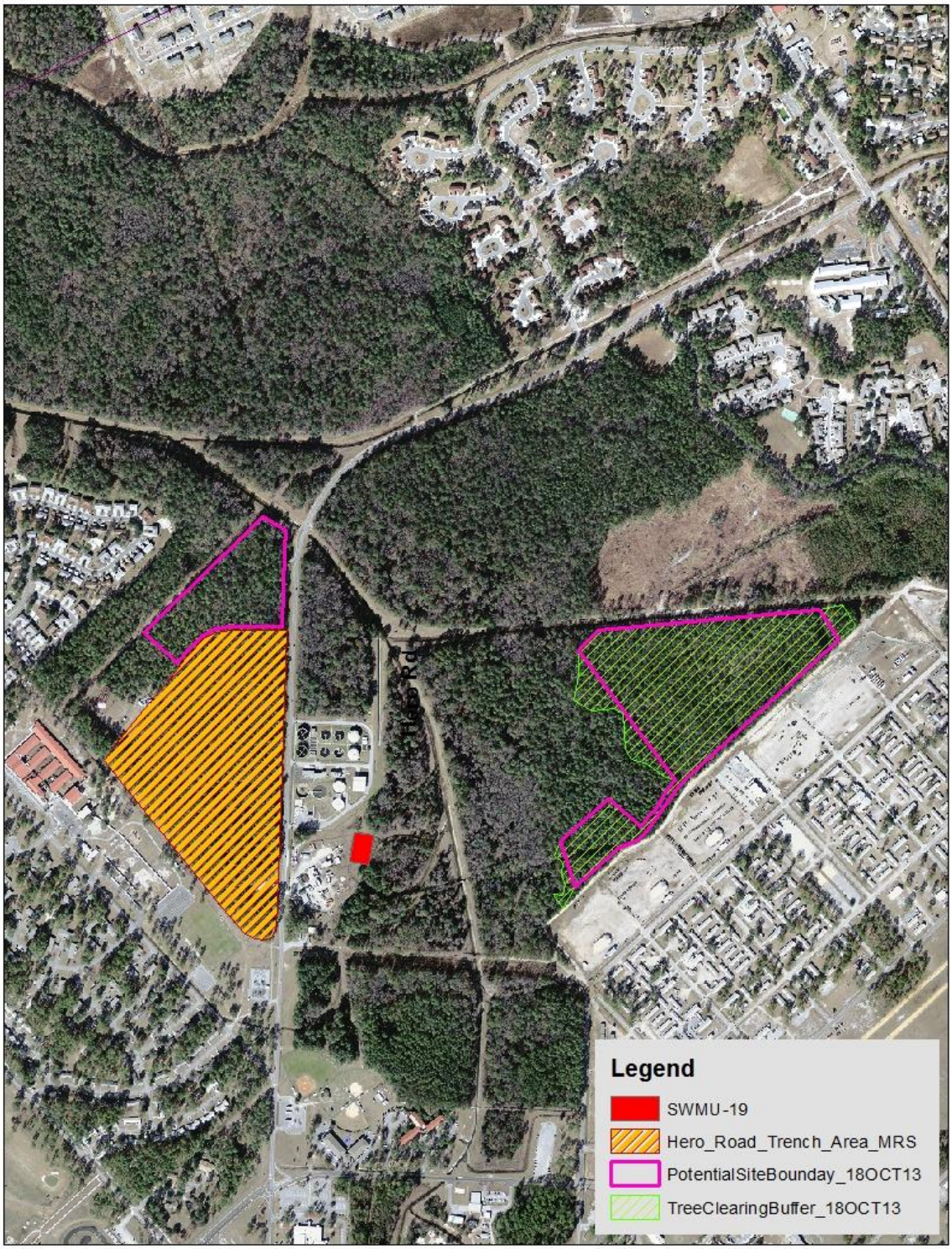

Figure 16: MMRP Site and SWMU Adjacent to Proposed Action A WWTP Site.

3.5.3 CUMULATIVE IMPACTS

Alternative I: No Action/Status Quo.

No cumulative impacts to safety are anticipated as a result of implementation of this alternative, as no direct or indirect impacts are expected.

Alternative II: Proposed Action.

Negligible adverse cumulative impacts to Health and Safety are anticipated as a result of implementation of this alternative. Although some hazards exist, the contractor will be required to receive prior approval of their Health and Safety plan from the Installation's Safety Office prior to implementation of the action, which minimizes potential impacts. Contractors working on site will also be required to adhere to Health and Safety plan.

3.6 UTILITIES

3.6.1 AFFECTED ENVIRONMENT

Utility services provided on Fort Stewart include water (potable), wastewater, and electrical. Fort Stewart operates two sanitary and one industrial WWTP in accordance with the NPDES Permit Number GA0004308 (issued by GA EPD) and four land application systems (LAS). Additionally, Fort Stewart's Garrison area is tied into and uses the Hinesville WWTP. By agreement, Fort Stewart can generate a maximum of 3.79 mgd of wastewater. Current use at the Fort Stewart is 2.44 mgd and will not increase or in any other way be impacted as a result of the proposed action (FSGA, 2009); therefore, this resource is not discussed in further detail in this section.

Potable water service to the main Garrison area is provided from eight wells with a combined maximum rated capacity of 7.74 million gallons per day (mgd), and is provided to outlying areas (such as ranges) by an additional 10 wells. Fort Stewart's permitted drinking water capacity is 4.99 mgd and its current use is 1.88 mgd. Although the proposed action will require minor to moderate amounts of water for cleaning PV panels (estimated at approximately 0.007 acre-feet per year per MW [BLM and DOE, 2010]), it will not have an adverse impacts on drinking water and/or result in the Installation exceeding its permitted potable water capacity level; therefore, this resource is not discussed in further detail in this section.

Electrical power for facilities and systems on Fort Stewart is supplied by either Canoochee Electric Membership Corporation (EMC) or Georgia Power. All Garrison areas use electricity as the main power source with diesel or natural gas powered generators for emergencies (FSGA, 2009). Any new systems constructed, tied into, and or upgraded in association with the proposed action will connect to the Georgia Power primary substation located on Hero Road, in the Installation cantonment area.

3.6.2 ENVIRONMENTAL CONSEQUENCES

3.6.2.1 Alternative I: No Action/Status Quo.

Under this alternative, the Army will not construct, operate, and maintain PV Systems on Fort Stewart, resulting in moderate adverse impacts to Utilities. The Installation will not meet the Army and federally

mandated requirements to produce or procure 25% of the energy it consumes, contribute to the Army's goal of generating 1GW of renewable electrical energy on Installation lands by 2025, and/or consume at least 7.5% of its electrical energy from renewals sources.

3.6.2.2 Alternative II: Proposed Action.

Under this alternative, there will be minor beneficial impacts to Utilities. Construction and operation of the PV Systems will enable Fort Stewart to beneficially increase its overall energy independence by reducing its energy demand. A new secondary substation will be constructed at the Proposed Action B location, within TA A-18, and a new utility corridor and ROW will be developed, potentially improving electrical service capabilities in this portion of the cantonment area, as well as servicing the newly constructed PV System. Fort Stewart could also realize a long-term return on investment based on the technology employed. Fort Stewart will reduce its energy demand commensurate with the output levels associated with PV output from each site selected, and will therefore realize long-term cost savings.

3.5.3 CUMULATIVE IMPACTS

Alternative I: No Action/Status Quo.

Minor adverse cumulative impacts to utilities are anticipated as a result of this alternative, as the Installation would not be in compliance with Army and federally mandated requirements for energy consumption and generation.

Alternative II: Proposed Action.

Minor beneficial cumulative impacts to utilities are anticipated as a result of this alternative, as the Installation would be in compliance with Army and federally mandated requirements for energy consumption and generation and in active production of a renewable energy source.

Type of Impact	Alternative I (No Action)	Alternative II (Preferred) Proposed Action
Water Quality and Resources		
Direct / Indirect	No Impact	Minor Adverse
Cumulative	None	Minor
Biological Resources		
Direct / Indirect	No Impact	Minor Adverse
Cumulative	None	Minor Adverse
Cultural Resources		
Direct / Indirect	No Impact	No Impact
Cumulative	None	None
Health and Safety		
Direct/Indirect	No Impact	Minor Adverse
Cumulative	None	Negligible Adverse
Utilities		
Direct / Indirect	Moderate Adverse	Minor Beneficial
Cumulative	Minor Adverse	Minor Beneficial

Table 1: Summary of Environmental Impacts.

4.0 CONCLUSIONS

The *EA for Implementation of Solar Photovoltaic Generating System at Fort Stewart, Georgia*, was prepared to analyze the potential environmental impacts associated with the construction, operation, and maintenance of a PV System on Army lands at Fort Stewart. Following an analysis and comparison of impacts of the No Action and Proposed Action alternatives, it was determined that neither will result in significant impacts, and that the preparation of a FNSI by the Army for the proposed action was appropriate.

5.0 ABBREVIATIONS AND ACRONYMS

AC	alternating current
ac-ft	acre-feet
AOC	area of concern
AR	Army Regulation
BCT	Brigade Combat Team
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFR	Code of Federal Regulations
CGP	construction general permit
CO	carbon monoxide
CWA	Clean Water Act
DA	Department of the Army
DC	direct current
DO	dissolved oxygen
DoD	Department of Defense
DOE	Department of Energy
DRMO	Defense Reutilization and Marketing Office
EA	Environmental Assessment
EIS	Environmental Impact Statement
EISA 2007	Energy Independence and Security Act of 2007
EITF	Energy Initiatives Task Force
EMC	Electric Membership Corporation
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPAct 2005	Energy Policy Act of 2005
ESCA	Erosion and Sediment Control Act
ESPC	erosion and sedimentation pollution control
FFS	frosted flatwoods salamander
FICON	Federal Interagency Committee on Noise
FNSI	Finding of No Significant Impact
FSGA	Fort Stewart, Georgia
FY	fiscal year
GA EPD	Georgia Environmental Protection Division
GPASI	Georgia Power Advanced Solar Initiative
GW	gigawatt
HMU	Habitat Management Unit
ICUZ	Installation Compatible Use Zone
IENMP	Installation Environmental Noise Management Plan
INRMP	Integrated Natural Resources Management Plan
IPM	Integrated Pest Management

kWh	kilowatt hour
LAS	land application system
LID	Low Impact Development
MBTA	Migratory Bird Treaty Act
MEC	Munitions and Explosives of Concern
mgd	million gallons per day
MMRP	Military Munitions Response Program
MS4	Municipal Separate Storm Sewer System
MSS	Managed Stability Standard
MW	megawatt
MWh	megawatt-hour
NAAQS	National Ambient Air Quality Standards
NDAA 2007	National Defense Authorization Act of 2007
NEPA	National Environmental Policy Act
NIOSH	National Institute for Occupational Safety and Health
NO_2	nitrogen dioxide
NOI	Notice of Intent
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
O&M	operation and maintenance
OHV	off highway vehicle
OSHA	Occupational Safety and Health Act
Pb	lead
PM_{10}	particulate matter measuring less than 10 microns
$PM_{2.5}$	particulate matter measuring less than 2.5 microns
POL	petroleum, oil, and lubricants
PPA	Power Purchase Agreement
PV	photovoltaic
QDR	Quadrennial Defense Review
RCW	red-cockaded woodpecker
RFP	Request for Proposal
RPMP	Real Property Master Plan
SDZ	surface danger zone
SO_2	sulfur dioxide
TMDL	total maximum daily load
TLS	threshold level of significance
tpy	tons per year
UFC	United Facilities Criteria
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
UXO	unexploded ordnance
VEC	Valued Environmental Component
WWTP	wastewater treatment plant
yr	year

6.0 REFERENCES

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APPENDIX A

SYSTEM DESCRIPTION

DESIGN WIND SPEED:	90 MPH	HIGH TEMP:	37° C
EXPOSURE CATEGORY:	C	LOW TEMP:	-15° C
MODULE TYPE:	TRINA TSM-235PA05 (235W DC STC)		
QUANTITY:	5,376 MODULES (384 STRINGS OF 14)		
SYSTEM SIZE (DC):	1.26MW		
MOUNTING SYSTEM:	GROUND MOUNT		
TILT ANGLE:	25°		
ARRAY AZIMUTH:	180°		
MONITORING SYSTEM:	DRAKER		
INVERTER(S):	[2] AE 500kW		

NOTES:
1. 192 STRINGS TO [2] AE 500 kW INVERTERS. [24] COMBINER BOXES OF 16 STRINGS EACH.
2. CURRENT ZONING CLASSIFICATION: AGRICULTURAL

RESIDENTIAL HOUSING
ANDERSON AVE
TOLCHESTER RD.
MAIN ST.
TAX MAP 51 PARCEL 459 N/F J. REID GALT 5959/443
TAX MAP 51 PARCEL 709 N/F J. REID GALT 5959/443
30' PROPERTY SETBACK LINE
2,870' PERIMETER SECURITY FENCE. 6'-0" TALL. ENCLOSES 6.57 ACRES
TAX MAP 51 PARCEL 5 N/F MAYOR & COUNCIL OF ROCK HALL 15/416
RESIDENTIAL HOUSING
SOFTBALL FIELD
[2] STEEL BOLLARDS
SCE
16'-0" GATE
TAX MAP 42 PARCEL 37 ERNEST T. EDKINRODE, ET AL. 622/103
1 A2
20'-0" TYP.
12'-0" TYP.
TREES TO BE REMOVED (TYP.)
EXISTING WETLANDS
ELECTRIC MANHOLE SEE 7/E7
ELECTRIC MANHOLE SEE 7/E7
16'-0" GATE
SOFTBALL FIELD
WWTF LAGOON
STREAM/POND. DIRECTIONAL BORE MV CONDUIT AROUND TO INTERCONNECTION
RUN MV AC CONDUIT AND FIBER OPTICS IN BERM (~1,250')
POINT OF INTERCONNECTION AT 25kV SIDE OF TRANSFORMER. METER AT 25kV
ROCK HALL WWTF
RESIDENTIAL HOUSING
RESIDENTIAL HOUSING
MAIN ST.
STEAC

ORIGINAL SHEET SIZE
36X24
SHOULD MEASURE 1":

SCALE
1"=80'-0"

DRAWING
A1

SYSTEM DESCRIPTION

DESIGN WIND SPEED:	90 MPH	HIGH TEMP:	37° C
EXPOSURE CATEGORY:	C	LOW TEMP:	-15° C
MODULE TYPE:	TRINA TSM-235PA05 (235W DC STC)		
QUANTITY:	5,376 MODULES (384 STRINGS OF 14)		
SYSTEM SIZE (DC):	1.26MW		
MOUNTING SYSTEM:	GROUND MOUNT		
TILT ANGLE:	25°		
ARRAY AZIMUTH:	180°		
MONITORING SYSTEM:	DRAKER		
INVERTER(S):	[2] AE 500kW		

NOTES:
1. 192 STRINGS TO [2] AE 500 kW INVERTERS. [24] COMBINER BOXES OF 16 STRINGS EACH.
2. CURRENT ZONING CLASSIFICATION: AGRICULTURAL

30' B.R.L.

S 76°57'18" E

1615.74'

20'-0" TYP.

20'-0" TYP.

17'-0" TYP.

30'-0"

17'-11 1/2"

CB1-

CB1+

CB2-

CB2+

CB3-

CB3+

CB4-

CB4+

CB5-

CB5+

CB6-

CB6+

CB7-

CB7+

CB8-

CB8+

CB9-

CB9+

CB10-

CB10+

CB11-

CB11+

CB12-

CB12+

RPT1 & ASSOC. JUNCTION BOXES

REMOTE PV TIE (TYP. x2)

INVERTER ENCLOSURE

ENVIRONMENTAL SENSORS

RPT2 & ASSOC. JUNCTION BOXES

MOUNT DISCONNECTING COMBINER BOXES TO VERTICAL POSTS, (TYP. x24)

TREES TO BE REMOVED (TYP.)

UNDERGROUND MV CONDUIT RUN AND UNDERGROUND DATA CABLE RUN. DATA AND MV CABLES MUST BE IN SEPARATE TRENCHES. SEE (3/E7)

EXACT CONDUIT ROUTES TO BE DETERMINED BY INSTALLER.

24'-0"

16'-6"

1 / E7

16' GATE #1

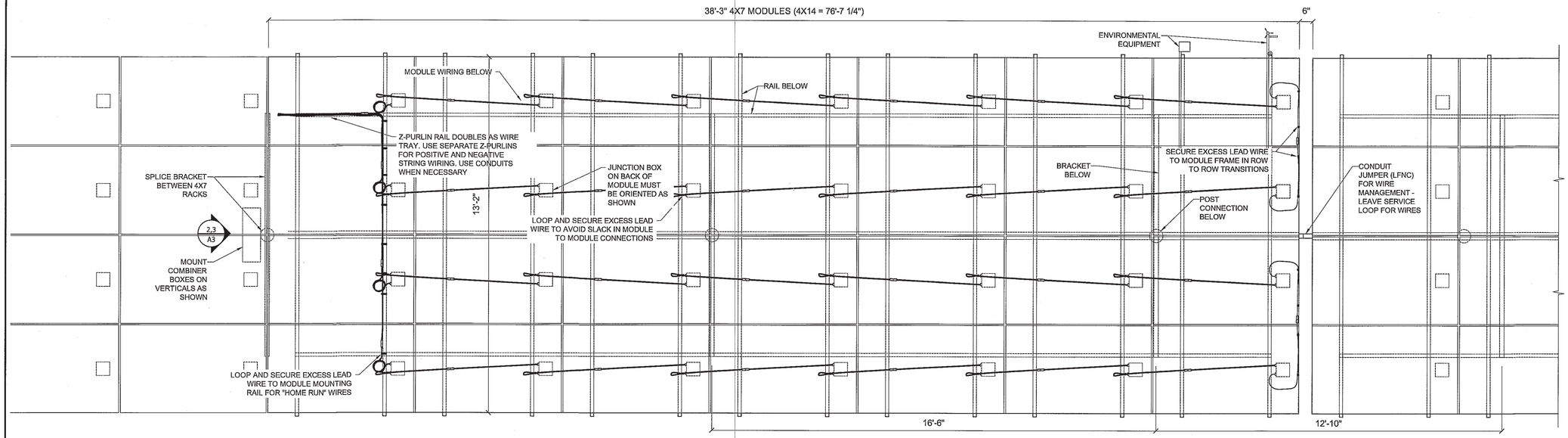
16' GATE #2

SCE

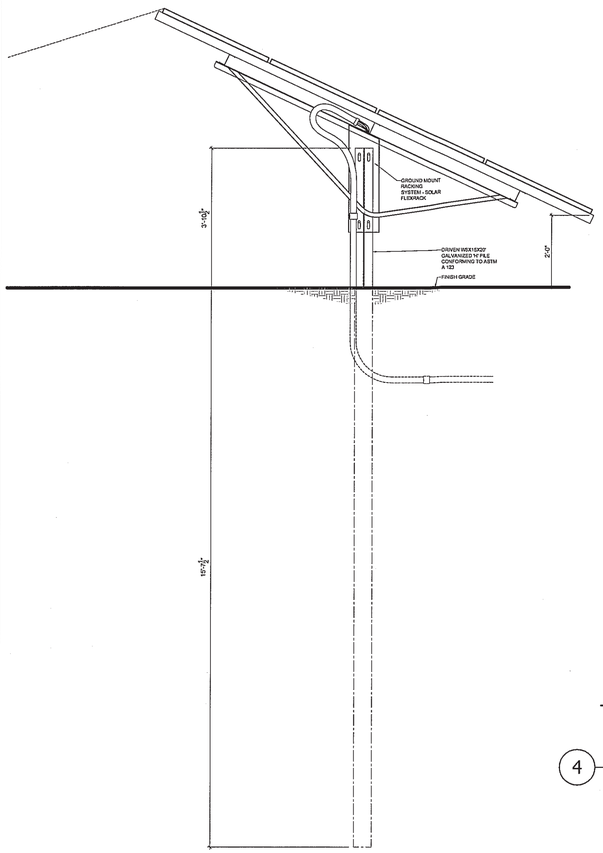
ORIGINAL SHEET SIZE
36X24
SHOULD MEASURE 1":

SCALE
1"=30'-0"

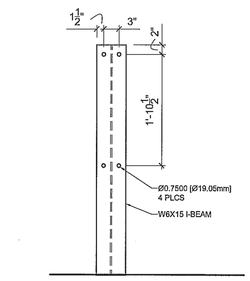
DRAWING
A2



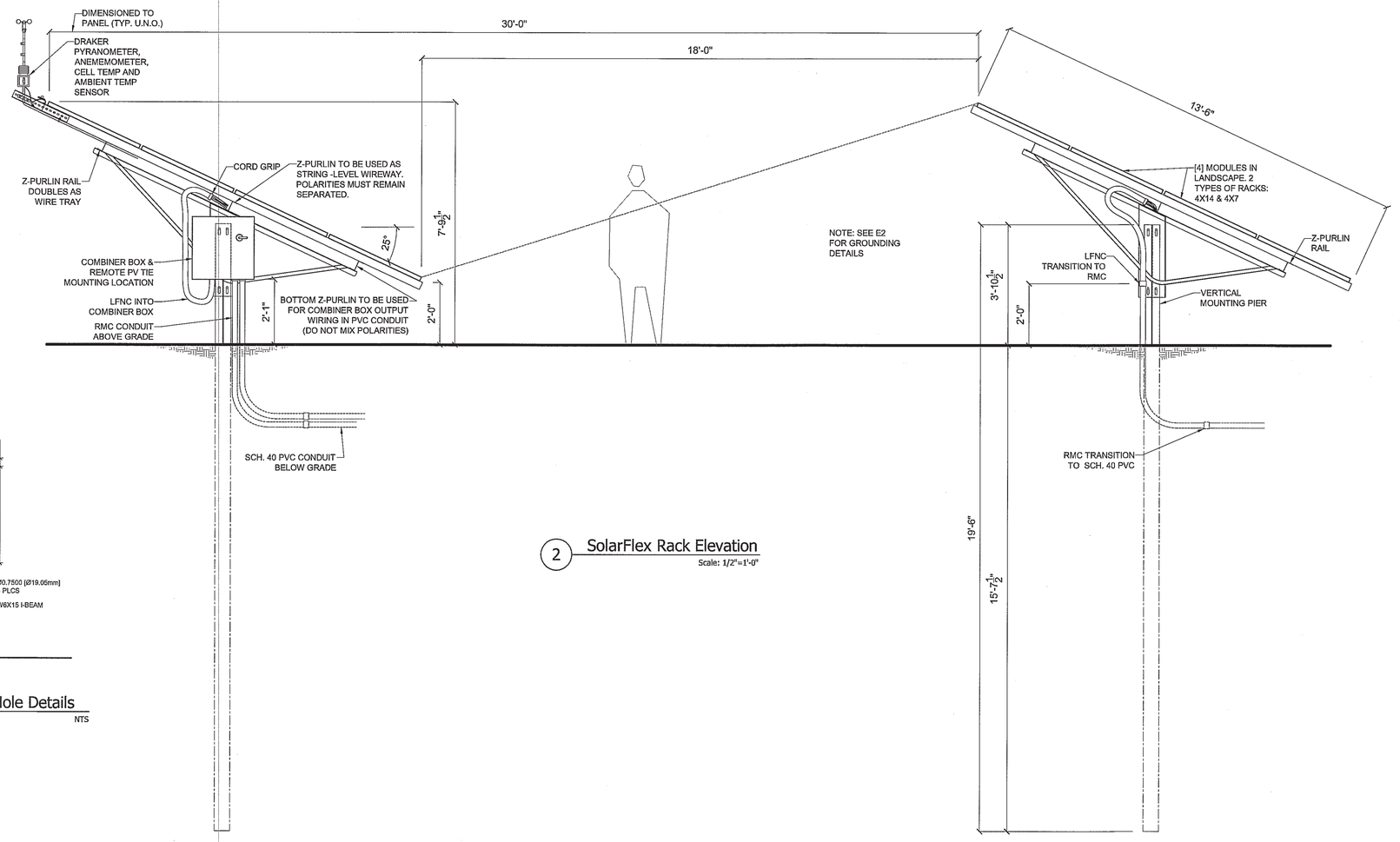
1 SolarFlex Rack Plan
Scale: 1/2"=1'-0"



3 Foundation Detail
Scale: 1/2"=1'-0"



4 H-Pile Bolt Hole Details
NTS



2 SolarFlex Rack Elevation
Scale: 1/2"=1'-0"

ORIGINAL SHEET SIZE
36X24
SHOULD MEASURE 1":

SCALE
AS NOTED

DRAWING
A3

SYSTEM DESCRIPTION

DESIGN WIND SPEED:	90 MPH	HIGH TEMP:	37° C
EXPOSURE CATEGORY:	C	LOW TEMP:	-15° C
MODULE TYPE:	TRINA TSM-235PA05 (235W DC STC)		
QUANTITY:	5,376 MODULES (384 STRINGS OF 14)		
SYSTEM SIZE (DC):	1.26MW		
MOUNTING SYSTEM:	GROUND MOUNT		
TILT ANGLE:	25°		
ARRAY AZIMUTH:	180°		
MONITORING SYSTEM:	DRAKER		
INVERTER(S):	[2] AE 500kW		

NOTES:
1. 192 STRINGS TO [2] AE 500 kW INVERTERS. [24] COMBINER BOXES OF 16 STRINGS EACH.
2. CURRENT ZONING CLASSIFICATION: AGRICULTURAL

RESIDENTIAL HOUSING
ANDERSON AVE
TOLCHESTER RD
MAIN ST.
TAX MAP 61 PARCEL 329 N/F J. REID GALT 955/443
TAX MAP 51 PARCEL 409 N/F J. REID GALT 955/443
TAX MAP 48 PARCEL 37 N/F ERNEST T. ECKENRODE, ET AL. 633/185
1 E2
30' PROPERTY SETBACK LINE
2,870' PERIMETER SECURITY FENCE. 6'-0" TALL. ENCLOSES 6.57 ACRES
TAX MAP 51 PARCEL 5 N/F MAYOR & COUNCIL OF ROCK HALL 15/416
RESIDENTIAL HOUSING
SOFTBALL FIELD
[2] STEEL BOLLARDS
SCE
16'-0" GATE
RIPT1 & ASSOC. JUNCTION BOXES
REMOTE PV TIE (TYP. 4X)
TREES TO BE REMOVED (TYP.)
UNDERGROUND MV CONDUIT RUN AND UNDERGROUND DATA CABLE RUN. DATA AND MV CABLES MUST BE IN SEPARATE TRENCHES. SEE (X67)
EXACT CONDUIT ROUTES TO BE DETERMINED BY INSTALLER.
RPT2 & ASSOC. JUNCTION BOXES
MOUNT DISCONNECTING COMBINERS BOXES TO VERTICAL MASTS, (TYP. x20)
ELECTRIC MANHOLE SEE 7/E7
16'-0" GATE
ELECTRIC MANHOLE SEE 7/E7
SOFTBALL FIELD
WWTF LAGOON
STREAM/POND. DIRECTIONAL BORE MV CONDUIT AROUND TO INTERCONNECTION
RUN MV AC CONDUIT AND FIBER OPTICS IN BERM (~1,250')
POINT OF INTERCONNECTION AT 25kV SIDE OF TRANSFORMER. METER AT 25kV
ROCK HALL WWTF
MAIN ST.
RESIDENTIAL HOUSING
RESIDENTIAL HOUSING
N

ORIGINAL SHEET SIZE
36X24
SHOULD MEASURE 1":

SCALE
1"=80'-0"

DRAWING
E1

SYSTEM DESCRIPTION			
DESIGN WIND SPEED:	90 MPH	HIGH TEMP:	37° C
EXPOSURE CATEGORY:	C	LOW TEMP:	-15° C
MODULE TYPE:	TRINA TSM-235PA05 (235W DC STC)		
QUANTITY:	5,376 MODULES (384 STRINGS OF 14)		
SYSTEM SIZE (DC):	1.26MW		
MOUNTING SYSTEM:	GROUND MOUNT		
TILT ANGLE:	25°		
ARRAY AZIMUTH:	180°		
MONITORING SYSTEM:	DRAKER		
INVERTER(S):	[2] AE 500kW		

NOTES:
1. 192 STRINGS TO [2] AE 500 kW INVERTERS. [24] COMBINER BOXES OF 16 STRINGS EACH.
2. CURRENT ZONING CLASSIFICATION: AGRICULTURAL

S 76°57'18" E

CB1-

CB1+

CB2-

CB2+

CB3-

CB3+

CB4-

CB4+

CB5-

CB5+

CB6-

CB6+

CB7-

CB7+

CB8-

CB8+

CB9-

CB9+

CB10-

CB10+

CB11-

CB11+

CB12-

CB12+

RPT1 & ASSOC. JUNCTION BOXES

REMOTE PV TIE (TYP. x2)

INVERTER ENCLOSURE

ENVIRONMENTAL SENSORS

RPT2 & ASSOC. JUNCTION BOXES

MOUNT DISCONNECTING COMBINER BOXES TO VERTICAL POSTS, (TYP. x24)

UNDERGROUND MV CONDUIT RUN AND UNDERGROUND DATA CABLE RUN. DATA AND MV CABLES MUST BE IN SEPARATE TRENCHES. SEE (3/E7)

EXACT CONDUIT ROUTES TO BE DETERMINED BY INSTALLER.

1 Array Electrical Plan

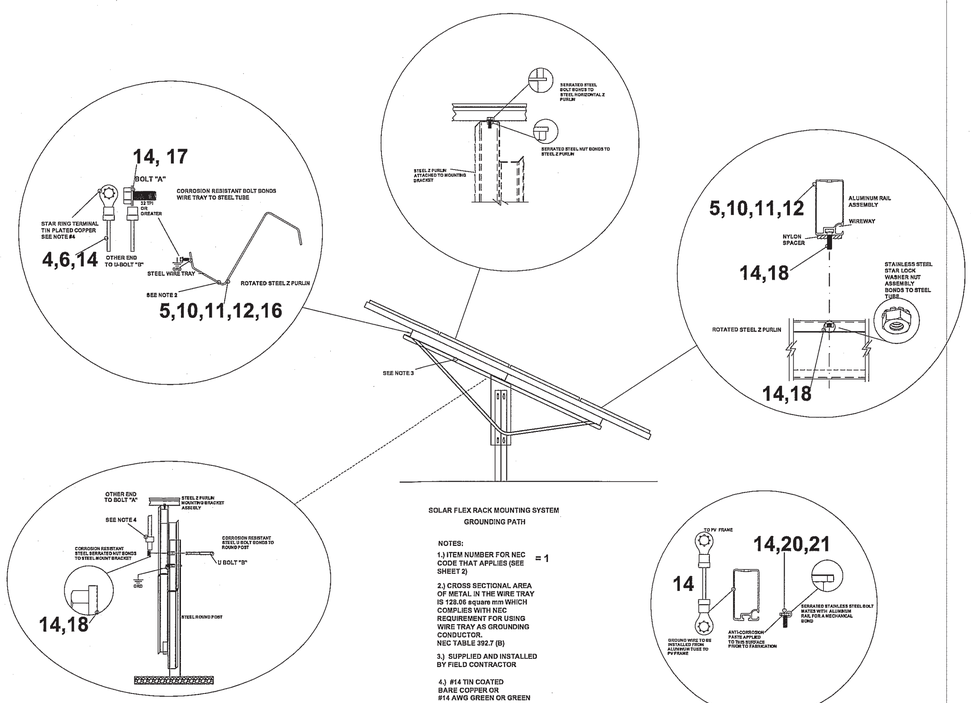
COMBINER BOX -11-6 (POLARITY / STRING)

2 String Polarity & Naming

ORIGINAL SHEET SIZE
36X24
SHOULD MEASURE 1":

SCALE
1"=30'-0"

DRAWING
E2



SOLAR FLEX RACK MOUNTING SYSTEM
GROUNDING PATH

NOTES:

1.) ITEM NUMBER FOR NEC CODE THAT APPLIES (SEE SHEET 2) = 1

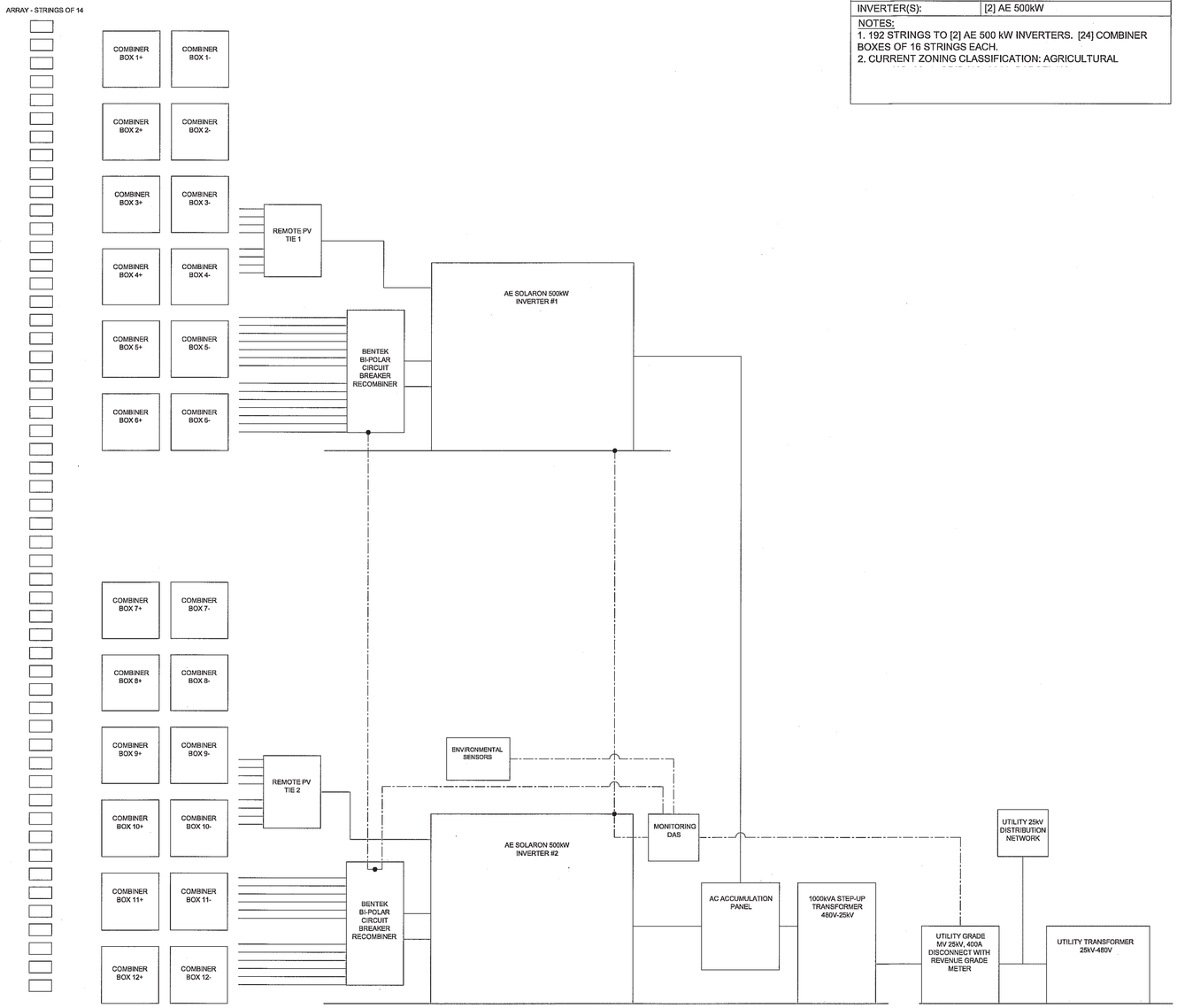
2.) CROSS SECTIONAL AREA OF METAL IN THE WIRE TRAY IS 123.06 square mm WHICH COMPLIES WITH NEC REQUIREMENT FOR USING WIRE TRAY AS GROUNDING CONDUCTOR. NEC TABLE 392.7 (B)

3.) SUPPLIED AND INSTALLED BY FIELD CONTRACTOR

4.) #14 TIN COATED BARE COPPER OR #14 AWG GREEN OR GREEN W/ YELLOW STRIPE GROUND JUMPER.

ITEM	NEC 2008 SECTION	SUMMARY	DETAILED DESCRIPTION
1	690.43	SOLAR PHOTOVOLTAIC EQUIPMENT GROUNDING	EXPOSED NON-CURRENT CARRYING PARTS OF MODULE FRAMES SHALL BE GROUNDED IN ACCORDANCE WITH 250.134
2	250.134(A)	EQUIPMENT GROUNDING CONDUCTOR TYPES	EQUIPMENT FASTENED IN PLACE SHALL BE CONNECTED TO GROUNDING CONDUCTORS PERMITTED BY 250.118
3	250.134(B)	GROUNDING WITH CIRCUIT CONDUCTORS	GROUNDING CONDUCTORS CAN BE RUN WITH CIRCUIT CONDUCTORS
4	250.118	TYPES OF EQUIPMENT GROUNDING	(1) GROUNDING CONDUCTOR CAN BE A COPPER CONDUCTOR
5			(14) GROUNDING CONDUCTOR CAN BE A CABLE TRAY AS PERMITTED IN 392.7
6	250.119	IDENTIFICATION OF EQUIPMENT GROUNDING CONDUCTORS	INDIVIDUALLY INSULATED GROUNDED CONDUCTORS SHALL HAVE AN OUTER FINISH THAT IS EITHER GREEN OR GREEN WITH ONE OR MORE YELLOW STRIPES. TIN COATED COPPER IS UTILIZED.
7	392.7(A)	GROUNDING METALLIC CABLE TRAYS	METALLIC CABLE TRAYS THAT SUPPORT ELECTRICAL CONDUCTORS SHALL BE GROUNDED IN ACCORDANCE WITH 250.96 & PART IV OF ARTICLE 250 (250.80)
8	250.96(A)	BONDING CABLE TRAYS SERVING AS GROUND CONDUCTORS.	CABLE TRAYS SERVING AS GROUNDING CONDUCTORS SHALL BE BONDED TO INSURE ELECTRICAL CONDUCTIVITY & HAVE THE CAPACITY TO CONDUCT ANY FAULT CURRENT LIKELY TO BE IMPOSED ON THEM.
9	250.80	METAL CONDUCTOR RACEWAY	UNGROUNDED RACEWAYS SHALL BE CONNECTED TO A GROUNDING ELECTRODE CONDUCTOR
10	392.7B	STEEL/ALUMINUM CABLE TRAY SYSTEMS	(1) THE CABLE TRAY SECTIONS ARE IDENTIFIED AS AN EQUIPMENT GROUNDING CONDUCTOR
11			(2) CROSS SECTIONAL AREA OF METAL TRAY CONFORMS TO TABLE 392.7(B)
12			(3) CABLE TRAY IS MARKED TO SHOW CROSS SECTIONAL AREA OF METAL TRAY
13			(4) CABLE TRAY SECTIONS BONDED PER 250.96 & 250.102
14	250.102(A)	EQUIPMENT BONDING JUMPER MATERIAL	BONDING MATERIAL SHALL BE OF COPPER OR OTHER CORROSIVE RESISTANT MATERIAL. A BONDING JUMPER CAN BE A WIRE OR SCREW.
15	250.102(B)	EQUIPMENT BONDING JUMPER ATTACHMENT	BONDING ATTACHMENTS ARE MADE IN THE MANNER SPECIFIED BY THE APPLICABLE PROVISIONS OF 250.8
16	392.9(D)	SOLID BOTTOM CABLE TRAY FILL	THE SUM OF THE CROSS SECTIONAL AREA FOR ALL CABLES AND/OR SINGLE CONDUCTORS IN THE TRAY SHALL NOT EXCEED 40% OF THE INTERIOR CROSS SECTION OF THE CABLE TRAY. IF THE TRAY DEPTH IS LARGER THAN 6 INCHES, 6 INCHES WILL BE USED TO CALCULATE THE TRAY'S INTERIOR CROSS SECTION.
17	250.8	CONNECTION OF GROUNDING EQUIPMENT	(A6) GROUNDING CONDUCTORS SHALL BE CONNECTED BY THREAD-FORMING MACHINE SCREWS THAT ENGAGE WITH NOT LESS THAN TWO THREADS
18	250.8	CONNECTION OF GROUNDING EQUIPMENT	(A5) GROUNDING CONDUCTORS SHALL BE CONNECTED BY MACHINE SCREWS THAT ENGAGE WITH NOT LESS THAN TWO THREADS OR ARE SECURED BY A NUT.
19	250.12	CLEAN SURFACES	NON-CONDUCTIVE COATINGS SUCH AS PAINT ON EQUIPMENT TO BE GROUNDED SHALL BE REMOVED FROM THREADS AND CONTACT SURFACES TO ENSURE GOOD ELECTRICAL CONDUCTIVITY
20	110.14	ELECTRICAL CONNECTIONS	A CONNECTION OF TWO DISSIMILAR CONDUCTORS SUCH AS COPPER AND ALUMINUM INVOLVING DIRECT CONTACT SHALL NOT BE MADE
21	344.10(D)	WET LOCATION	ALL BOLTS,STRAPS, SCREWS & SO FORTH SHALL BE CORROSIVE-RESISTANT MATERIAL

2 Racking Equipment Grounding Details



1 Electrical Block Diagram

SYSTEM DESCRIPTION

DESIGN WIND SPEED:	90 MPH	HIGH TEMP:	37° C
EXPOSURE CATEGORY:	C	LOW TEMP:	-15° C
MODULE TYPE:	TRINA TSM-235PA05 (235W DC STC)		
QUANTITY:	5,376 MODULES (384 STRINGS OF 14)		
SYSTEM SIZE (DC):	1.26MW		
MOUNTING SYSTEM:	GROUND MOUNT		
TILT ANGLE:	25°		
ARRAY AZIMUTH:	180°		
MONITORING SYSTEM:	DRAKER		
INVERTER(S):	[2] AE 500kW		

NOTES:
1. 192 STRINGS TO [2] AE 500 kW INVERTERS. [24] COMBINER BOXES OF 16 STRINGS EACH.
2. CURRENT ZONING CLASSIFICATION: AGRICULTURAL

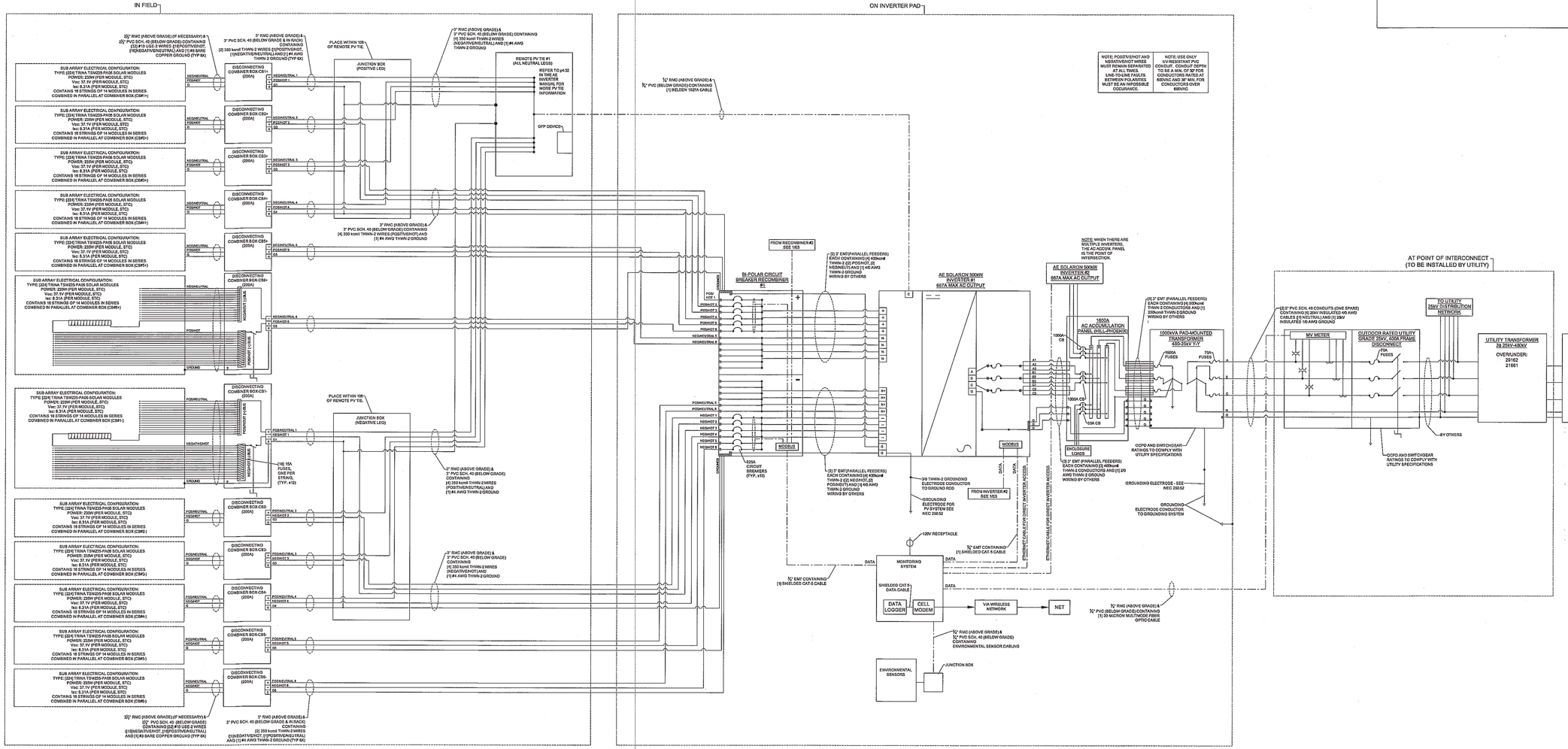
ORIGINAL SHEET SIZE
36X24
SHOULD MEASURE 1":

SCALE
NTS

DRAWING
E3

SYSTEM DESCRIPTION			
DESIGN WIND SPEED:	90 MPH	HIGH TEMP:	37° C
EXPOSURE CATEGORY:	C	LOW TEMP:	-15° C
MODULE TYPE:	TRINA TSM-235PA05 (235W DC STC)		
QUANTITY:	5,376 MODULES (384 STRINGS OF 14)		
SYSTEM SIZE (DC):	1.26MW		
MOUNTING SYSTEM:	GROUND MOUNT		
TILT ANGLE:	25°		
ARRAY AZIMUTH:	180°		
MONITORING SYSTEM:	DRAKER		
INVERTER(S):	[2] AE 500kW		

NOTES:
1. 192 STRINGS TO [2] AE 500 kW INVERTERS. [24] COMBINER BOXES OF 16 STRINGS EACH.
2. CURRENT ZONING CLASSIFICATION: AGRICULTURAL



1 Inverter #1 3-Line Diagram

NOTES:
1. EQUIPMENT AIC RATING TO BE SELECTED BASED ON THE AVAILABLE FAULT CURRENT DETERMINED IN COORDINATION WITH UTILITY COMPANY
2. SERVICE AND METERING SWITCHGEAR CONFIGURATION, RATINGS AND LOCATION ARE SUBJECT TO APPROVAL BY THE UTILITY COMPANY AND AHJ
3. SERVICE AND METERING SWITCHGEAR SHOP DRAWINGS WILL BE SUBMITTED TO THE UTILITY COMPANY AND AHJ FOR APPROVAL PRIOR TO INSTALLATION

WIRE COLOR CODING:
POSITIVE/HOT - RED
NEGATIVE/HOT - BLACK
POSITIVE/NEUTRAL - WHITE
NEGATIVE/NEUTRAL - WHITE

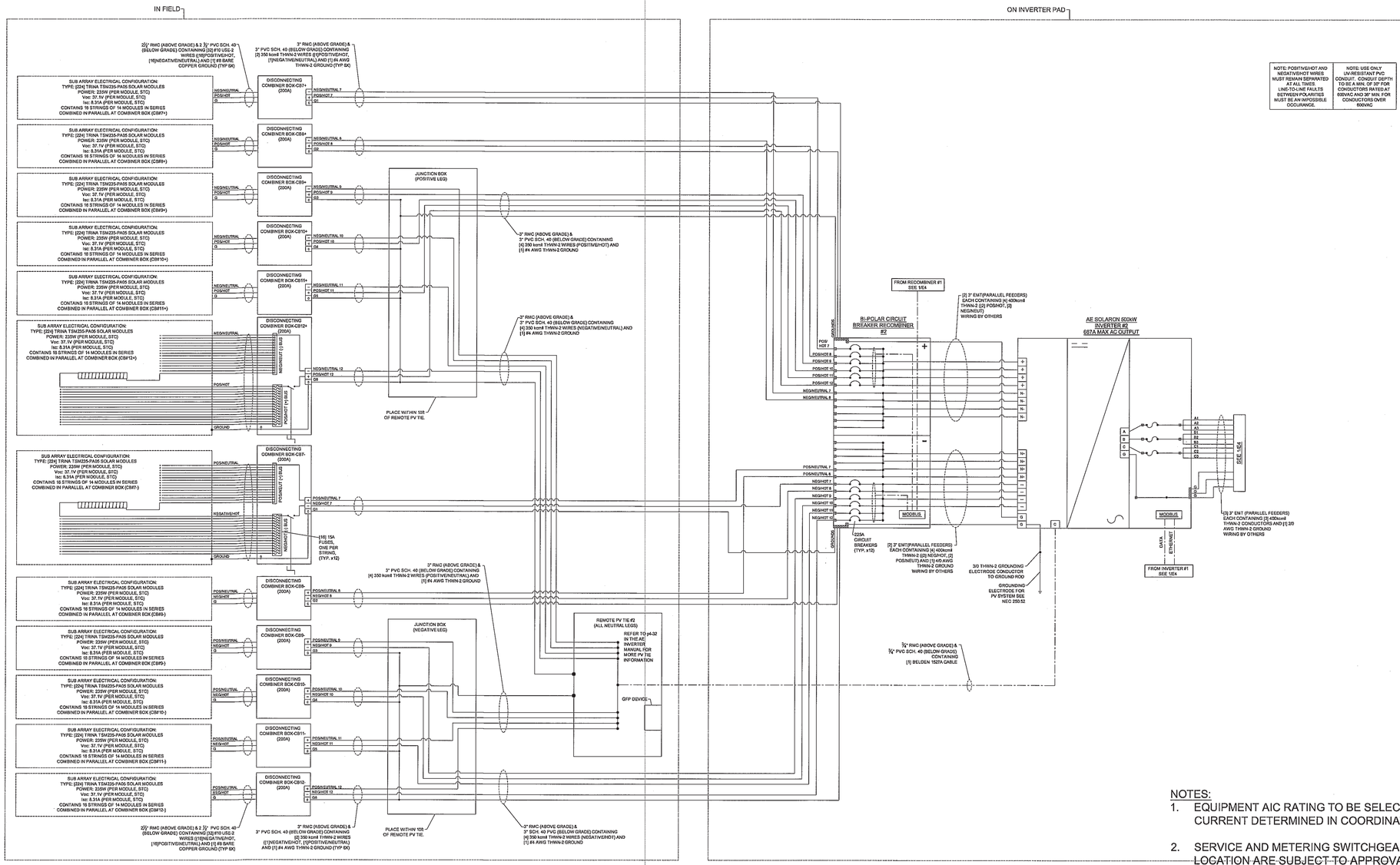
ORIGINAL SHEET SIZE
36X24
SHOULD MEASURE 1":

SCALE
NTS

DRAWING
E4

SYSTEM DESCRIPTION			
DESIGN WIND SPEED:	90 MPH	HIGH TEMP:	37° C
EXPOSURE CATEGORY:	C	LOW TEMP:	-15° C
MODULE TYPE:	TRINA TSM-235PA05 (235W DC STC)		
QUANTITY:	5,376 MODULES (384 STRINGS OF 14)		
SYSTEM SIZE (DC):	1.26MW		
MOUNTING SYSTEM:	GROUND MOUNT		
TILT ANGLE:	25°		
ARRAY AZIMUTH:	180°		
MONITORING SYSTEM:	DRAKER		
INVERTER(S):	[2] AE 500kW		

NOTES:
1. 192 STRINGS TO [2] AE 500 kW INVERTERS. [24] COMBINER BOXES OF 16 STRINGS EACH.
2. CURRENT ZONING CLASSIFICATION: AGRICULTURAL



WIRE COLOR CODING:
POSITIVE/HOT - RED
NEGATIVE/HOT - BLACK
POSITIVE/NEUTRAL - WHITE
NEGATIVE/NEUTRAL - WHITE

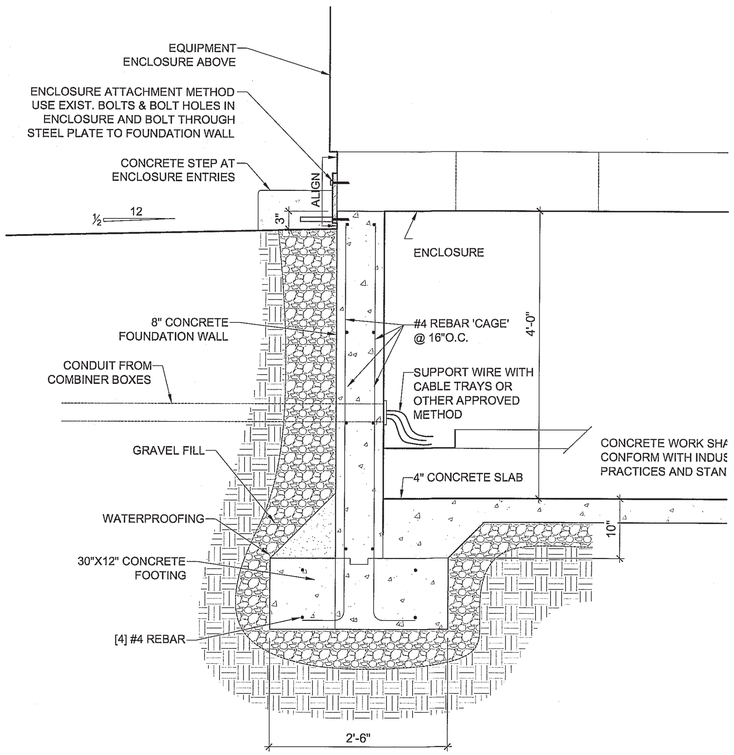
1 Inverter #2 3-Line Diagram

NOTES:
1. EQUIPMENT AIC RATING TO BE SELECTED BASED ON THE AVAILABLE FAULT CURRENT DETERMINED IN COORDINATION WITH UTILITY COMPANY
2. SERVICE AND METERING SWITCHGEAR CONFIGURATION, RATINGS AND LOCATION ARE SUBJECT TO APPROVAL BY THE UTILITY COMPANY AND AHJ
3. SERVICE AND METERING SWITCHGEAR SHOP DRAWINGS WILL BE SUBMITTED TO THE UTILITY COMPANY AND AHJ FOR APPROVAL PRIOR TO INSTALLATION

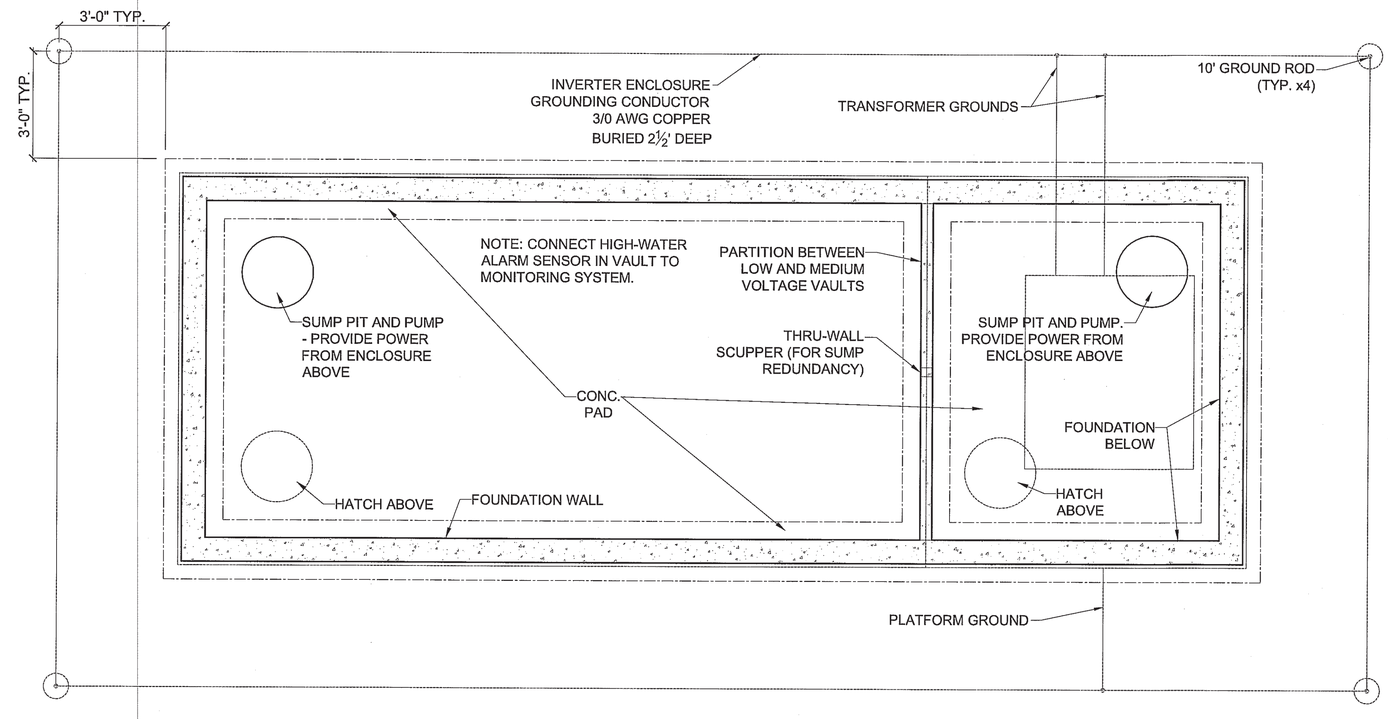
ORIGINAL SHEET SIZE
36X24
SHOULD MEASURE 1":

SCALE
NTS

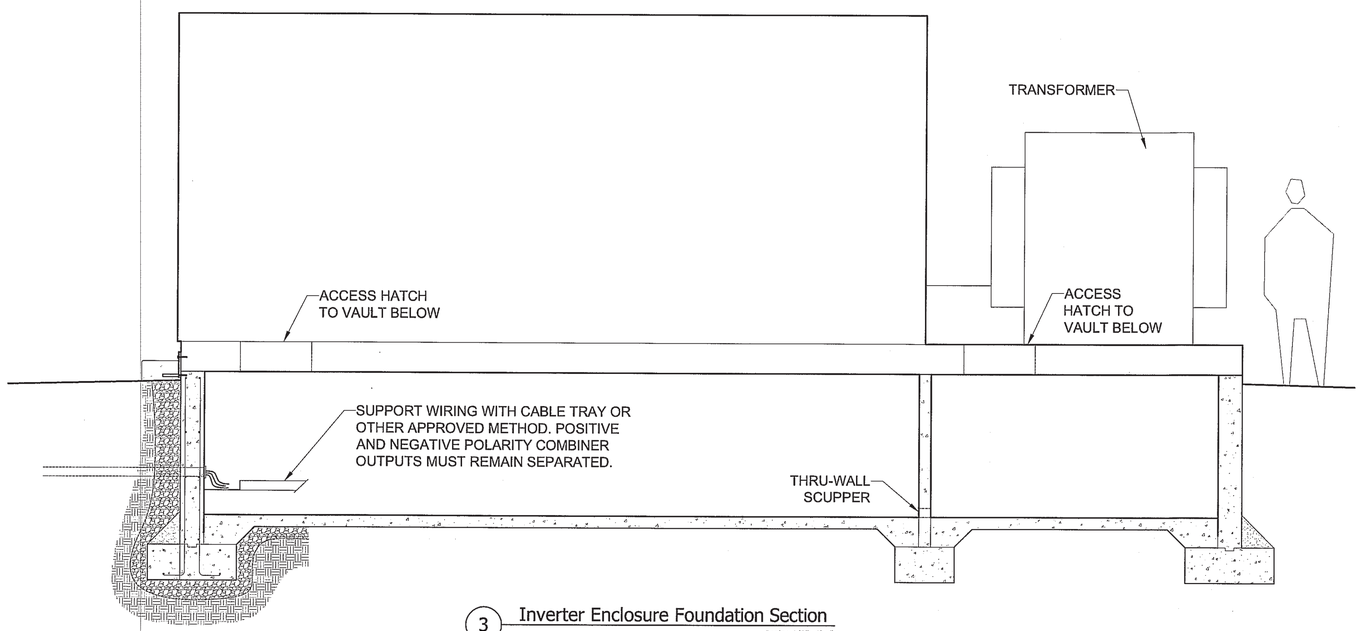
DRAWING
E5



1 Typical Foundation Detail
Scale: 1"=1'-0"



2 Inverter Enclosure Plan
Scale: 1/2"=1'-0"

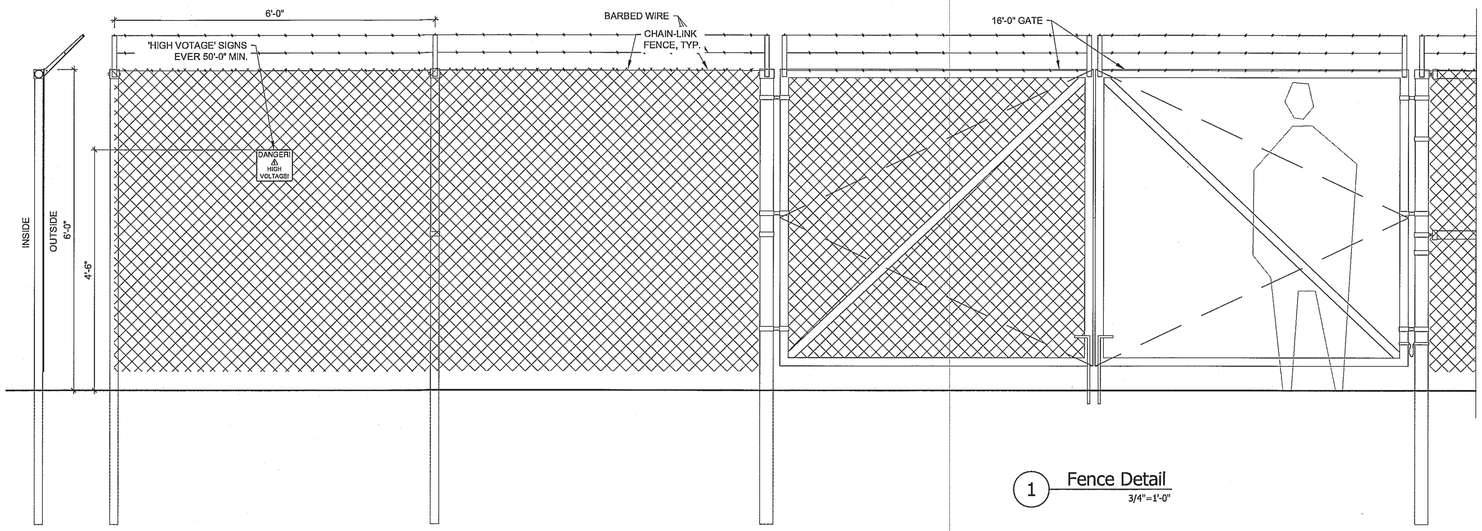


3 Inverter Enclosure Foundation Section
Scale: 1/2"=1'-0"

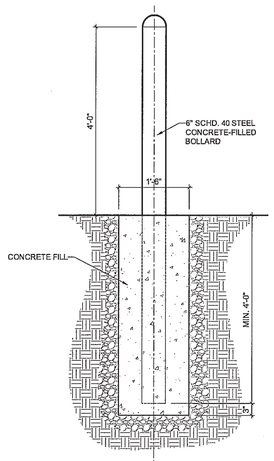
ORIGINAL SHEET SIZE
36X24
SHOULD MEASURE 1":

SCALE
AS NOTED

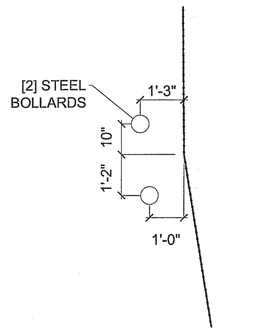
DRAWING
E6



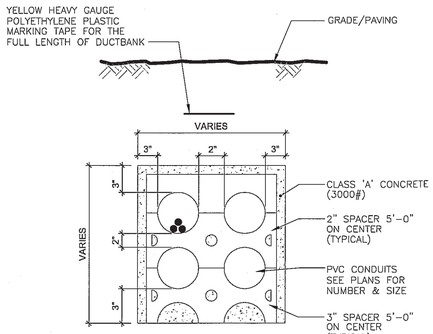
1 Fence Detail
3/4"=1'-0"



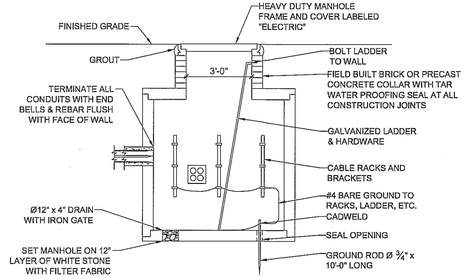
5 Typical Steel Bollard Details
NTS



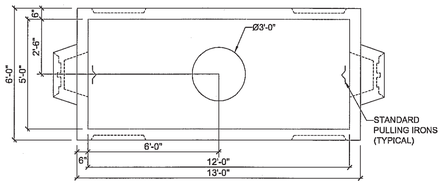
6 Steel Bollard Plan
1/2" = 1'



2 Typical Concrete Ductbank Section
NTS



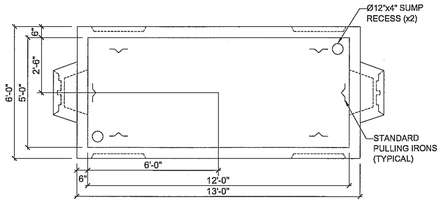
7 Typical Manhole Section
NTS



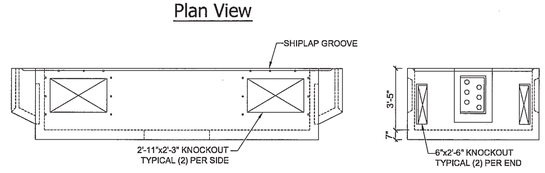
Plan View

Front View Right View

Top Section



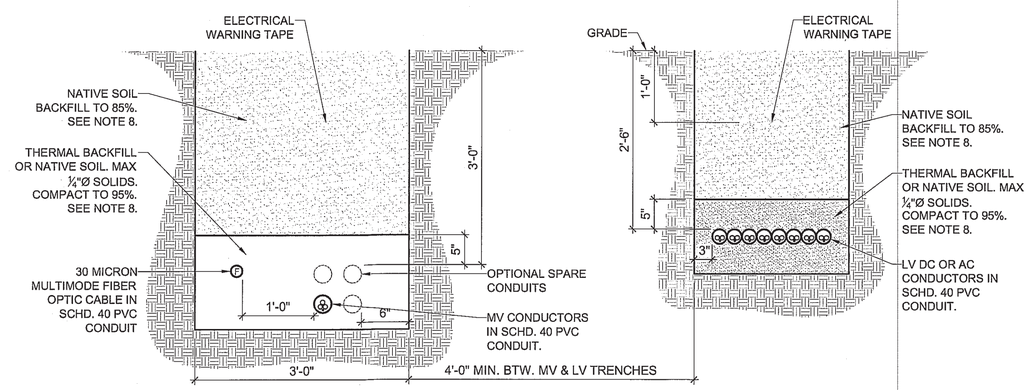
Plan View



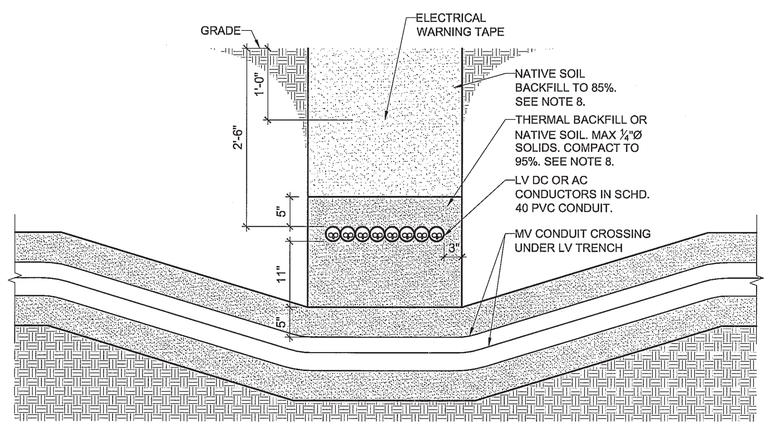
Front View Right View

Bottom Section

1. MANHOLES SUPPLIED BY THE APPROVED SUPPLIERS HAVE VARYING DIMENSIONS. THE MAXIMUM OUTSIDE DIMENSIONS SHOULD BE USED TO DETERMINE THE SIZE OF THE EXCAVATION.
2. THE THICKNESS OF THE WALLS SHALL BE 6"(MINIMUM), ROOF 8"(MINIMUM) AND THE FLOOR 7"(MINIMUM).
3. EQUIPM ENT RACKS SHALL BE PURCHASED AND INSTALLED ON BOTH SIDES OF MANHOLE AT 4'-0" ON CENTER.
4. PROVIDE AND INSTALL LADDER AND GROUNDING KIT.



3 General Trench Detail, MV & LV
1"=1'-0"



4 Perpendicular Trench Detail, MV & LV
1"=1'-0"

NOTES:

1. ASSUMED RHO = 120°C-cm/W.
2. DIRECT-BURIAL BUNDLED MV CIRCUITS SHALL BE SPACED AT LEAST 12".
3. LV AND DC DIRECT-BURIAL CABLES SHALL HAVE MINIMUM SPACING OF 3" O.C.
4. ALL TRENCHES SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
5. TRENCHES GREATER THAN 18" IN WIDTH SHALL CONTAIN ADDITIONAL ELECTRICAL WARNING TAPE.
6. CABLES IN TRENCHES SHALL NOT BE STACKED WITHOUT ENGINEERING APPROVAL.
7. DIRECT-BURIAL BUNDLED MV CIRCUITS SHALL BE INSTALLED SUCH THAT THE CIRCUITS ARE CONTINUOUSLY TRANSPOSED CLOCKWISE.
8. COMPACT TRENCH BACKFILL TO 95% FULL DEPTH FOR TRENCHES WITHIN 5 FEET OF PIERS, FOOTINGS OR OTHER STRUCTURES. AT ALL LOCATIONS, COMPACTION SHALL BE SUFFICIENT TO SUPPORT LARGEST CONSTRUCTION OR MAINTENANCE VEHICLE ON SITE.

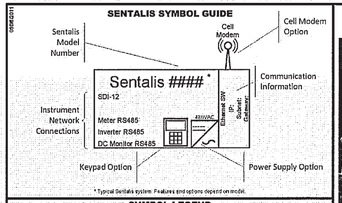
CAUTION TO CONTRACTOR: THE CONTRACTOR SHALL BE RESPONSIBLE TO INVESTIGATE AND VERIFY THE ACTUAL LOCATION AND DEPTH OF ALL EXISTING UNDERGROUND FACILITIES AT LEAST 48 HOURS IN ADVANCE OF THE PERFORMANCE OF ANY WORK.

ORIGINAL SHEET SIZE
36X24
SHOULD MEASURE 1":

SCALE
AS NOTED

DRAWING
E7

SENTALIS SYMBOL GUIDE



SYMBOL LEGEND

- Inverter
- DC Monitoring String Combiner Or Recombiner
- PV Panel Array
- Revenue Meter
- Current Transformer(s)
- Cell Temperature Sensor
- Anemometer
- Wind Vane
- Anemometer & Wind Vane
- Tipping Rain Bucket
- Ambient Temperature
- All-In-One Weather Station
- Pyranometer Plane Of Array (POA)
- Pyranometer Horizontal
- Internet
- Barometer
- Section Outline
- Transformer
- Network Switch Ethernet / Fiber

LINE LEGEND

- Power Cables & Distribution (supplied by other)
- Sentalis Instrument Cables (included)
- Data Cable (supplied by other)
- Facilities Device Power (supplied by other)

Wire Reference · A1 Line Connectors · Utility Connection · Termination Resistor

RELEASE / REVISION

	BY	CKD	DATE	DESCRIPTION
0	RWC	---	12/16/11	First release

GENERAL NOTES

1 All equipment "supplied by other" unless itemized on quote or as per change order.

2 All wiring "supplied by other" unless noted in Data Cable Schedule.

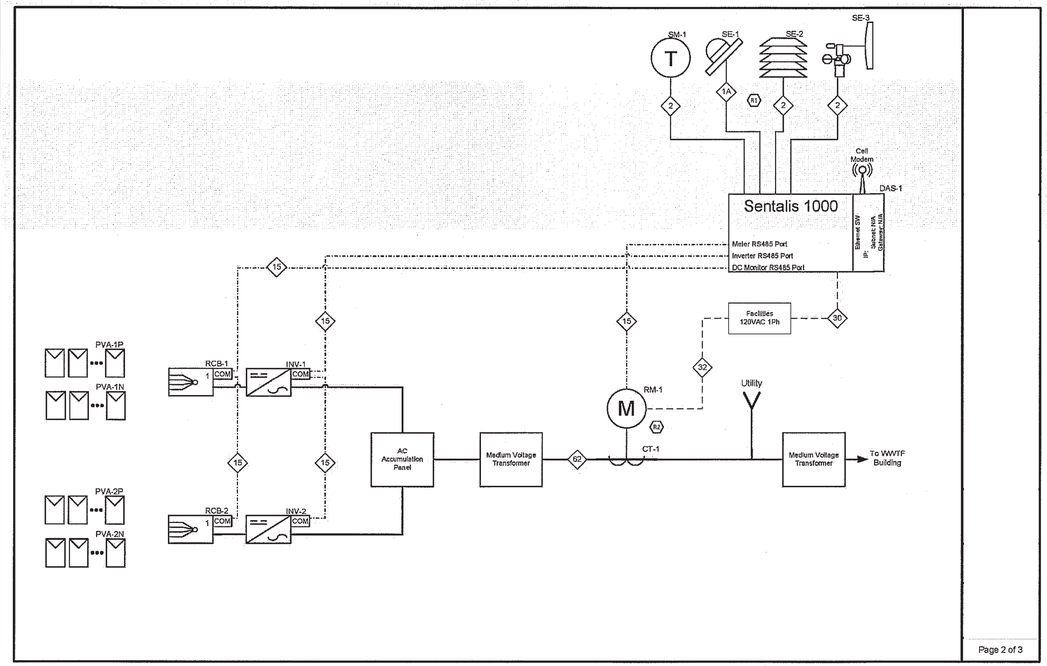
REVIEW NOTES

R1 Verify sensor cable length, see Instrument Cable Schedule.

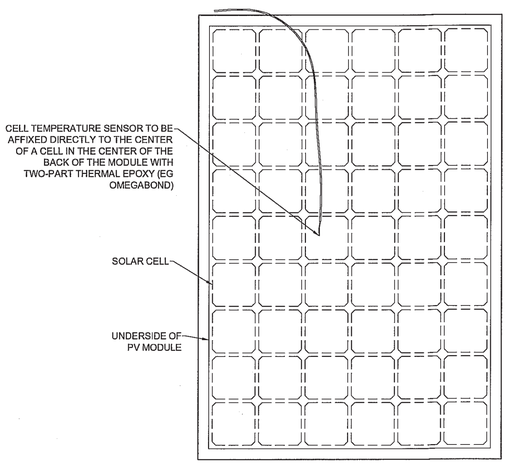
R2 Selection of PT/CT to be determined based on MV switchgear make and model. Meter CT/PT location TBD.

PROJECT LOCATION

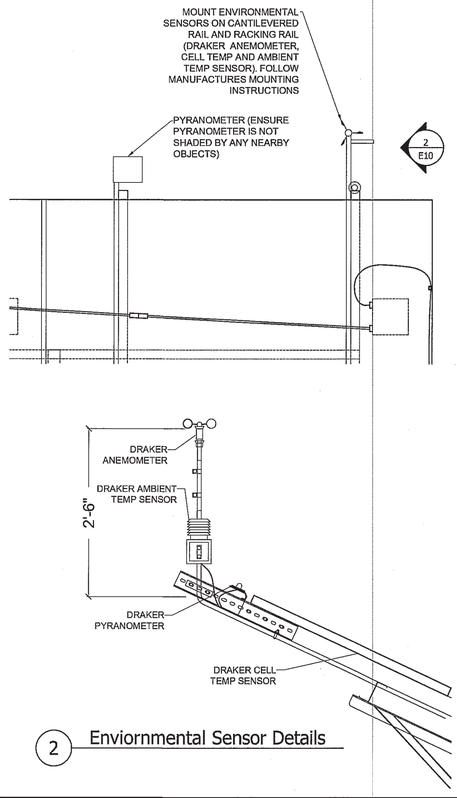
Page 1 of 3



Page 2 of 3



1 Enviornmental Sensor Details A



2 Enviornmental Sensor Details

PV ARRAY SCHEDULE

REF	PANEL MFG	PANEL MODEL	PANEL POWER	NUM STRINGS	MODS /STR	TOTAL MODS	TOTAL PWR	RECOMBINER REF	INVERTER REF
PVA-1P	TRINA	TSM-235PA05	235	96	14	1344	315840	RCB-1	INV-1
PVA-1N	TRINA	TSM-235PA05	235	96	14	1344	315840	RCB-1	INV-1
PVA-2P	TRINA	TSM-235PA05	235	96	14	1344	315840	RCB-2	INV-2
PVA-2N	TRINA	TSM-235PA05	235	96	14	1344	315840	RCB-2	INV-2
						0	0		
		Totals		384		5376	1263360		

INVERTER SCHEDULE

REF	MFG	MODEL	ELECTRICAL PWR	VOLT	PH	AMPS	NETWORK TYPE	PROTOCOL	ADDRESS	BAUD	FIRM INDEX
INV-1	AE	Solorn	500	480	3	667	RS-485	Modbus RTU	21	9600	1
INV-2	AE	Solorn	500	480	3	667	RS-485	Modbus RTU	22	9600	2

RECOMBINER SCHEDULE

RECOMBINER REF	RECOMBINER MFG	RECOMBINER MODEL	DATA MODULE MAKE	DATA MODULE MODEL	QTY	PROTOCOL	BAUD	ADDRS	FW INDEX
RCB-1	Bentek				1	Modbus RTU	9600	31	1
RCB-2	Bentek				1	Modbus RTU	9600	32	2

DAS BASE STATION SCHEDULE

REF	MFG	MODEL	PART	POWER	CELL IP ADDRESS
DAS-1	Draker Labs	Sentalis 1000	DL202	120VAC 1Ph 37VA	166.148.18.239

METER SCHEDULE

METER REF	METER TYPE	METER ADDRS	METER BAUD	METER P/N	CT REF	CT TYPE	CT RATIO	CT INT DIA	CT P/N	PT REF	PT RATIO	PT P/N
RM-1	Shark 100	11	9600	DL187	CT-1	TBD	TBD	TBD	TBD	TBD	TBD	TBD

INSTRUMENT SCHEDULE

REF	TYPE	TYPE	MFG	MODEL	DAS REF
SE-1	Irradiance, plane of array	Analog	LICOR	LI-200SA	DAS-1
SE-2	Ambient temperature	Analog	Cambell Scientific	CS109	DAS-1
SE-3	Anemometer & wind vane	Pulse/Analog	Met One	034B	DAS-1
SM-1	Cell temp, back of module	Analog	Draker	DL209	DAS-1

INSTRUMENT / DATA CABLE SCHEDULE

REF	TYPE	DESCRIPTION	MAX LENGTH
1A	Draker supplied instrument, 50' std length	LiCor specific voltage, current, pulse, or data	200'
2	Draker supplied instrument, 200' standard length	Instrument specific voltage, current, pulse, or data	200'
6	Data Cat5e or Cat6	TCP/IP, ModBus TCP	100m
15	Data RS-485	ModBus RTU, 9600 baud	4000'

Cable Schedule Note: All cables supplied by other unless otherwise noted here

POWER CABLE SCHEDULE

REF	DESCRIPTION	VOLT	PH	AMP	VA	KW	WIRES	SIZE
30	Sentalis power (120VAC nominal)	90VAC to 304VAC	1		37			
32	Meter power, Shark 100 (120VAC nominal)	90VAC to 265VAC	1		5			
62	Power, three phase, 25kV	25kV	3			1000	TBD	TBD

Cable Schedule Note: All cables supplied by other unless otherwise noted here

Page 3 of 3

ORIGINAL SHEET SIZE
36X24
SHOULD MEASURE 1":

SCALE
½"=1'-0" UNO

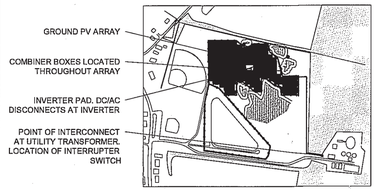
DRAWING
E9

A

8½"

CAUTION!

POWER TO THIS SERVICE IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN



7"

B

6"

SOLAR PV COMBINER BOX (CB1+ THRU CB16+)

WARNING: TERMINALS ON BOTH LINE AND LOAD SIDE MAY BE ENERGIZED WHEN PHOTOVOLTAIC MODULES ARE EXPOSED TO SUNLIGHT.

RATED MPP CURRENT: 123.52A
RATED MPP VOLTAGE: 421.4V
MAX SYSTEM VOLTAGE: 537.1V
MAX CIRCUIT CURRENT: 165.2A

3½"

B

6"

SOLAR PV COMBINER BOX (CB1- THRU CB16-)

WARNING: TERMINALS ON BOTH LINE AND LOAD SIDE MAY BE ENERGIZED WHEN PHOTOVOLTAIC MODULES ARE EXPOSED TO SUNLIGHT.

RATED MPP CURRENT: 123.52A
RATED MPP VOLTAGE: 421.4V
MAX SYSTEM VOLTAGE: 537.1V
MAX CIRCUIT CURRENT: 165.2A

3½"

D

6"

500kW SOLAR PV INVERTER #1

WARNING: WHEN GROUND FAULT IS INDICATED, THE NORMALLY GROUNDED CONDUCTORS MAY BE ENERGIZED AND UNGROUNDED.

NOTE: POINT OF INTERCONNECTION IN ELECTRICAL ROOM

INVERTER AC RATINGS:
AC OUTPUT CURRENT: 667A
NOMINAL AC VOLTAGE: 480V

5"

D

6"

500kW SOLAR PV INVERTER #2

WARNING: WHEN GROUND FAULT IS INDICATED, THE NORMALLY GROUNDED CONDUCTORS MAY BE ENERGIZED AND UNGROUNDED.

NOTE: POINT OF INTERCONNECTION IN ELECTRICAL ROOM

INVERTER AC RATINGS:
AC OUTPUT CURRENT: 667A
NOMINAL AC VOLTAGE: 480V

5"

P

6"

1000kVA PAD-MOUNTED TRANSFORMER 480-25kV YY

V PRIMARY: 480V
V SECONDARY: 25kV
% IMPEDENCE:
INSTALLATION DATE:
SERVING:

4"

H

4"

SOLAR PV SYSTEM INTERACTIVE POINT OF INTERCONNECTION

AC OUTPUT CURRENT: 100A
NOMINAL AC VOLTAGE: 25000V

2½"

K

4"

SOLAR PV DATA ACQUISITION SYSTEM

1"

M

4"

DANGER!

ARC FLASH AND SHOCK HAZARD!

FOLLOW ALL REQUIREMENTS IN NFPA 70E FOR SAFE WORK PRACTICES AND FOR PERSONAL PROTECTIVE EQUIPMENT

3½"

R

4"

WARNING: BIPOLAR PHOTOVOLTAIC ARRAY

DISCONNECTION OF NEUTRAL OR GROUNDED CONDUCTORS MAY RESULT IN OVERVOLTAGE ON ARRAY OR INVERTER

2½"

G

6"

SOLAR PV SYSTEM MAIN AC DISCONNECT SWITCH

WARNING: ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION.

AC OUTPUT CURRENT: 667A
NOMINAL AC VOLTAGE: 480V

4½"

GENERAL NOTES FOR LABELS AND MARKINGS:

1. LABELS AND MARKINGS SHALL BE APPLIED TO THE APPROPRIATE COMPONENTS IN ACCORDANCE WITH THE NEC.

2. SOLAR MODULES AND INVERTER(S) ARE SUPPLIED FROM THE MANUFACTURER WITH MARKINGS PRE-APPLIED TO MEET THE REQUIREMENTS OF THE NEC.

3. TEXT LABELS WILL BE ETCHED WITH BLACK GRAPHICS ONTO $\frac{1}{16}$" YELLOW PLASTIC PLACARDS WITH AN $\frac{1}{8}$" FILLET ON ALL CORNERS. THE PLACARD, THE LABEL WILL BE ATTACHED TO THE APPROPRIATE COMPONENT ENCLOSURES IN CONSPICUOUS PLACES USING TWO PART EPOXY OR RIVETS.

4. LABEL "A" WILL BE EITHER ETCHED WITH BLACK GRAPHICS ONTO $\frac{1}{16}$" YELLOW PLASTIC PLACARD OR PRINTED ON A STICKER. THE LABEL WILL BE EFFECTIVELY BONDED TO THE EXISTING FACILITY SWITCHBOARD AND THE NEW PHOTOVOLTAIC SYSTEM DISCONNECT.

LABELS AND MARKINGS LEGEND:

A. PROVIDES THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC DISCONNECTING MEANS. THIS PLAQUE SHALL BE APPLIED TO THE MAIN SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC DISCONNECTING MEANS; ONE PER POCC.

B. PHOTOVOLTAIC COMBINER BOX GENERIC WARNING LABEL APPLIED TO ALL PHOTOVOLTAIC COMBINER BOXES; ONE PER COMBINER BOX. NOTE: THERE WILL BE 32 TOTAL LABELS FROM ONE PLUS TO SIXTEEN PLUS AND ONE MINUS TO SIXTEEN MINUS.

D. PHOTOVOLTAIC INVERTER OPERATING SPECIFICATIONS LABEL APPLIED TO ALL INVERTERS.

G. LABEL TO BE PLACED ON MAIN AC DISCONNECT.

H. LABEL REQUIRED BY UTILITY TO FIT ON OR NEAR THE INTERCONNECTION POINT.

K. SOLAR PV DATA ACQUISITION SYSTEM BOX GENERIC LABEL; ONE PER BOX

M. TO BE PLACED ON INVERTER, DISCONNECTS, ROOF JUNCTION BOXES & COMBINER BOXES.

N. TO BE PLACED ON ALL AC ACCUMULATION PANELS

P. TO BE PLACED ON TRANSFORMERS

R. BIPOLAR ARRAY WARNING TO BE PLACED ON INVERTER, DISCONNECTS, COMBINER BOXES AND REMOTE PV TIE.

ORIGINAL SHEET SIZE
36X24
SHOULD MEASURE 1":

SCALE
NTS

DRAWING
E10

SYSTEM DESCRIPTION			
DESIGN WIND SPEED:	90 MPH	HIGH TEMP:	37° C
EXPOSURE CATEGORY:	C	LOW TEMP:	-15° C
MODULE TYPE:	TRINA TSM-235PA05 (235W DC STC)		
QUANTITY:	5,376 MODULES (384 STRINGS OF 14)		
SYSTEM SIZE (DC):	1.26MW		
MOUNTING SYSTEM:	GROUND MOUNT		
TILT ANGLE:	25°		
ARRAY AZIMUTH:	180°		
MONITORING SYSTEM:	DRAKER		
INVERTER(S):	[2] AE 500kW		

NOTES:
1. 192 STRINGS TO [2] AE 500 kW INVERTERS. [24] COMBINER BOXES OF 16 STRINGS EACH.
2. CURRENT ZONING CLASSIFICATION: AGRICULTURAL

30' B.R.L.

4X7 RACK (TYP.)

4X14 RACK (TYP.)

S 76°57'18" E

1615.74'

16'-6" 11'-1" 16'-6" 11'-1" 16'-6" 11'-5" 13'-6"

30'-0" TYP.

74'-5"

19'-2"

19'-2"

INVERTER ENCLOSURE

19'-2"

29'-11"

44'-10"

57'-11"

6'-5"

7'-4"

57'-11"

19'-2"

19'-2"

19'-2"

141'-10"

116'-3"

WoA

Oh

W

N

ORIGINAL SHEET SIZE
36X24
SHOULD MEASURE 1":

SCALE
1"=30'-0"

DRAWING
S1

SYSTEM DESCRIPTION			
DESIGN WIND SPEED:	90 MPH	HIGH TEMP:	37° C
EXPOSURE CATEGORY:	C	LOW TEMP:	-15° C
MODULE TYPE:	TRINA TSM-235PA05 (235W DC STC)		
QUANTITY:	5,376 MODULES (384 STRINGS OF 14)		
SYSTEM SIZE (DC):	1.26MW		
MOUNTING SYSTEM:	GROUND MOUNT		
TILT ANGLE:	25°		
ARRAY AZIMUTH:	180°		
MONITORING SYSTEM:	DRAKER		
INVERTER(S):	[2] AE 500kW		

NOTES:
1. 192 STRINGS TO [2] AE 500 kW INVERTERS. [24] COMBINER BOXES OF 16 STRINGS EACH.
2. CURRENT ZONING CLASSIFICATION: AGRICULTURAL

30' B.R.L.

S 76°57'18" E

1615.74'

4X7 RACK (TYP.)

4X14 RACK (TYP.)

CB1-

CB1+

16'-6" 11'-1" 16'-6" 11'-1" 16'-6" 11'-5" 13'-6"

30'-0" TYP.

74'-5"

CB2-

CB2+

CB3-

19'-2"

CB3+

RPT1 & ASSOC. JUNCTION BOXES

REMOTE PV TIE (TYP. x2)

CB4-

CB4+

19'-2"

CB5-

CB5+

CB6-

CB6+

INVERTER ENCLOSURE

ENVIRONMENTAL SENSORS

CB7-

CB7+

CB8-

19'-2"

CB8+

CB9-

CB9+

29'-11"

44'-10"

CB10-

CB10+

CB11-

RPT2 & ASSOC. JUNCTION BOXES

MOUNT DISCONNECTING COMBINER BOXES TO VERTICAL POSTS, (TYP. x24)

57'-11"

6'-5"

7'-4"

57'-11"

19'-2"

CB11+

19'-2"

CB12-

19'-2"

CB12+

UNDERGROUND MV CONDUIT RUN AND UNDERGROUND DATA CABLE RUN. DATA AND MV CABLES MUST BE IN SEPARATE TRENCHES. SEE (3/E7)

EXACT CONDUIT ROUTES TO BE DETERMINED BY INSTALLER.

WoA

Oh

w

141'-10"

116'-3"

SCALE
1"=30'-0"

DRAWING
S2

APPENDIX B

As mentioned in Chapter 3 of the Draft EA, preliminary analysis determined implementation of the No Action and Proposed Action alternatives had the potential to result in impacts to Water Quality and Resources, Biological Resources, Cultural Resources, Health and Safety, and Utilities, and these resources were discussed in detail in the Draft EA. Preliminary analysis predicted no impacts to land use, air quality, noise, socioeconomics, transportation, and hazardous and toxic substances; accordingly, these resources are not discussed in detail in the main body of the Draft EA, but are instead briefly summarized in this appendix.

Land Use. Land use generally refers to human modification of land, often for residential, commercial, industrial, agricultural, recreational, and economic purposes, but may also refer to the use of land for preservation or protection of natural resources such as wildlife habitat, vegetation, or unique features. The Army Real Property Master Plan (RPMP) process is specified in AR 210-20 (DA, 2005a), and the RPMP Technical Manual (DA, 2008) provides assistance in developing an RPMP at Army installations. An Army RPMP determines the types of activities that are allowed or that protect specially designated or environmentally sensitive uses. In compliance with AR 210-20, Fort Stewart maintains an RPMP that assists efficient and appropriate land use and development decisions across the Installation.

The majority of land use at Fort Stewart (68%, or 191,000 acres) is classified as Ranges and Training Land (or Operational Lands), which is divided into 120 training areas (including live-fire ranges, non-live-fire ranges, and special training areas such as confidence courses, driver's training, or land navigation). The remaining land is utilized for cantonment/living and other uses, such as recreation (or Non-Operational Lands). The process through which lands historically used for training activities may be transferred to other uses (AR 350-19) involves Garrison Command, environmental and planning staff, and Installation Management Command. This extensive process ensures the continued safety of the site as the Army's needs transform. The threshold limit for land use will be met if the proposed future use is incompatible with surrounding land uses or results in a change of land use that will degrade mission-essential training.

Anti-reflective crystalline solar PV panels possess reflectivity properties from 2% to 7%, meaning 92-98% of the light from the sun's rays are absorbed into the solar panel and not reflected out. These reflectivity levels are below those of water, wood shingles, bare soil, and vegetation (EITF, 2012). The Proposed Action A-SAIA Site is within the Range and Training (Operational) land use category, is designated as an impact area for small arms ranges, has limited uses due to the SDZ associated with each range, but is not within an SDZ itself. Therefore its post-project use as a PV System site is compatible with surrounding land uses and will not degrade mission-essential training. The Proposed Action A-SW Quadrant Site and -WWTP Site are both currently categorized as Cantonment (Non-Operational Lands), will remain so post-project, and their use as PV System sites will be compatible with surrounding land uses. The Proposed Action B Site is categorized as Operational land. Flight training routes at nearby WAAF will not be adversely impacted by solar reflectivity of the completed PV System, maintaining compatibility with surrounding land uses and not degrading mission-essential training in the vicinity of the project. Therefore, impacts to land use as a result of the overall proposed action are not anticipated, and this resource is not carried forward for further analysis.

Air Quality. Air quality in a given location is described by the concentration of various pollutants in the atmosphere, with the significance of the pollutant concentration determined by comparing it to the Federal and State National Ambient Air Quality Standards (NAAQS). Fort Stewart's air quality is better

than the NAAQS and implementation of the proposed action at any alternative location will not change this status. Therefore, this resource is not carried forward for further analysis.

Groundwater Quality. There are several aquifer systems on Fort Stewart, to include the Floridan aquifer system, from which the Installation withdraws its drinking water. No impacts to these groundwater resources are expected, as impacts will be temporary and limited to tree removal, grubbing, and grading, actions for which impacts are routinely minimized through standard erosion and sedimentation control measures. Therefore, this resource is not carried forward for further analysis.

Noise. No noise impacts are expected from implementation of the proposed action because the associated construction, operation, and site maintenance will occur during normal business hours; no sensitive noise receptors will be in the vicinity of the alternative locations; the noise generated (during timber harvest, improvements) will be temporary in duration; and because the proposed action will not change the existing noise contours on or off the Installation. As such, no impacts are expected, and this resource is not carried forward for further analysis.

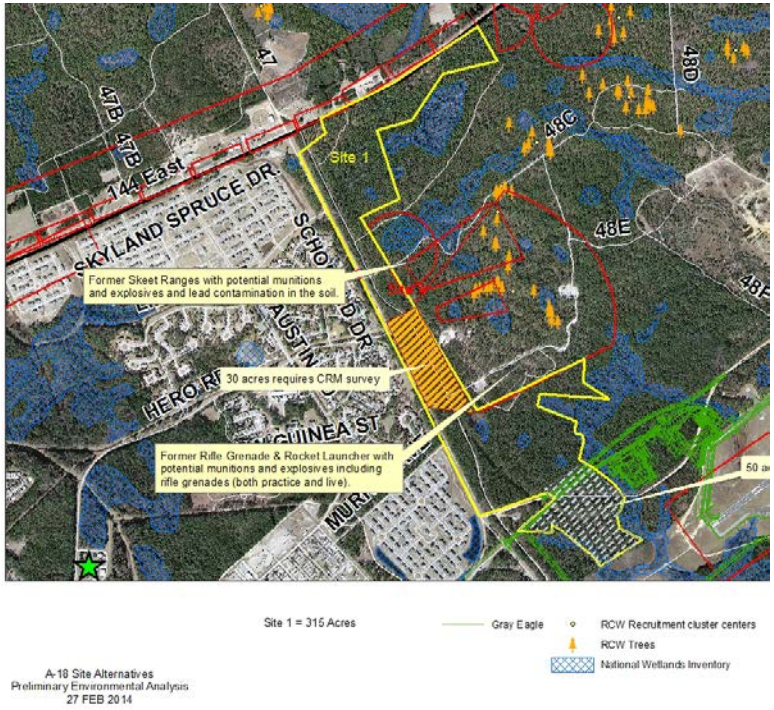
Recreation & Visual Resources. Recreational opportunities on Fort Stewart are abundant and include hunting, fishing, and camping. Visual resources include the natural and manmade physical features that give a particular landscape its aesthetic character and value. The alternative location is utilized for military training and airfield activities only and is not utilized for recreation, negating potential impacts to this resource. Although additional tree removal will occur, it will not detract from the existing viewshed and overall aesthetics at this location, which will remain surrounded by vegetation and forested lands. Therefore, this resource is not carried forward for further analysis.

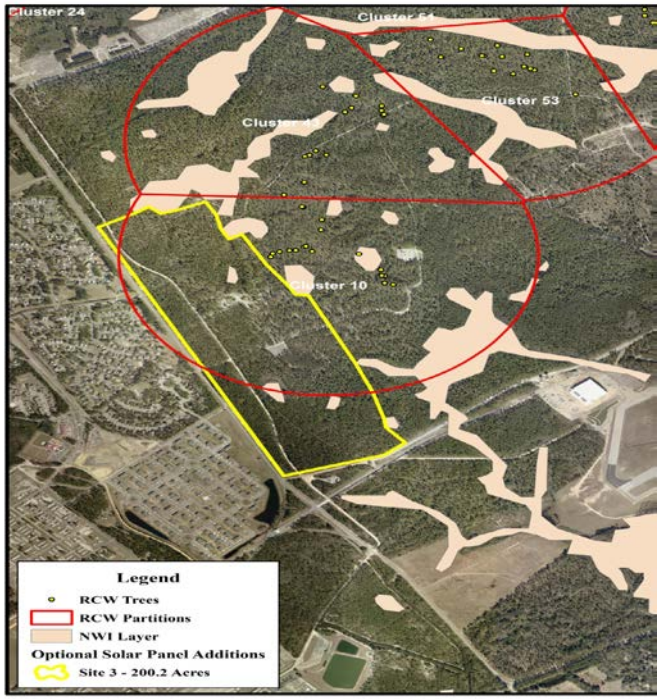
Socioeconomics/Environmental Justice/Protection of Children. Socioeconomics focuses on the general features of the local economy that could be affected by the proposed action and its alternatives. Completion of the proposed action is not expected to result in the creation of new jobs and/or a change in the local economy. Because the proposed action will occur entirely within the Installation boundary, where no low-income or minority populations reside, and where there are no children residing and/or frequently visiting, environmental justice and protection of children are also not carried forward for further analysis.

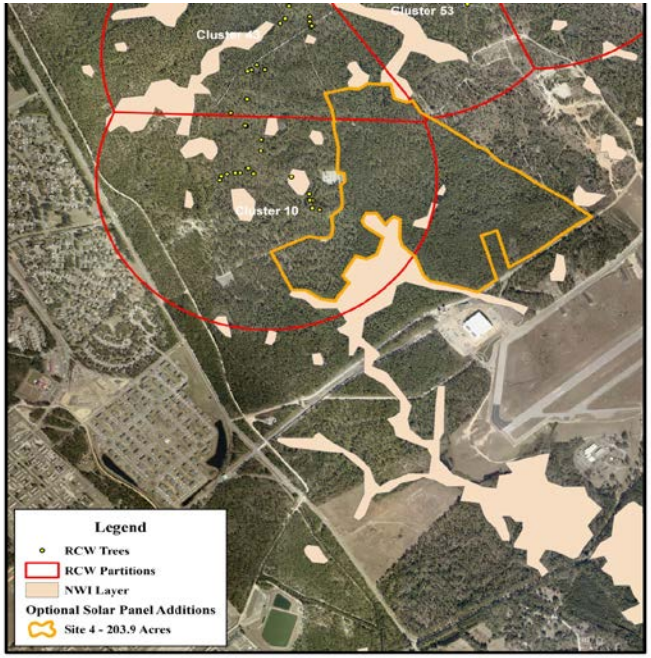
Provision for the Handicapped. The Americans with Disabilities Act (ADA) guarantees equal opportunity for individuals with disabilities in public accommodations, employment, transportation, state and local government services, and telecommunications. The proposed action does not come under the purview of the ADA; therefore, this provision has been eliminated from further analysis in this EA.

Transportation. Impacts are not expected because contractors and operators will be required to coordinate with the Installation prior to occupying the sites. A plan will be developed to ensure on-Post traffic remains unhindered.

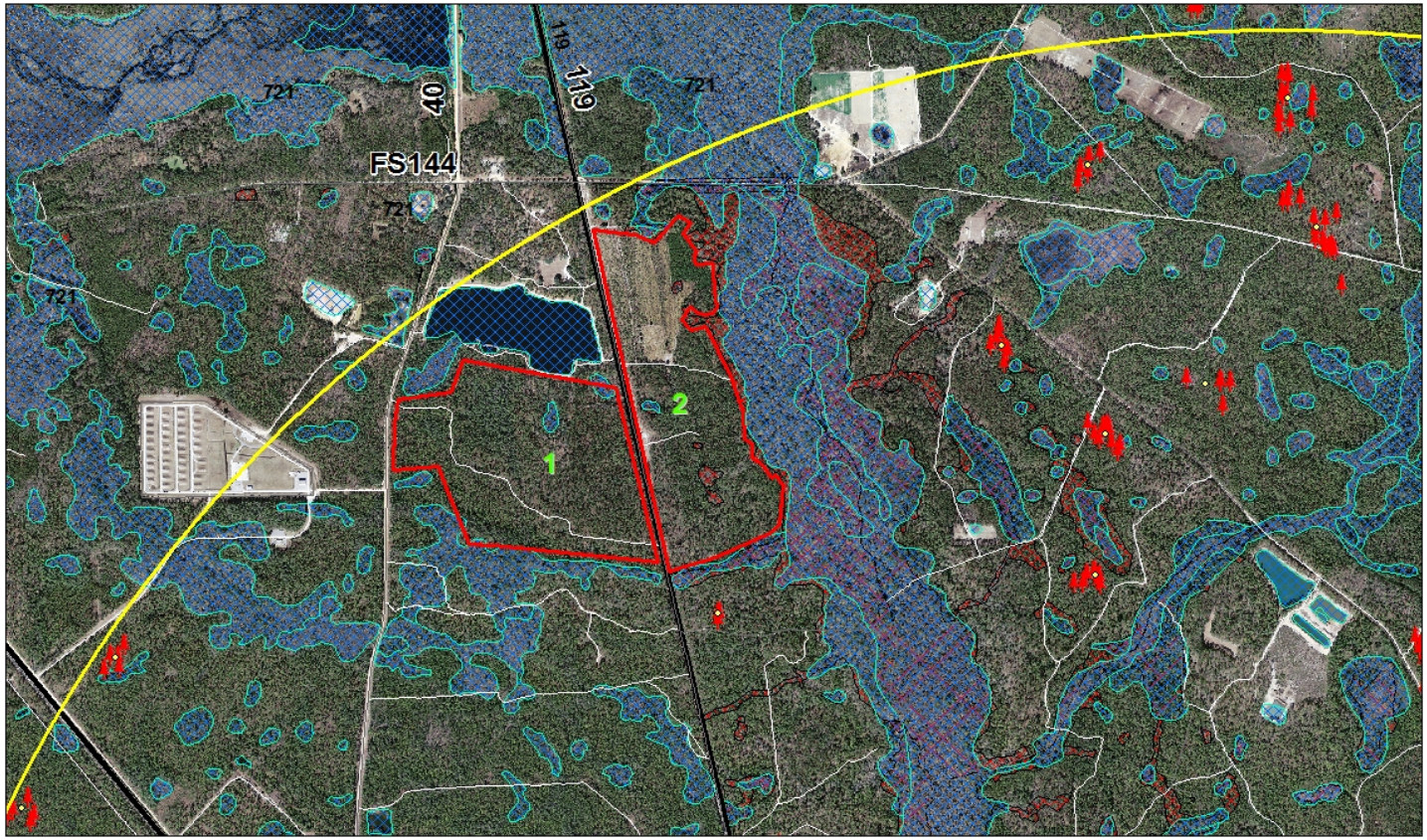
APPENDIX C



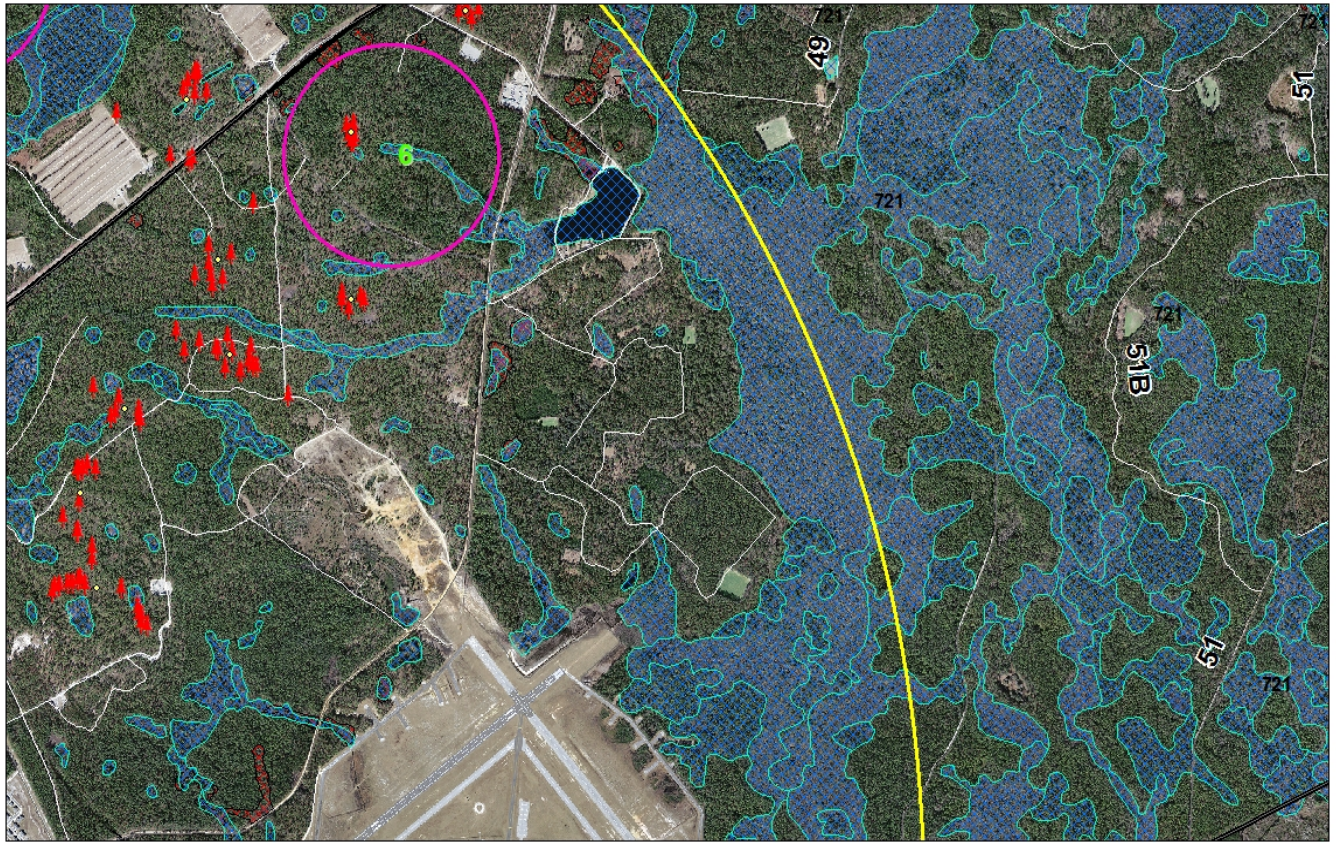




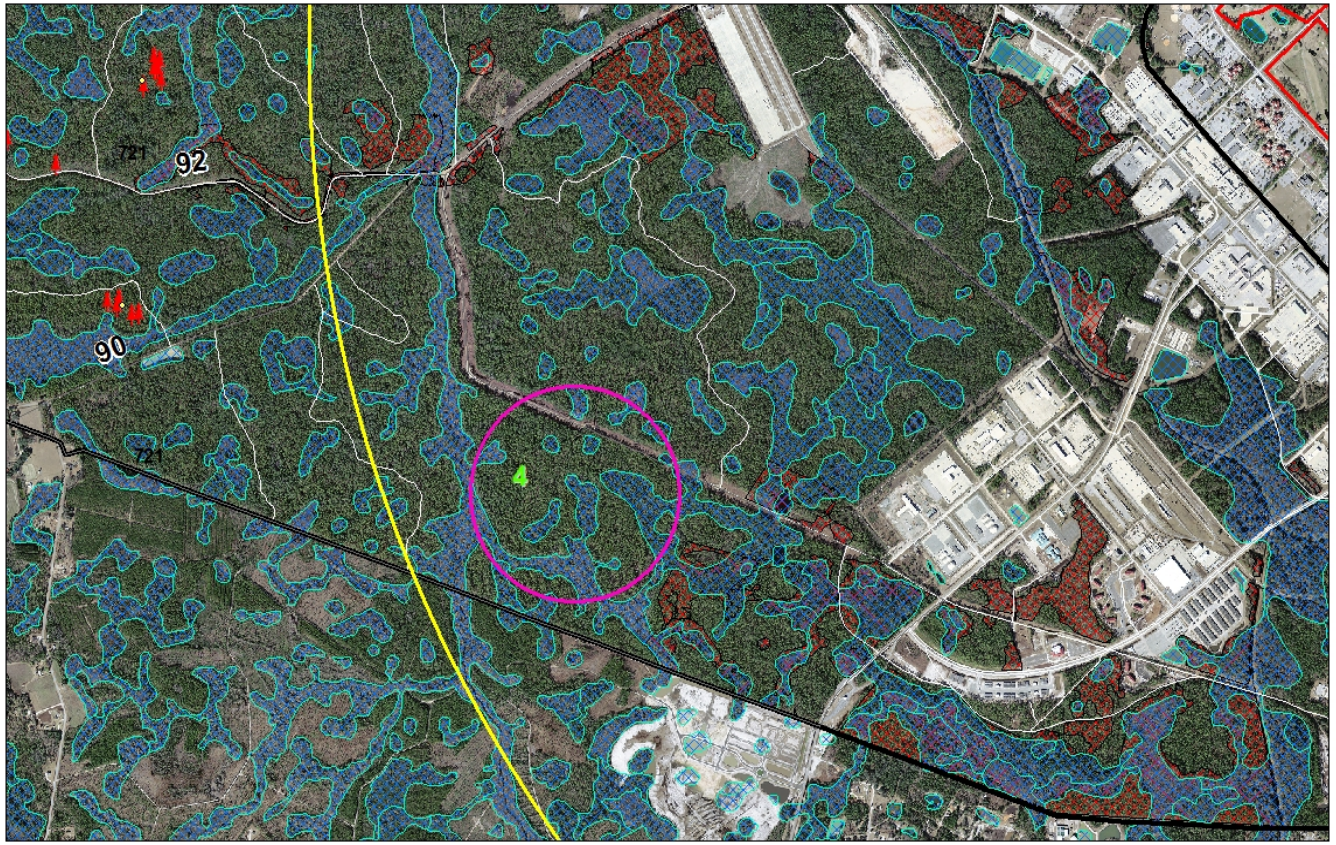
A18: The Army considered several 150-200 acre contiguous parcels within Training Areas (TA) A-18, near Fort Stewart (FS) Road 47, that met the criteria for Parcel Size and Topography, Grid Access/Electrical Tie in Potential, Environmental Factors (minimal), and Safety, as shown in these figures. However, implementation of the Proposed Action A or B at these locations would have resulted in the elimination of several key tank trails (47, 48, 48C, and 48E) and thus disrupted the Installation's training mission, failing the Mission Compatibility/Land Use criteria. For this reason, this potential alternative location was dismissed from further consideration.



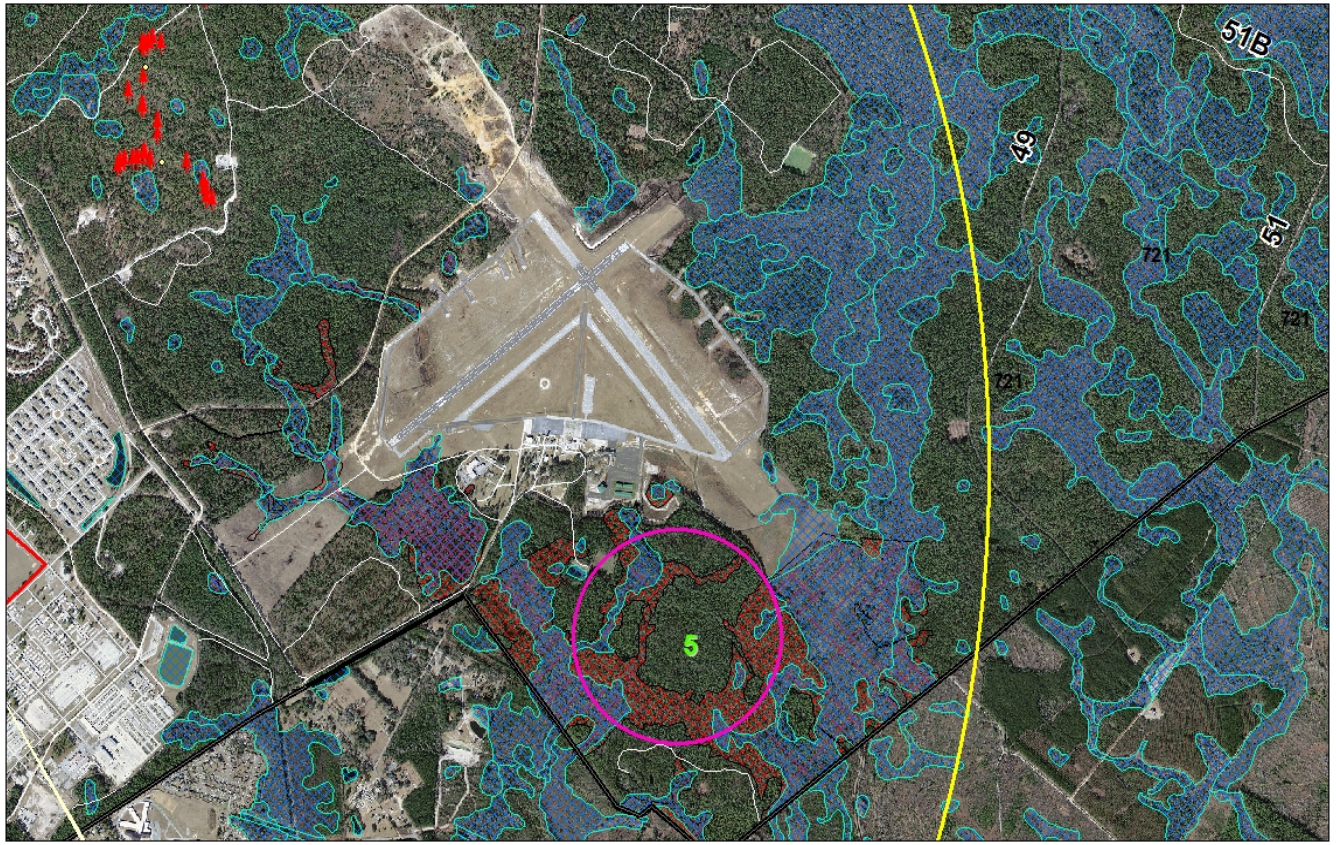
E-1 and B-7: The Army considered 200 acre contiguous parcels within TAs E-1 (left) and B-7 (right), which met the screening criteria for Parcel Size and Topography, Mission Compatibility/Land Use, and Grid Access/Electrical Tie in Potential. Both, however, failed the criteria for Environmental Factors and Safety. Specifically, implementation of the Proposed Action A or B at these locations had the potential to fragment the Installation's population of the federally-listed Red-cockaded woodpecker, as well as involve a lengthy military munitions removal and remediation/cleanup process. For this reason, these potential alternative locations were dismissed from further consideration.



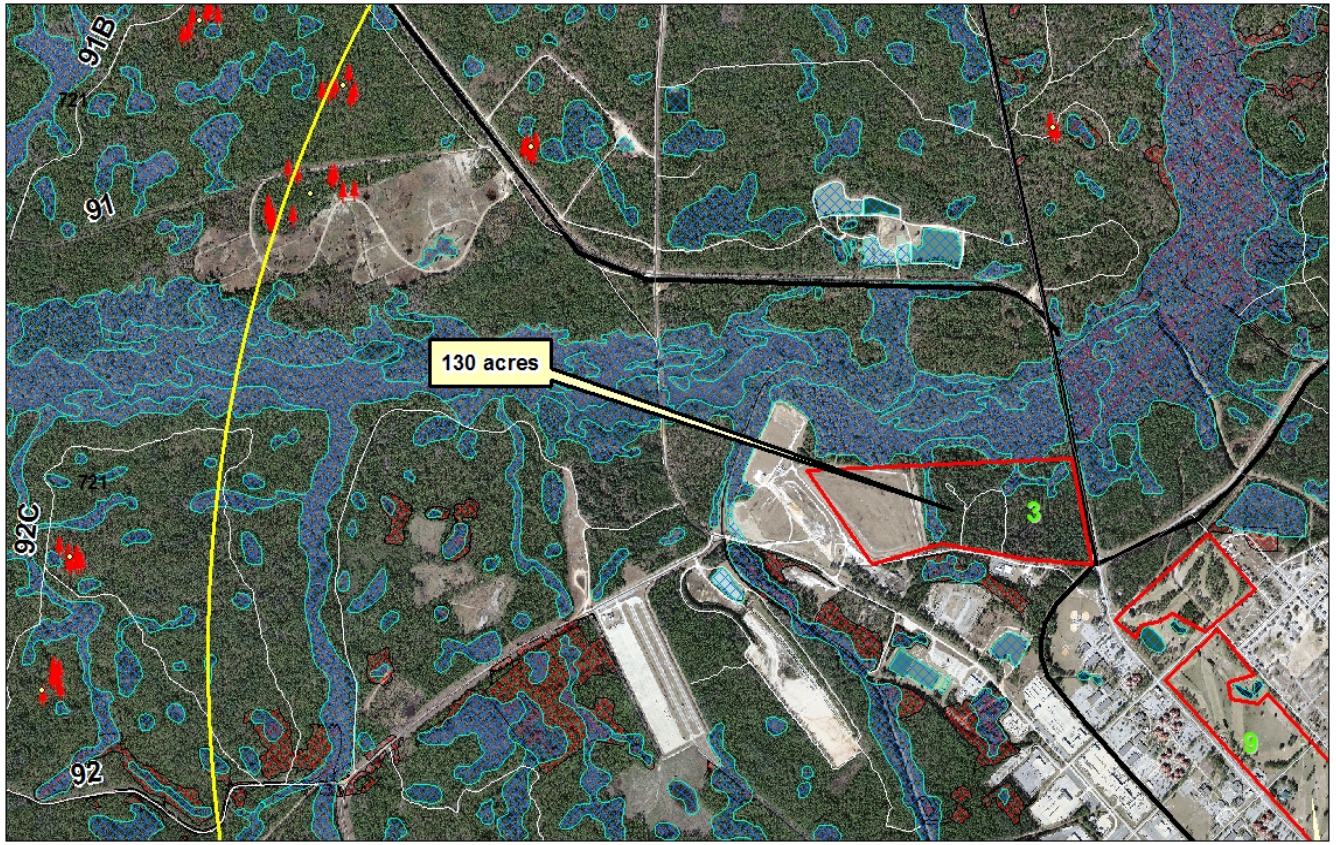
A-17: The Army considered a 200 acre contiguous parcel in TA A-17 that met the screening criteria for Parcel Size and Topography, Mission Compatibility/Land Use, Grid Access/Electrical Tie in Potential, and Safety. However, it failed the criteria for Environmental Factors. Specifically, although implementation of Proposed Action A or B at this alternative location would likely avoid adverse wetland impacts, it would have required the removal of a RCW cluster and formal consultation with the U.S. Fish and Wildlife Service (USFWS). For this reason, this potential alternative location was dismissed from further consideration.



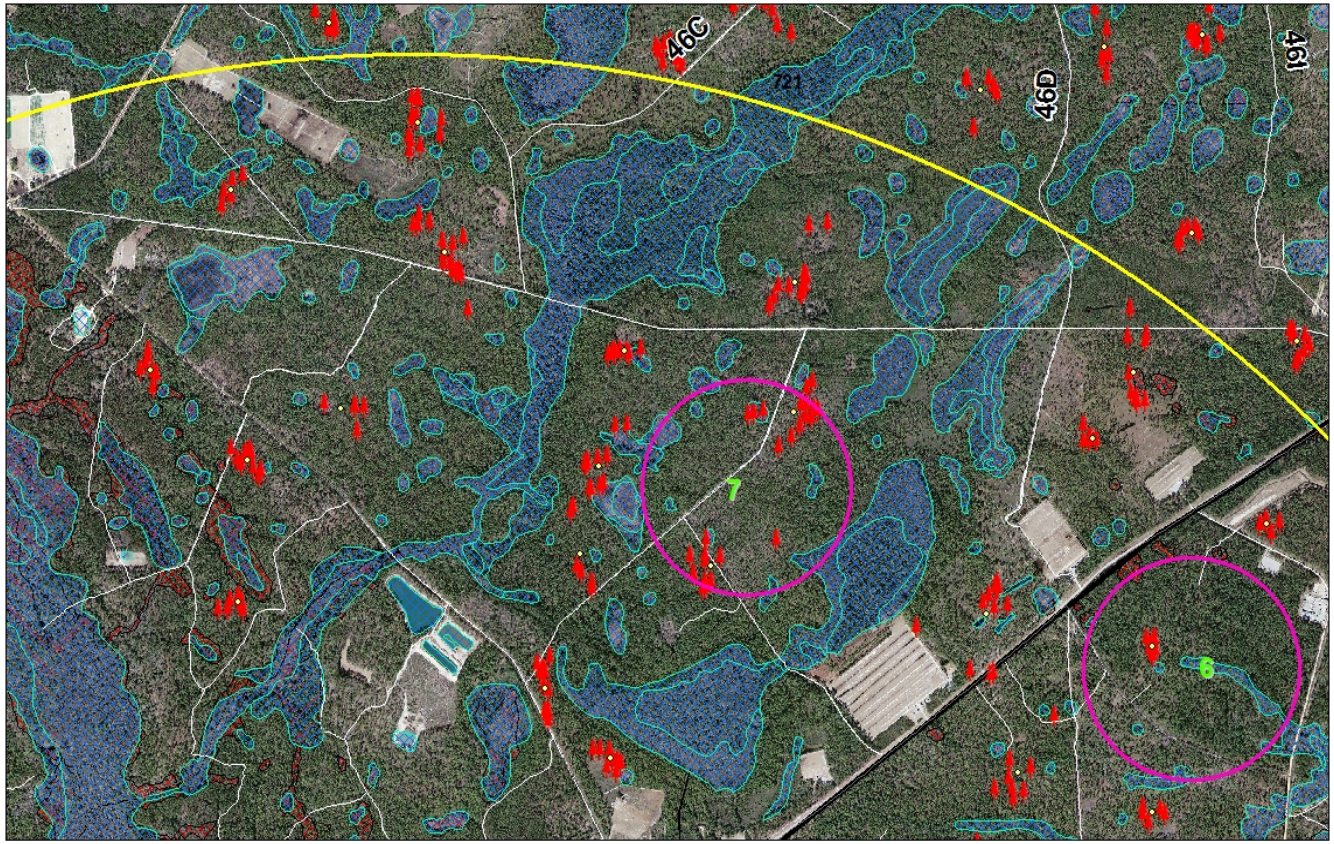
D-1: The Army considered a 200 acre contiguous parcel in TA D-1 that met the screening criteria for Parcel Size and Topography, Mission Compatibility/Land Use, and Grid Access/Electrical Tie in Potential. However, the Army could not find 200 contiguous acres that avoided and minimized additional wetland impacts to the greatest extent practicable. In addition, there were also Safety criteria concerns at this location, as some of the land within TA D-1 is a former anti-aircraft range, requiring the lengthy MMRP process. For this reason, this potential alternative location was dismissed from further consideration.



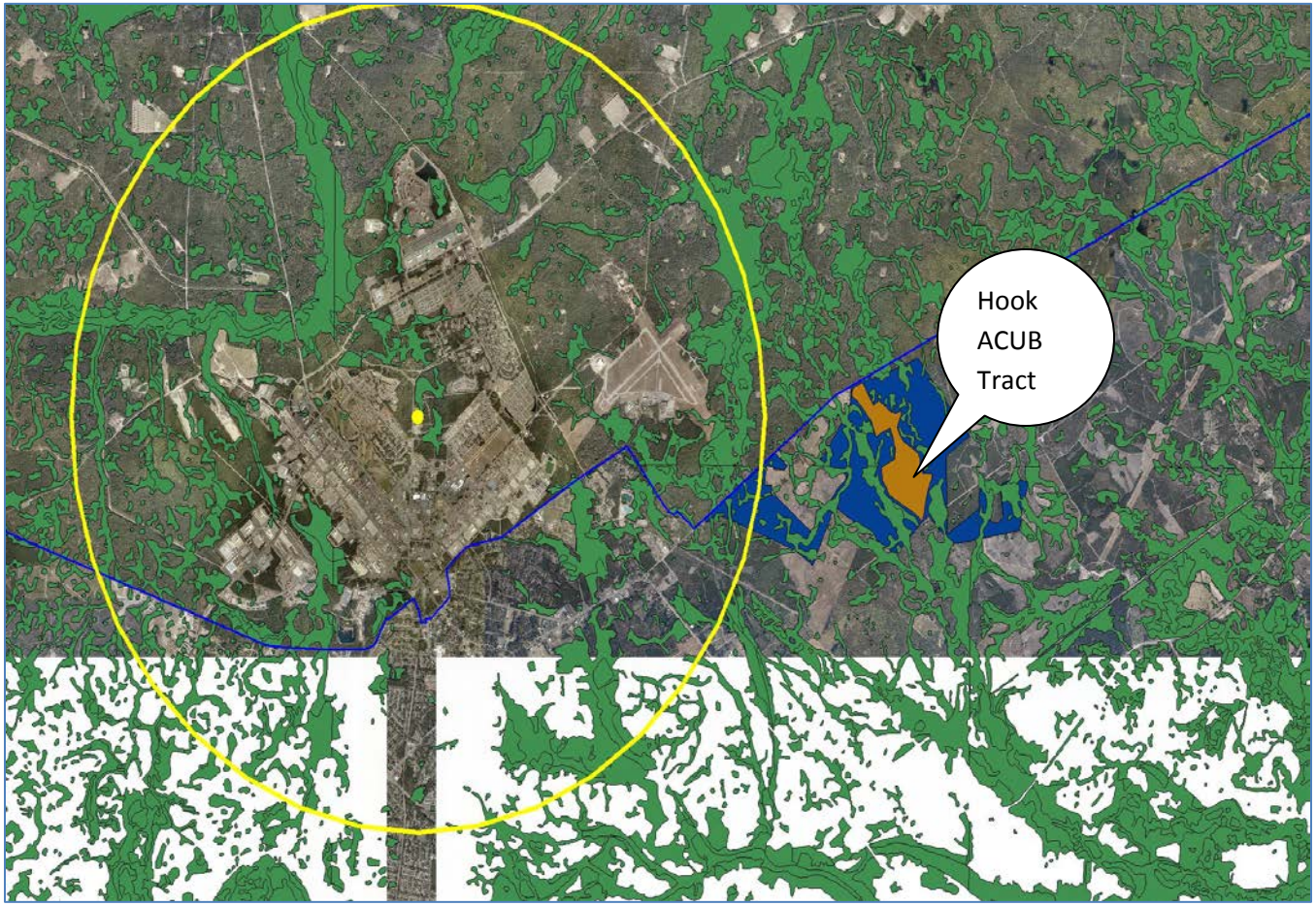
Wright Army Airfield (WAAF) : The Army considered a 200 acre parcel near the joint-use development facilities of WAAF and the MidCoast Regional Airport. Initially, the site seemed feasible as it met the criteria for Parcel Size and Topography, Mission Compatibility/Land Use, Safety, and Grid Access/Electrical Tie in Potential. The site, however, is segmented into several small upland parcels which. Therefore, even though it totals 200 acres, it does not meet the requirement for contiguous 200 acres, and this contiguous layout criterion will not allow for the avoidance and minimization of wetland systems. For this reason, this potential alternative location was dismissed from further consideration.



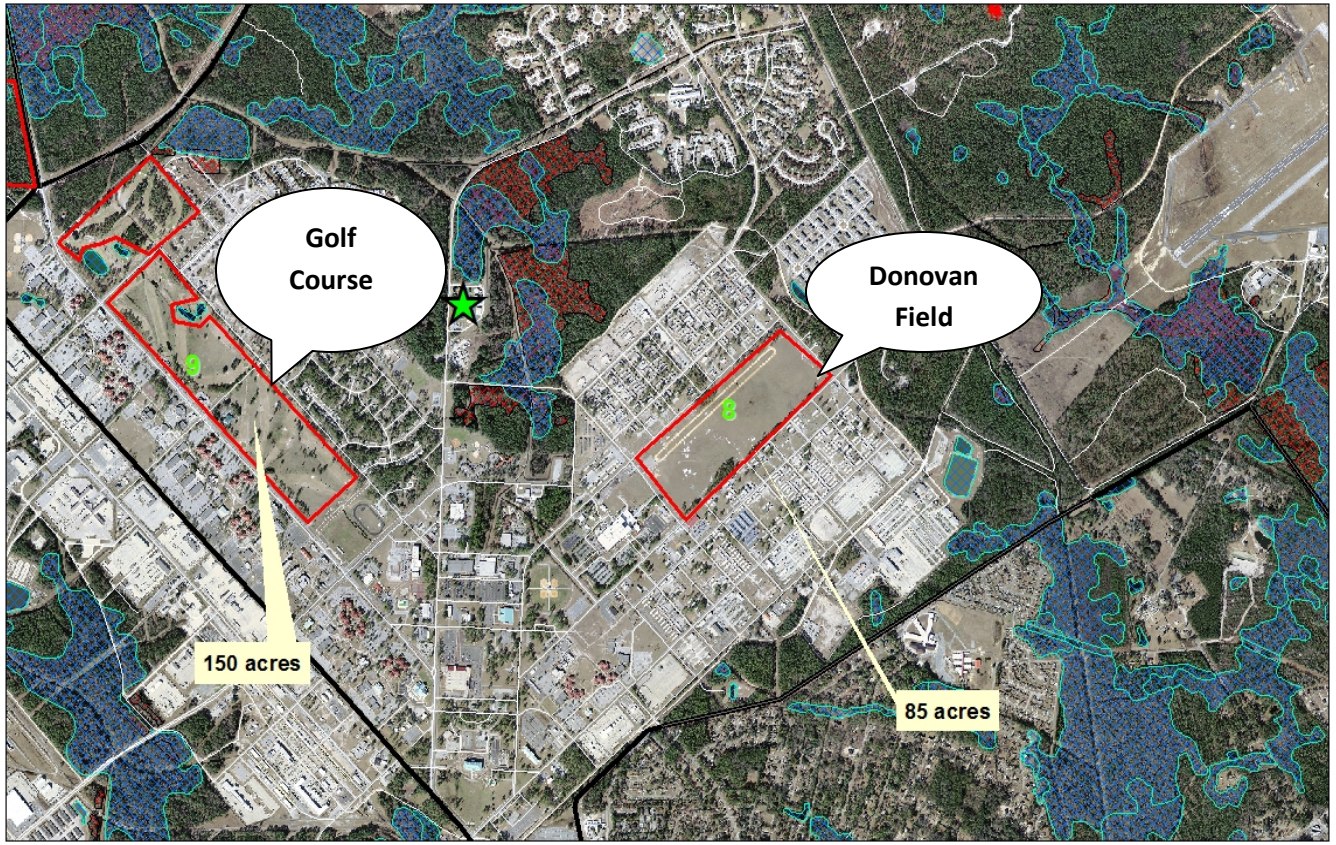
Landfill: The Army considered a 130 acre portion of the South Central Landfill facility, even though the location only met the screening criteria for Grid Access/Electrical Tie in Potential. Initial investigations determined that construction at this location could interfere with ongoing methane monitoring investigations at the landfill, and that construction must be preceded by completion of the MMRP process, failing the Safety and Mission Compatibility/Land Use criteria. For this reason, this potential alternative location was dismissed from further consideration.



Small Arms Impact Area (SAIA): The Army considered a 200 acre contiguous parcel it's SAIA that met the screening criteria for Parcel Size and Topography, Mission Compatibility/Land Use, and Grid Access/Electrical Tie in Potential. Initially analysis indicated avoidance of sensitive environmental resources, to include wetlands; however, upon further evaluation, it was determined that implementation of Proposed Action A or B at this location would remove several RCW clusters, requiring formal USFWS consultation. The site is also located in the surface danger zones of the small arms ranges that comprise this impact area, failing the criteria for Safety, and increasing the potential for damage to the solar panels if they were constructed at this site. For this reason, this potential alternative location was dismissed from further consideration.



Army Compatible Use Buffer (ACUB): The Army considered the "Hook" parcel as a viable alternative, which is located in the Installation's ACUB, as its 240 acres of upland acreage met the screening criteria for Parcel Size and Topography, Mission Compatibility/Land Use, Safety, and Environmental Factors. However, the parcel is five miles from the Fort Stewart substation and outside of the criteria's four mile radius, failing the Grid Access/Electrical Tie in Potential criteria. For this reason, this potential alternative location was dismissed from further consideration.



Donovan Field/Golf Course: The Army considered implementing Proposed Action A or B on Donavan Field (far right) or the Fort Stewart Golf Course (far left). Donovan Field is currently used as a parade field for the GA Army National Guard and a running track, and the Golf Course is used by many Soldiers, Family Members, Civilians, and Retirees. Both sites met the screening criteria for Grid Access/Electrical Tie in Potential, Safety, and Environmental Factors, as they are located within the cantonment area and avoid all sensitive environmental resources, with no adverse Safety concerns. However, they did not meet the criteria for Mission Compatibility/Land Use, as the loss of their use in support of troop morale and recreation was deemed detrimental. For this reason, this potential alternative location was dismissed from further consideration.

APPENDIX D

United States Department of the Interior

Fish and Wildlife Service
105 West Park Drive, Suite D
Athens, Georgia 30606
Phone: (706) 613-9493
Fax: (706) 613-6059

West Georgia Sub-Office
Post Office Box 52560
Fort Benning, Georgia 31995-2560
Phone: (706) 544-6428
Fax: (706) 544-6419

Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

June 5, 2014

Mr. Robert R. Baumgardt
U.S. Army Installation Management Command
Directorate of Public Works
1587 Veterans Parkway
Fort Stewart, Georgia 31314
Attention: Mr. Tim Beaty

Re: USFWS Log Number 2014-0660

Dear Mr. Baumgardt:

Thank you for your April 21, 2014, letter and attached Biological Assessment concerning the proposed construction of a 30-megawatt Solar Photovoltaic Panel Array on Fort Stewart, Georgia. The project area covers an area not to exceed 200 acres of forested and non-forested habitat in Training Area A18 in Liberty County, Georgia. We have reviewed the information you provided and submit the following comments under provisions of the Endangered Species Act of 1973 (ESA), as amended; (16 U.S.C. 1531 et seq.).

According to the information you provided, the project may impact foraging partitions of four RCW Clusters (Clusters 10, 43, 53, and 402), but a foraging analysis shows that these clusters will still have adequate foraging habitat post project. The proposed project area lies within the frosted flatwoods salamander Habitat Management Unit, but only 14.3% of the secondary buffer of a highly likely breeding pond will be impacted by the project. The nearest known sighting of an eastern indigo snake (*Drymarchon couperi*) is 1.5 miles east-northeast of the proposed project site and the project will not impact any existing gopher tortoise burrows. The nearest known sighting of foraging wood storks is at least one mile south of the project site. The nearest smooth coneflower population is 18.3 miles northwest of the project area. Therefore, we agree with your determination that this proposed project is not likely to adversely affect any federally listed endangered or threatened species. Also, we believe that the requirements of section 7 of the ESA have been satisfied and no further

consultation is required. However, obligations under section 7 of the ESA must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner which was not considered in this assessment; or (3) a new species is listed or critical habitat determined that may be affected by the identified action.

We appreciate the opportunity to comment during the planning stages of your project. If you have any questions, please contact our Coastal Georgia Sub Office staff biologist, Robert Brooks, at 912-832-8739, extension 107.

Sincerely,

Strant Colwell

Strant Colwell
Coastal Georgia Supervisor

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
DIRECTORATE OF PUBLIC WORKS
1587 VETERANS PARKWAY
FORT STEWART, GEORGIA 31314

REPLY TO
ATTENTION OF

Directorate of Public Works

U.S. Department of the Interior
Fish and Wildlife Service
ATTN: Strant Caldwell
4980 Wildlife Drive, NE
Townsend, GA, 31331

Dear Mr. Caldwell:

Fort Stewart proposes to clear, grub, and grade an area to facilitate construction of a 30-megawatt Solar Photovoltaic Panel Array in Fort Stewart Training Area A-18 in Liberty County, Georgia. A Biological Assessment has been prepared in accordance with the requirements of the Endangered Species Act. The conclusion reached in this Biological Assessment is that the proposed action may affect, but is not likely to adversely affect, the red-cockaded woodpecker, wood stork, eastern indigo snake, or frosted flatwoods salamander. The proposed action will not affect the smooth coneflower, or the Atlantic or shortnose sturgeon. Fort Stewart reached its red-cockaded woodpecker recovery goal of 350 potential breeding groups during the breeding season of 2012 and has enough suitable or potentially suitable habitat to support 657 red-cockaded woodpecker clusters post project.

If additional information is needed, please contact Mr. Tim Beaty, DPW, Fish and Wildlife Branch at telephone (912) 767-7261. Your continued cooperation and assistance are appreciated.

Sincerely,

Thomas C. for
Robert R. Baumgardt
Director, Public Works

Enclosures

BIOLOGICAL ASSESSMENT

Construction of a 30-Megawatt Solar Photovoltaic Array

Fort Stewart, Georgia

Prepared By:

GARY C. HART
Wildlife Biologist
Fish and Wildlife Branch
Environmental Division
Directorate of Public Works
Fort Stewart, GA

Reviewed By:

LAWRENCE D. CARLILE
Chief, Planning and Monitoring
Fish and Wildlife Branch
Environmental Division
Directorate of Public Works
Fort Stewart, GA

Submitted By:

for TIMOTHY A. BEATY
Chief, Fish and Wildlife Branch
Environmental Division
Directorate of Public Works
Fort Stewart, GA

Approved By:

THOMAS C. FRY
Chief, Environmental Division
Directorate of Public Works
Fort Stewart, GA

PROJECT DESCRIPTION

Fort Stewart proposes to clear, grub, grade, and maintain a 200-acre area in Fort Stewart Training Area (FSTA) A-18 to facilitate the construction of a 30-Megawatt Solar Photovoltaic Array (SPVA; Figure 1). Construction of access trails to the SPVA and a storm water drainage system will be included in this project. Fort Stewart personnel have selected 2 possible sites (Site A and B; Figure 1). Final site design may select Site A, Site B, or a combination of Sites A and B with an overall footprint not to exceed 200 acres. Assessments for Site A and B are included in this Biological Assessment. After the final site determination, the U.S Fish and Wildlife Service (USFWS) will be notified of the final project area. If upon final design a combination of Site A and B is required the RCW Matrix will be applied to the new site and the USFWS will be provided with the RCW Matrix report based on the new location. The purpose of the proposed action is to help the Army implement its Energy Initiatives Task Force Strategy to reach its goal of deploying 1 gigawatt of renewable energy by 2025. The possible project areas consist of forested and non-forested habitat.

SITE DESCRIPTIONS

Forested habitat within the proposed action areas comprises a canopy dominated by slash pine (*Pinus elliottii*), longleaf pine (*P. palustris*), loblolly pine (*P. taeda*), and pond pine (*P. serotina),* with a mid-story of sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), live oak (*Q. virginiana*), wax myrtle (*Myrica cerifera*), and red bay (*Persea borbonia*). The groundcover is characterized by saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), shiny blueberry (*Vaccinium myrsinites*), huckleberry (*Gaylusaccia frondosa*), runner oak (*Q. pumila*), bracken fern (*Pteridium aquilinum*) and Carolina jessamine (*Gelsemium sempervirens*). Wetland systems adjacent to the proposed project are dominated by pond cypress (*Taxodium ascendens*), blackgum (*Nyssa sylvatica*), pond pine, red maple (*Acer rubrum*), and red bay. The soil types within the project areas are Ocilla loamy fine sand, Fuquay loamy sand, Pelham loamy sand, Echaw and Centenary fine sands, Mandarin fine sand, Albany loamy fine sand, and Rutlege fine sand.

SPECIES CONSIDERED

The following species occur, or may occur, in the proposed action area and were considered in this assessment:

Red-cockaded woodpecker (*Picoides borealis*) – Endangered
Wood stork (*Mycteria americana*) – Endangered
Eastern indigo snake (*Drymarchon couperi*) – Threatened
Frosted flatwoods salamander (*Ambystoma cingulatum*) – Threatened
Atlantic sturgeon (*Acipenser oxyrinchus*) – Endangered
Shortnose sturgeon (*Acipenser brevirostrum*) – Endangered
Smooth coneflower (*Echinacea laevigata*) – Endangered

DISCUSSION

Red-cockaded Woodpecker

Fort Stewart Fish and Wildlife Branch personnel surveyed the project area for red-cockaded woodpeckers (RCW) and RCW cavity trees. There were no RCW cavity trees detected in the action area. Site A will affect the foraging partitions of RCW Clusters 10, 43, 53, and 402 (Figure 2). Site A will impact 164.1 acres of existing RCW Habitat Management Unit (HMU; Table 1) and 89.1 acres of existing non-forested habitat as identified in Fort Stewart's Integrated Natural Resources Management Plan (INRMP; Directorate of Public Works 2001; Figure 3). Site B will affect the foraging partitions of RCW Clusters 10 and 43 (Figure 2). Site B will impact 194.0 acres of existing RCW Habitat Management Unit (HMU; Table 2) and 89.1 acres of existing non-forested habitat as identified in the INRMP (Figure 3).

A May 2005 memorandum from Noreen Walsh, Assistant Regional Director, Ecological Services, U.S. Fish and Wildlife Service, Atlanta, GA entitled "Implementation Procedures for Use of Foraging Habitat Guidelines and Analysis of Project Impacts under the Red-cockaded Woodpecker (*Picoides borealis*) Recovery Plan: Second Revision" (USFWS 2003), describes parameters and concepts to be considered when federal properties analyze projects that may affect RCWs. There are potentially 5 levels of analysis to consider in the preparation of biological assessments, with the analyses conducted in the following order: 1) foraging partition, 2) group, 3) neighborhood, 4) population, and 5) recovery unit. The results of each level of analysis predicate the necessity to conduct subsequent analyses.

Foraging Partition Level Analysis

The RCW Recovery Plan requires that a foraging analysis be performed for all active RCW clusters that may be impacted by a project using the Foraging Matrix (hereafter, Matrix) analysis tool. Federal agencies must perform an analysis of all affected foraging partitions to determine if they meet the RCW Recovery Standard (RS) of Good Quality Foraging Habitat (GQFH). If foraging partitions do not meet the RS, then the foraging partition must be analyzed to determine if it meets the Managed Stability Standard (MSS). The pre-project foraging partitions of Clusters 10, 43, 53, and 402 were analyzed and no stand within the foraging partitions met the RS (i.e., there were no acres of GQFH), therefore we analyzed the post-project stands receiving direct impact (i.e., loss of habitat in a foraging partition) using the MSS. Clusters 10, 43, 53, and 402 exceeded the MSS (Table 3 and 4).

All affected clusters will have adequate foraging resources available to them post-project with the selection of either Site A or B, and will continue to meet the MSS. Fort Stewart reached its recovery goal of 350 potential breeding groups during the breeding season of 2012 and at the end of the 2013 breeding season had increased to 366 PBGs. Fort Stewart has enough suitable or potentially suitable RCW HMU to support 657 RCW clusters post project. Because the foraging partitions pass MSS, the group, neighborhood, and population analyses are not warranted. The proposed action may affect, but is not likely to adversely affect the RCW.

Wood Stork

No wood storks were observed in the proposed project area, nor have they been observed foraging in the action area. No wetlands will be affected by the proposed action, but the nearest area where foraging wood storks have been observed is approximately 1.0 mile south of the action area in Holbrook Pond (Figure 4). Because of its distance from confirmed wood stork sightings and the implementation of erosion and sedimentation control measures, the proposed action may affect, but is not likely to adversely affect, the wood stork.

Eastern Indigo Snake

The project area does not lie within eastern indigo snake HMU. No eastern indigo snakes have ever been detected in the project area. The nearest known occurrence of an eastern indigo snake is 1.5 miles east-northeast of the action area in FSTA B-2 (Figure 4). This project will not affect gopher tortoise habitat or any gopher tortoise burrows. The nearest known gopher tortoise habitat is between both Sites in FSTA A-18 (Figure 4). The proposed project may affect, but is not likely to adversely affect, the eastern indigo snake.

Frosted Flatwoods Salamander

The entire project area lies within the frosted flatwoods salamander (FFS) HMU. Site A will impact 3 potential dry breeding pond buffers as identified in a FFS habitat review project (Palis 2002). Site B will impact 1 highly likely breeding pond buffer and 5 potential dry breeding pond buffers (Figure 5). If Site B is selected the action would require the possible clear cut of 14.3% of the secondary buffer for the highly likely breeding pond. The proposed project will impact greater than 25% of the buffers for the potential FFS breeding ponds. A ground survey was conducted on the potential breeding ponds and their surrounding buffers. It was determined that due to the lack of graminaceous plants in both the ponds and buffer areas it is unlikely that any FFS are associated with these ponds. Records indicate 1 historical (1970's) road-crossing sighting of a FFS in FSTA B-4 near the project area (Figure 5). Project design will incorporate delineation of wetland areas, a 25-foot vegetative buffer around all wetlands, and protection measures as required by the Clean Water Act and the Georgia Erosion and Sedimentation Control Act to ensure appropriate wetland protection. Therefore, the proposed actions will not result in significant erosion, run-off, or other off-site impacts that might affect FFS habitat or ponds. Due to less than a 25% impact to the highly likely buffer, the findings of the ground survey, the distance of the project area from the confirmed breeding pond, and the implementation of previously mentioned control measures, the proposed action may affect, but is not likely to adversely affect, the FFS or the landscape's ability to support FFS.

Atlantic and Shortnose Sturgeon

Telemetry and capture data, which was collected as part of Fort Stewart's shortnose sturgeon monitoring program (1991-2000), indicate that these fish do not travel >2 miles up the Canoochee River or 20 miles up the Ogeechee River from the Canoochee/Ogeechee River confluence. The Canoochee River flows diagonally through the Installation while the Ogeechee River forms much of the Installation's eastern boundary. The proposed project lies >15 miles

west-southwest of the nearest Atlantic and shortnose sturgeon occurrences on the Canoochee River. Due to unsuitable habitat and the distance between the proposed project area and documented sturgeon sightings, this project will not affect the Atlantic and shortnose sturgeon.

Smooth Coneflower

No smooth coneflowers were observed in the proposed project areas and the soils types are unsuitable for this species (USFWS 1995). Fort Stewart's population of the smooth coneflower is located in FSTA F-11, approximately 18.3 miles northwest of the project area (Figure 6). Because of its distance from the confirmed smooth coneflower population and the acidic soil types present in the action area, the proposed action will not affect the smooth coneflower.

CUMULATIVE EFFECTS

There are no foreseeable state, local, tribal, or private actions that would have a cumulative adverse effect when combined with impacts associated with the proposed action.

CONCLUSION

The proposed action may affect, but is not likely to adversely affect, the RCW, wood stork, eastern indigo snake, or FFS. The proposed action will not affect the smooth coneflower or the Atlantic and shortnose sturgeon because habitat in the action area is not suitable for these species. Critical habitat has been proposed for the FFS, but no FFS critical habitat was proposed for designation on Fort Stewart. Other listed species that occur on Fort Stewart have no critical habitat designated, so no critical habitat will be destroyed or modified adversely. The Army did not draw on the regulatory definition of destruction or adverse modification of critical habitat at 50 CFR 402.02 with respect to the conclusions and analysis made in this BA. Instead, the Army has incorporated into the critical habitat effects analysis the conservation of species principals found in the statutory provisions of the Endangered Species Act.

Figure 1. Location of Proposed A-18 SPVA, Fort Stewart, Georgia.

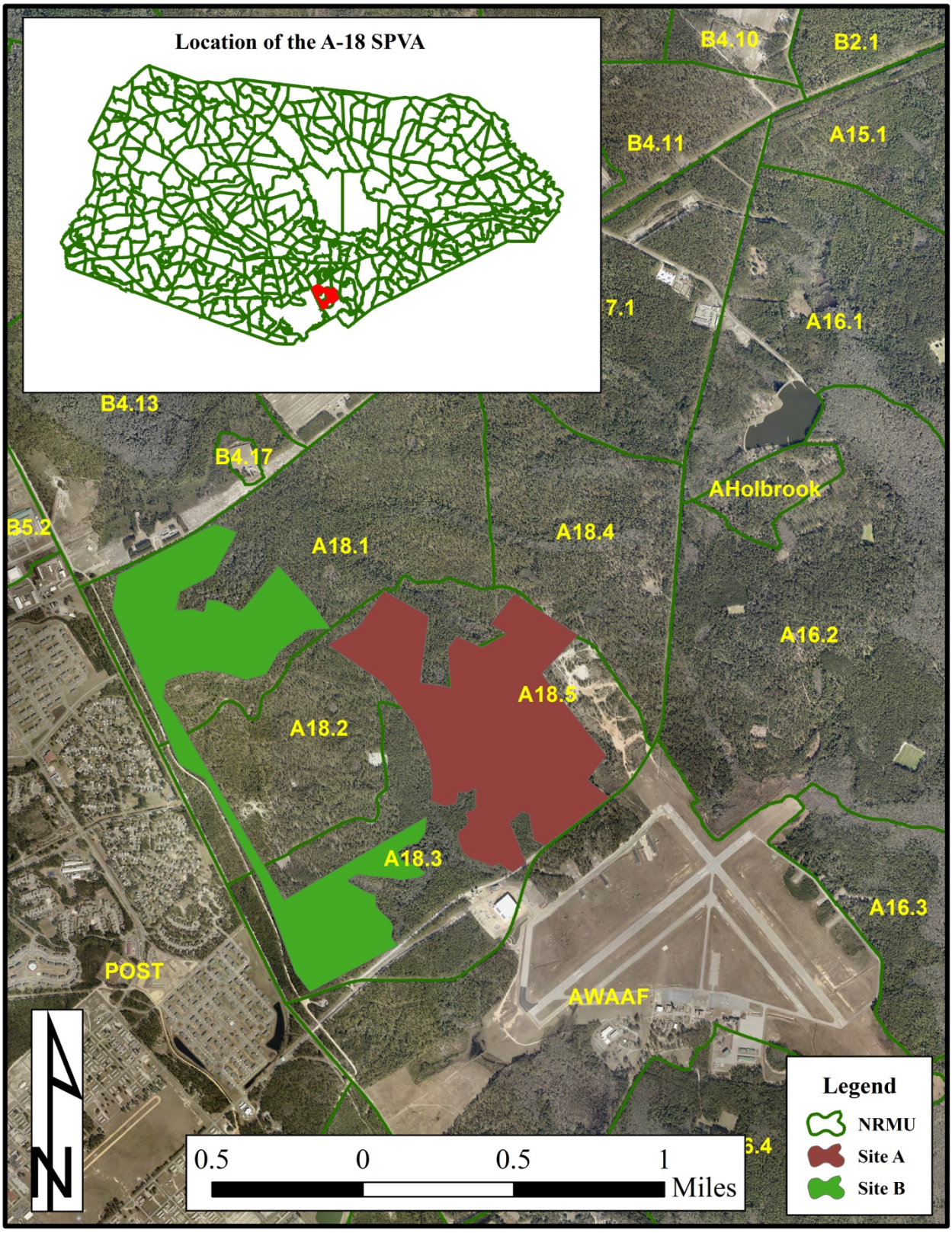


Figure 2. Red-cockaded Woodpecker Clusters Affected by the Proposed Project, Fort Stewart, Georgia.

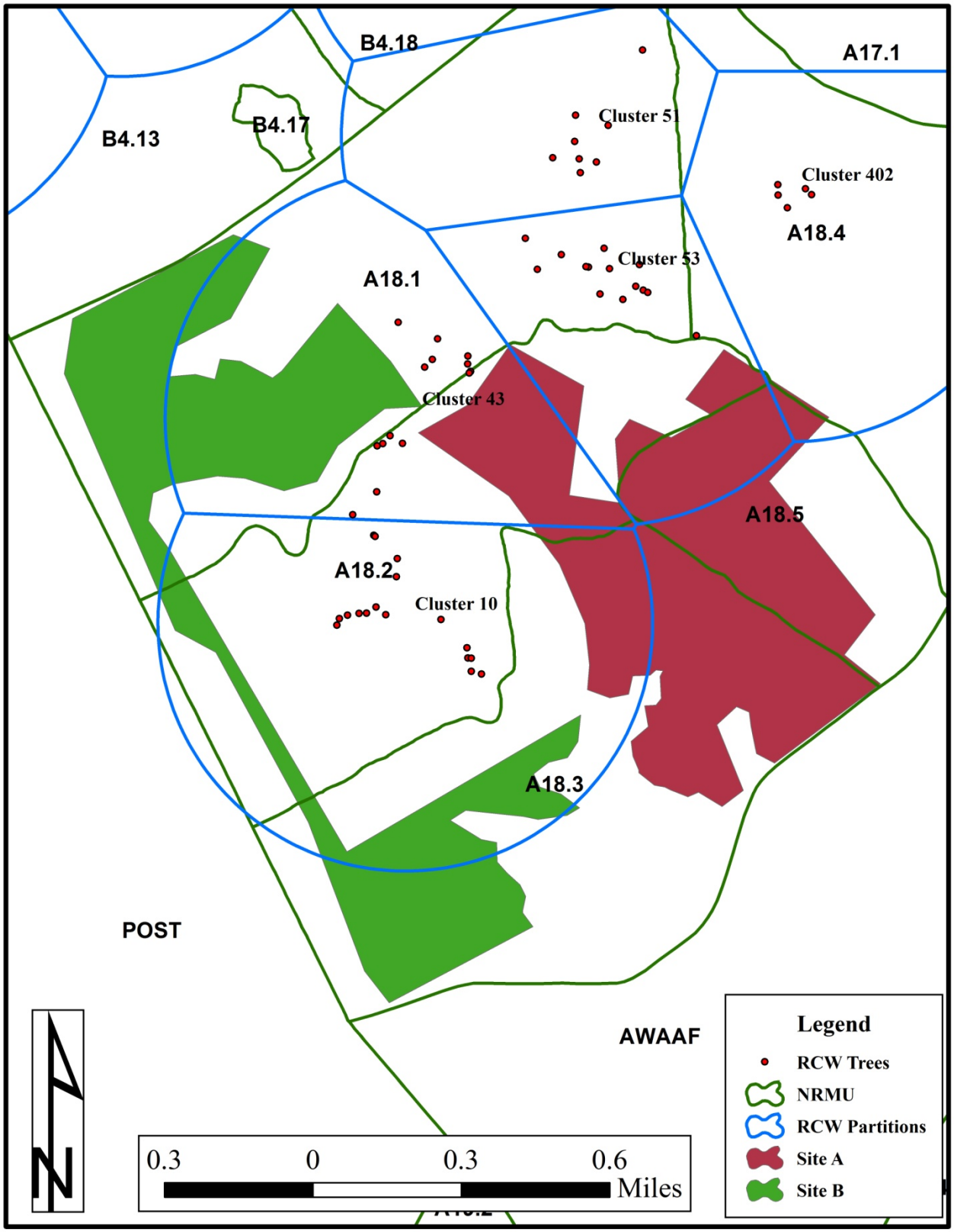


Figure 3. Red-cockaded Woodpecker Habitat Management Unit Affected by the Proposed Project, Fort Stewart, Georgia.

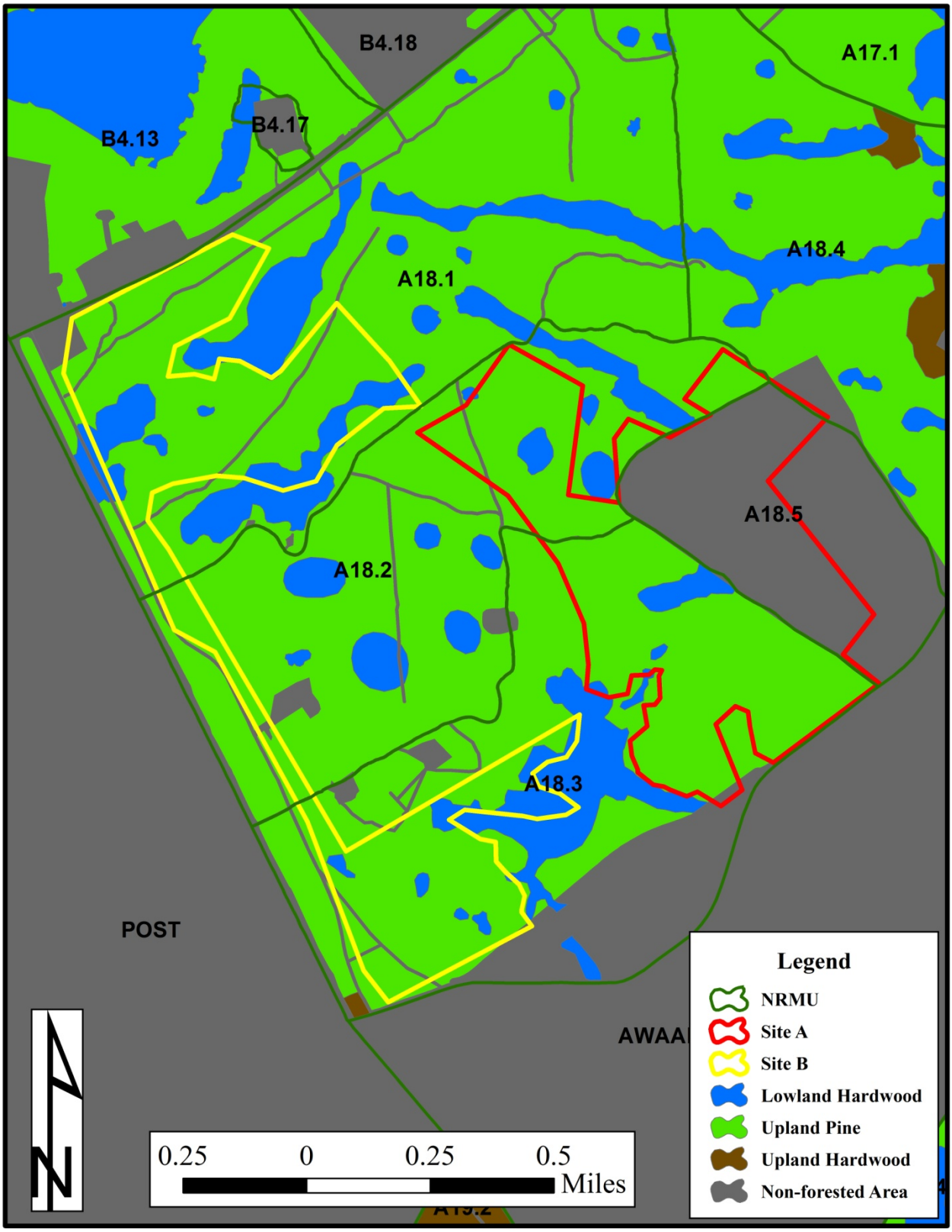


Figure 4. Wood Stork, Eastern Indigo Snake, and Gopher Tortoise Occurrences Near the Project Area, Fort Stewart, Georgia.

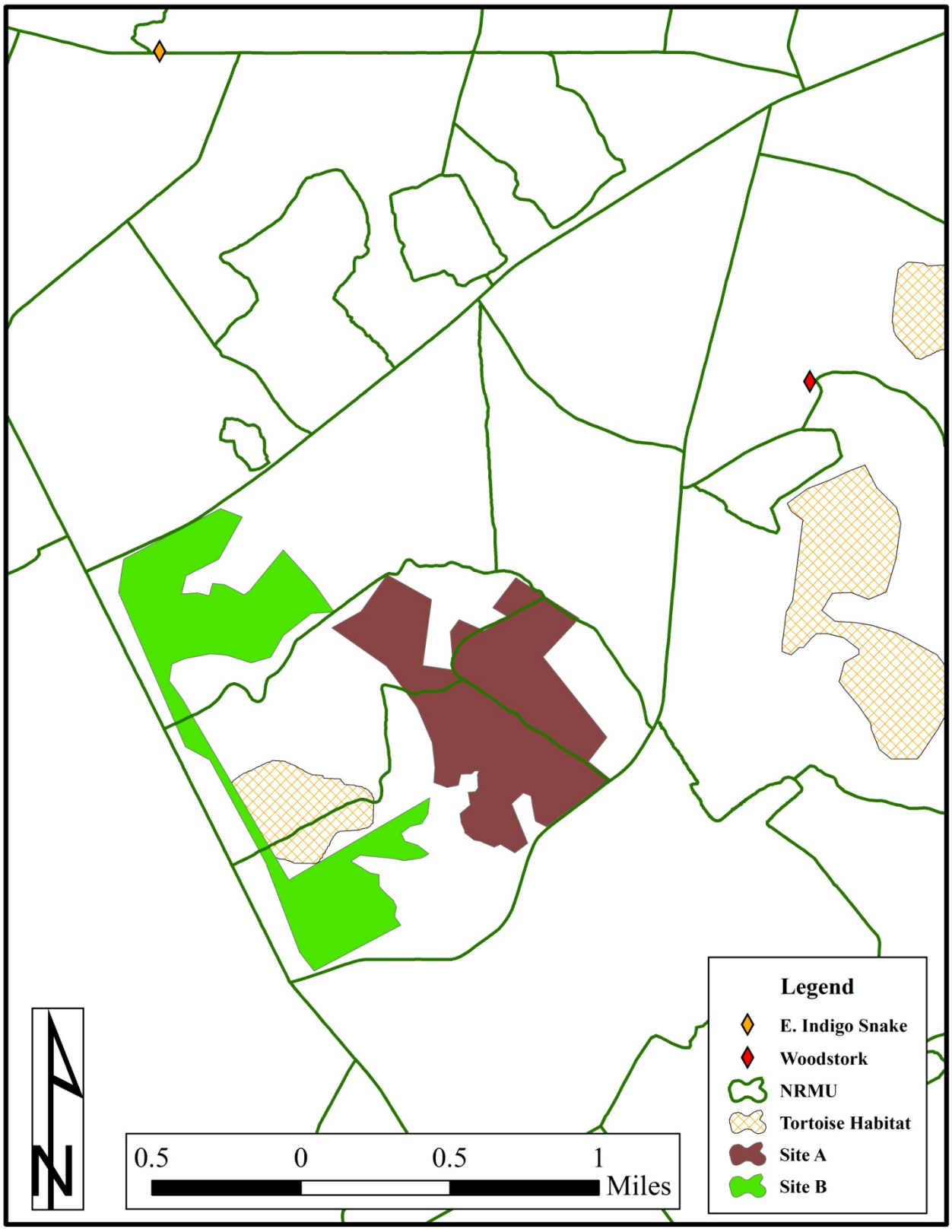


Figure 5. Frosted Flatwoods Salamander Habitat Impacted by Project Area, Fort Stewart, Georgia.

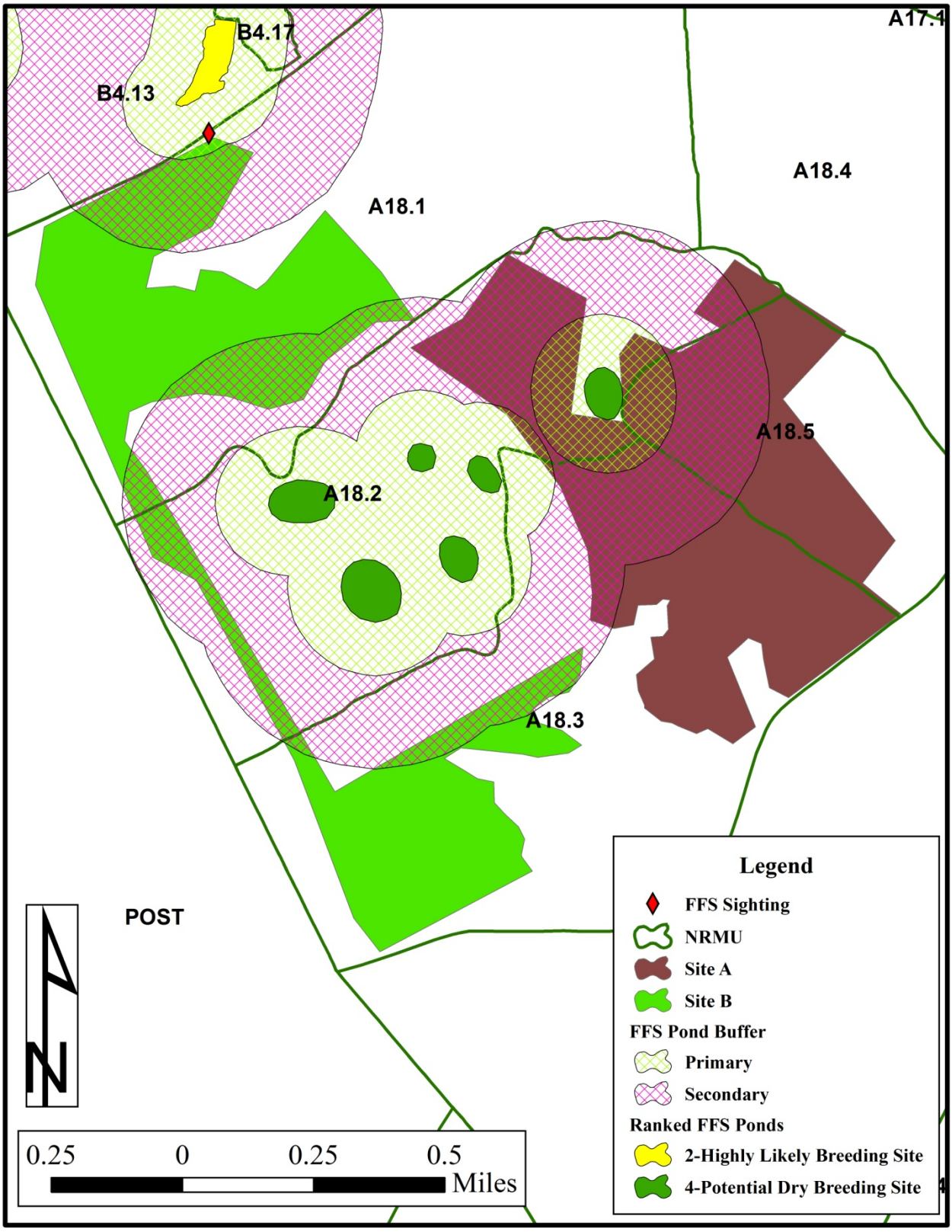


Figure 6. Smooth Coneflower Population, Fort Stewart, Georgia.

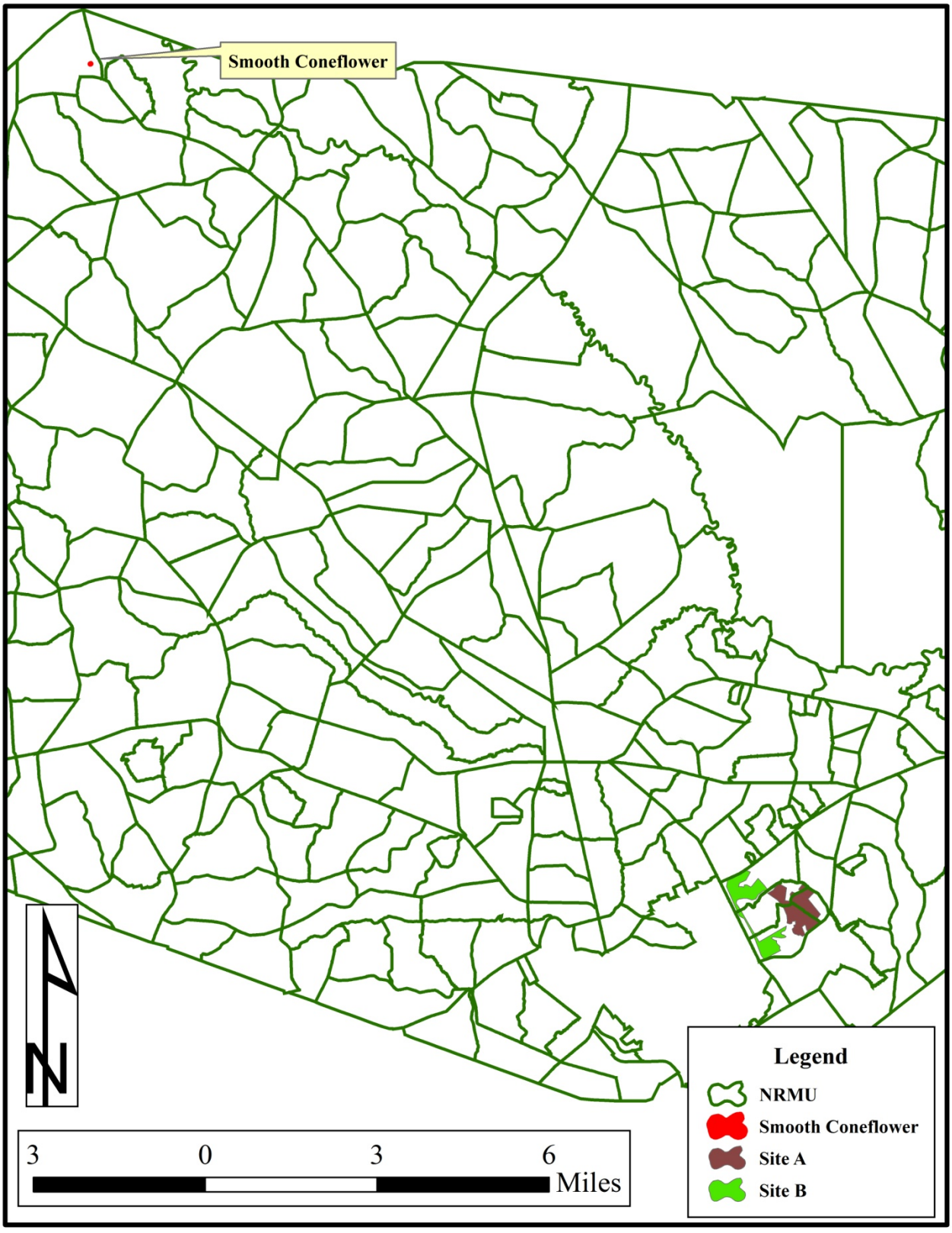


Table 1. Red-cockaded Woodpecker Habitat Management Unit Acres Affected per Partition Site using Site A.

RCW Partition	HMU Acres Affected
10	30.2
43	37.3
53	16.0
402	0.1
Non-Partition	80.4

Table 2. Red-cockaded Woodpecker Habitat Management Unit Acres Affected per Partition Site using Site B.

RCW Partition	HMU Acres Affected
10	39.6
43	65.0
Non-Partition	89.5

Table 3. Site A - Managed Stability Values for Affected Red-cockaded woodpecker Partitions, Post-project.

Partition 10 - Partition Values (MS)

04/09/2014
09:17:07AM

Total size of Partition (acres)	380.00	**Total Acres Forage Habitat 1/4-Mile***	5.53
Total Pine BA (sq feet) Pines > 10" dbh	5,937.50	**Contiguous Foraging Acres***	95.94
Total Acres Forage Habitat	98.19	**Meets Mananaged Stability**	Yes

Partition 43 - Partition Values (MS)

04/09/2014
09:18:07AM

Total size of Partition (acres)	274.62	**Total Acres Forage Habitat 1/4-Mile***	51.23
Total Pine BA (sq feet) Pines > 10" dbh	7,224.33	**Contiguous Foraging Acres***	141.34
Total Acres Forage Habitat	143.45	**Meets Mananaged Stability**	Yes

Partition 53 - Partition Values (MS)

04/09/2014
09:19:10AM

Total size of Partition (acres)	175.88	Total Acres Forage Habitat 1/4-Mile*	72.70
Total Pine BA (sq feet) Pines > 10" dbh	4,264.45	Contiguous Foraging Acres*	87.92
Total Acres Forage Habitat	91.16	Meets Mananaged Stability	Yes

Partition 402 - Partition Values (MS)

04/09/2014
09:20:04AM

Total size of Partition (acres)	266.91	Total Acres Forage Habitat 1/4-Mile*	12.00
Total Pine BA (sq feet) Pines > 10" dbh	3,745.16	Contiguous Foraging Acres*	87.19
Total Acres Forage Habitat	87.19	Meets Mananaged Stability	Yes

Table 4. Site B - Managed Stability Values for Affected Red-cockaded woodpecker Partitions, Post-project.

Partition 10 - Partition Values (MS)

04/09/2014
09:21:42AM

Total size of Partition (acres)	380.00	Total Acres Forage Habitat 1/4-Mile*	5.53
Total Pine BA (sq feet) Pines > 10" dbh	6,113.58	Contiguous Foraging Acres*	99.60
Total Acres Forage Habitat	100.87	Meets Mananaged Stability	Yes

Partition 43 - Partition Values (MS)

04/09/2014
09:22:28AM

Total size of Partition (acres)	274.62	Total Acres Forage Habitat 1/4-Mile*	46.30
Total Pine BA (sq feet) Pines > 10" dbh	5,925.94	Contiguous Foraging Acres*	107.68
Total Acres Forage Habitat	110.98	Meets Mananaged Stability	Yes

LITERATURE CITED

Directorate of Public Works. 2001. Integrated Natural Resources Management Plan, 2001-2005. 172 pp. plus appendices.

Palis, John G. 2002. Distribution of Potential Habitat of the Federally Threatened Flatwoods Salamander (*Ambystoma cingulatum*) on Fort Stewart, Georgia. Contract #DAKF10-01-P-0265.

USFWS. 2003. Recovery plan for the red-cockaded woodpecker (*Picoides borealis*): second revision. U.S. Fish and Wildlife Service, Atlanta, GA. 296 pp.

USFWS. 1992. Endangered and threatened wildlife and plants; *Echinacea laevigata* (smooth coneflower) determined to be endangered. 57 Federal Register, pp. 46340-46344.

United States Department of the Interior

Fish and Wildlife Service
105 West Park Drive, Suite D
Athens, Georgia 30606
Phone: (706) 613-9493
Fax: (706) 613-6059

West Georgia Sub-Office
Post Office Box 52560
Fort Benning, Georgia 31995-2560
Phone: (706) 544-6428
Fax: (706) 544-6419

Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

February 25, 2014

Mr. Robert R. Baumgardt
U.S. Army Installation Management Command
Directorate of Public Works
1587 Frank Cochran Drive
Fort Stewart, Georgia 31314-5048
Attention: Mr. Tim Beaty

Re: USFWS Log Number 2014-0173

Dear Mr. Baumgardt:

Thank you for your December 31, 2013, letter and attached Biological Assessment concerning the proposed construction of Solar Photovoltaic Panel Arrays on Fort Stewart, Georgia. The project area covers 119.3 acres, 25.3 of which are non-forested habitat with the rest forested, in Training Area B4 in Liberty County, Georgia. We have reviewed the information you provided and submit the following comments under provisions of the Endangered Species Act of 1973 (ESA) as amended (16 U.S.C. 1531 et seq.).

According to the information you provided, the project will impact a total of about 85.6 acres of existing red-cockaded woodpecker (RCW) Habitat Management Unit, however, RCW clusters will have adequate foraging resources available to them post-project. The proposed project will also impact 28.7 acres of a primary buffer of a potential flatwoods salamander breeding pond but the wetlands will be excluded from project construction. The nearest historical sighting of an eastern indigo snake is 1.5 miles east-northeast of the proposed project site and the project will not impact any existing gopher tortoise burrows. The nearest known sighting of foraging wood storks is at least 1.0 mile south of the project site. The nearest smooth coneflower population is 18.3 miles northwest of the project area. Therefore, due to the relatively small amount of habitat that will be impacted, we agree with your determination that this proposed project is not likely to adversely affect any federally listed endangered or threatened species. Also, we believe that the requirements of section 7 of the ESA have been satisfied and no further consultation is required. However, obligations under section 7 of the ESA must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner which was not considered in this assessment; or (3) a new species is listed or critical habitat determined that may be affected by the identified action.

We appreciate the opportunity to comment during the planning stages of your project. If you have any questions, please contact Robert Brooks of our Coastal Georgia Office at 912-832-8739, extension 107.

Sincerely,

Strant Colwell

Strant Colwell
Coastal Georgia Supervisor

DEC 3 1 2013

Directorate of Public Works

U.S. Department of the Interior
Fish and Wildlife Service
ATTN: Strant Caldwell
4980 Wildlife Drive, NE
Townsend, GA, 31331

Dear Mr. Caldwell:

Fort Stewart proposes to clear, grub, and grade along a section of Georgia Highway 144 to facilitate construction of Solar Photovoltaic Panel Arrays in Fort Stewart Training Area B-4 in Liberty County, Georgia. A Biological Assessment has been prepared in accordance with the requirements of the Endangered Species Act. The conclusion reached in this Biological Assessment is that the proposed action may affect, but is not likely to adversely affect, the red-cockaded woodpecker, wood stork, eastern indigo snake, frosted flatwoods salamander, or smooth coneflower, and will not affect the Atlantic or shortnose sturgeon. Fort Stewart reached its red-cockaded woodpecker recovery goal of 350 potential breeding groups during the breeding season of 2012 and has enough suitable or potentially suitable habitat to support 657 red-cockaded woodpecker clusters post project.

If additional information is needed, please contact Mr. Tim Beaty, DPW, Fish and Wildlife Branch at telephone (912) 767-7261. Your continued cooperation and assistance are appreciated.

Sincerely,

for Thomas C. Fry
Robert R. Baumgardt
Director, Public Works

Enclosures

BIOLOGICAL ASSESSMENT

Clearing, Grubbing, and Grading of an Area to Construct Solar Photovoltaic Arrays

Fort Stewart, Georgia

Prepared By:

ROY L. KING
Wildlife Biologist
Fish and Wildlife Branch
Environmental Division
Directorate of Public Works
Fort Stewart, GA

Reviewed By:

LAWRENCE D. CARLILE
Chief, Planning and Monitoring
Fish and Wildlife Branch
Environmental Division
Directorate of Public Works
Fort Stewart, GA

Submitted By:

TIMOTHY A. BEATY
Chief, Fish and Wildlife Branch
Environmental Division
Directorate of Public Works
Fort Stewart, GA

Approved By:

THOMAS C. FRY
Chief, Environmental Division
Directorate of Public Works
Fort Stewart, GA

PROJECT DESCRIPTION

Fort Stewart proposes to clear, grub, grade, and maintain an area along Georgia Highway 144 to facilitate the construction of Solar Photovoltaic Arrays (SPVA) (Figure 1) in Fort Stewart Training Area (FSTA) B-4. Construction of access trails to the SPVA and a storm water drainage system also will be part of this project. The purpose of the proposed action is to implement Energy Initiatives Task Force strategy for development of up to 18 megawatts of SPV power on Fort Stewart. This proposed action will help the Army reach its goal of deploying 1 gigawatt of renewable energy by 2025 and assist Georgia Power in reaching its goal of purchasing 50 megawatts of solar power. The project area consists of 119.3 acres of forested and non-forested habitat.

SITE DESCRIPTIONS

Forested habitat within the proposed action area comprises a canopy dominated by slash pine (*Pinus elliottii*), longleaf pine (*P. palustris*), and pond pine (*P. serotina)*, with a mid-story of sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), live oak (*Q. virginiana*), wax myrtle (*Myrica cerifera*), and red bay (*Persea borbonia*). The groundcover is characterized by saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), shiny blueberry (*Vaccinium myrsinites*), huckleberry (*Gaylusaccia frondosa*), runner oak (*Quercus pumila*), and rusty lyonia (*Lyonia ferruginea*). Wetland systems adjacent to the proposed project are dominated by pond cypress (*Taxodium ascendens*), blackgum (*Nyssa sylvatica*), pond pine, red maple (*Acer rubrum*), and red bay. The soil types within the project area are Ocilla loamy fine sand, Mandarin fine sand, Rutlege fine sand, Echaw and Centenary fine sand, and Pelham loamy sand.

SPECIES CONSIDERED

The following species occur, or may occur, in the proposed action area and were considered in this assessment:

Red-cockaded woodpecker (*Picoides borealis*) – Endangered
Wood stork (*Mycteria americana*) – Endangered
Eastern indigo snake (*Drymarchon couperi*) – Threatened
Frosted flatwoods salamander (*Ambystoma cingulatum*) – Threatened
Atlantic sturgeon (*Acipenser oxyrinchus*) – Endangered
Shortnose sturgeon (*Acipenser brevirostrum*) – Endangered
Smooth coneflower (*Echinacea laevigata*) – Endangered

DISCUSSION

Red-cockaded Woodpecker

Fort Stewart Fish and Wildlife Branch personnel surveyed the project area for red-cockaded woodpeckers (RCW) and RCW cavity trees. There was 1 RCW cavity tree detected in the action area. The foraging partitions of RCW Clusters 3, 28, 51, 249, 253, and 413 will be impacted by the proposed project (Figure 2). The project will impact 85.6 acres of existing RCW Habitat Management Unit (HMU; Table 1), 8.3 acres of lowland hardwood, and 25.3 acres of existing non-forested habitat as identified in Fort Stewart's Integrated Natural Resources Management Plan (INRMP; Directorate of Public Works 2001; Figure 3).

A May 2005 memorandum from Noreen Walsh, Assistant Regional Director, Ecological Services, U.S. Fish and Wildlife Service, Atlanta, GA entitled "Implementation Procedures for Use of Foraging Habitat Guidelines and Analysis of Project Impacts under the Red-cockaded Woodpecker (*Picoides borealis*) Recovery Plan: Second Revision" (USFWS 2003) describes parameters and concepts to be considered when federal properties analyze projects that may affect RCWs. There are potentially 5 levels of analysis to consider in the preparation of biological assessments, with the analyses conducted in the following order: 1) foraging partition, 2) group, 3) neighborhood, 4) population, and 5) recovery unit. The results of each level of analysis predicate the necessity to conduct subsequent analyses.

Foraging Partition Level Analysis

The RCW Recovery Plan requires that a foraging analysis be performed for all active RCW clusters that may be impacted by a project using the Foraging Matrix (hereafter, Matrix) analysis tool. Federal agencies must perform an analysis of all affected foraging partitions to determine if they meet the RCW Recovery Standard (RS) of Good Quality Foraging Habitat (GQFH). If foraging partitions do not meet the RS, then the foraging partition must be analyzed to determine if it meets the Managed Stability Standard (MSS). The pre-project foraging partitions of Clusters 3, 28, 51, 249, 253, and 413 were analyzed and no stand within the foraging partitions met the RS (i.e., there were no acres of GQFH), therefore we analyzed the post-project stands receiving direct impact (i.e., loss of habitat in a foraging partition) using the MSS. Clusters 3, 28, 51, 249, 253, and 413 currently exceed the MSS (Table 2).

To summarize the impacts of the proposed project on the RCW,

- Cluster 3 will lose 19.3 acres of foraging habitat
- Cluster 28 will lose 19.6 acres
- Cluster 51 will lose 3.1 acres
- Cluster 249 will lose 5.1 acres

- Cluster 253 will lose 5.5 acres
- Cluster 413 will lose 18.9 acres

All affected clusters will have adequate foraging resources available to them post-project and will continue to meet the MSS. Cluster 3 will lose 1 inactive cavity tree (#33; Figure 2) that has an enlarged cavity and has been inactive since at least 1994. Fort Stewart reached its recovery goal of 350 potential breeding groups during the breeding season of 2012 and has enough suitable or potentially suitable RCW HMU to support 657 RCW clusters post project. Because the foraging partitions pass MSS, the group, neighborhood, and population analyses are not warranted. The proposed action may affect, but is not likely to adversely affect the RCW.

Wood Stork

No wood storks were observed in the proposed project area, nor have they been observed foraging in the action area. Some wetlands will be affected by the proposed action, but the nearest area where foraging wood storks have been observed is approximately 1.0 mile south of the action area in Holbrook Pond (Figure 4). Because of its distance from confirmed wood stork sightings and the implementation of erosion and sedimentation control measures, the proposed action may affect, but is not likely to adversely affect, the wood stork.

Eastern Indigo Snake

The project area does not lie within eastern indigo snake HMU. No eastern indigo snakes have ever been detected in the project area. The nearest known occurrence of an eastern indigo snake is 1.5 miles east-northeast of the action area in FSTA B-2. This project will not affect gopher tortoise habitat or any gopher tortoise burrows. The nearest known gopher tortoise habitat is 0.75 miles southeast of the action area in FSTA A-16 (Figure 4). The proposed project may affect, but is not likely to adversely affect, the eastern indigo snake.

Frosted Flatwoods Salamander

The entire project area lies within the frosted flatwoods salamander (FFS) HMU. A highly likely breeding site and a potential breeding site adjoin the project area, but these wetland ponds will be delineated and excluded from project construction. A 25 foot vegetative buffer will be left in place to further protect these ponds. The proposed project impacts 28.7 acres of primary buffer and 43.2 acres of secondary buffer for potential FFS breeding ponds as identified in a FFS habitat review project (Palis 2002). Records indicate 1 historical (1970's) road-crossing sighting within the project area and 1 historical (1970's) sighting within a confirmed breeding pond located 0.5 miles north-northeast of the project area (Figure 5). Project design will incorporate

delineation of wetland areas, a 25 foot vegetative buffer around all wetlands, and protection measures as required by the Clean Water Act and the Georgia Erosion and Sedimentation Control Act to ensure appropriate wetland protection. Therefore, the proposed actions will not result in significant erosion, run-off, or other off-site impacts that might affect FFS habitat or ponds. Due to the historical nature of the FFS sighting within the project area, the distance of the project area from the confirmed breeding pond, and the implementation of previously mentioned control measures, the proposed action may affect, but is not likely to adversely affect, the FFS or the landscape's ability to support FFS.

Atlantic and Shortnose Sturgeon

Telemetry and capture data, which was collected as part of Fort Stewart's shortnose sturgeon monitoring program (1991-2000), indicate that these fish do not travel >2 miles up the Canoochee River or 20 miles up the Ogeechee River from the Canoochee/Ogeechee River confluence. The Canoochee River flows diagonally through the Installation while the Ogeechee River forms much of the Installation's eastern boundary. The proposed project lies >15 miles west-southwest of the nearest Atlantic and shortnose sturgeon occurrences on the Canoochee River. Due to unsuitable habitat and the distance between the proposed project area and documented sturgeon sightings, this project will not affect the Atlantic and shortnose sturgeons.

Smooth Coneflower

No smooth coneflowers were observed in the proposed project area and the soils types are unsuitable for this species (USFWS 1995). Fort Stewart's population of the smooth coneflower is located in FSTA F-11, approximately 18.3 miles northwest of the project area (Figure 6). Because of its distance from the confirmed smooth coneflower population and the acidic soil types present in the action area, the proposed action may affect, but is not likely to adversely affect, the smooth coneflower.

CUMULATIVE EFFECTS

There are no foreseeable state, local, tribal, or private actions that will have a cumulative adverse effect when combined with impacts associated with the proposed action.

CONCLUSION

The proposed action may affect, but is not likely to adversely affect, the RCW, wood stork, eastern indigo snake, FFS, or smooth coneflower. The proposed action will not affect the Atlantic and shortnose sturgeon because habitat in the action area is not suitable for these species. Critical habitat has been proposed for the FFS, but no FFS critical habitat was proposed

for designation on Fort Stewart. Other listed species that occur on Fort Stewart have no critical habitat designated, so no critical habitat will be destroyed or modified adversely. The Army did not draw on the regulatory definition of destruction or adverse modification of critical habitat at 50 CFR 402.02 with respect to the conclusions and analysis made in this BA. Instead, the Army has incorporated into the critical habitat effects analysis the conservation of species principals found in the statutory provisions of the Endangered Species Act.

Figure 1. Location of Proposed SPVA, Fort Stewart, Georgia.

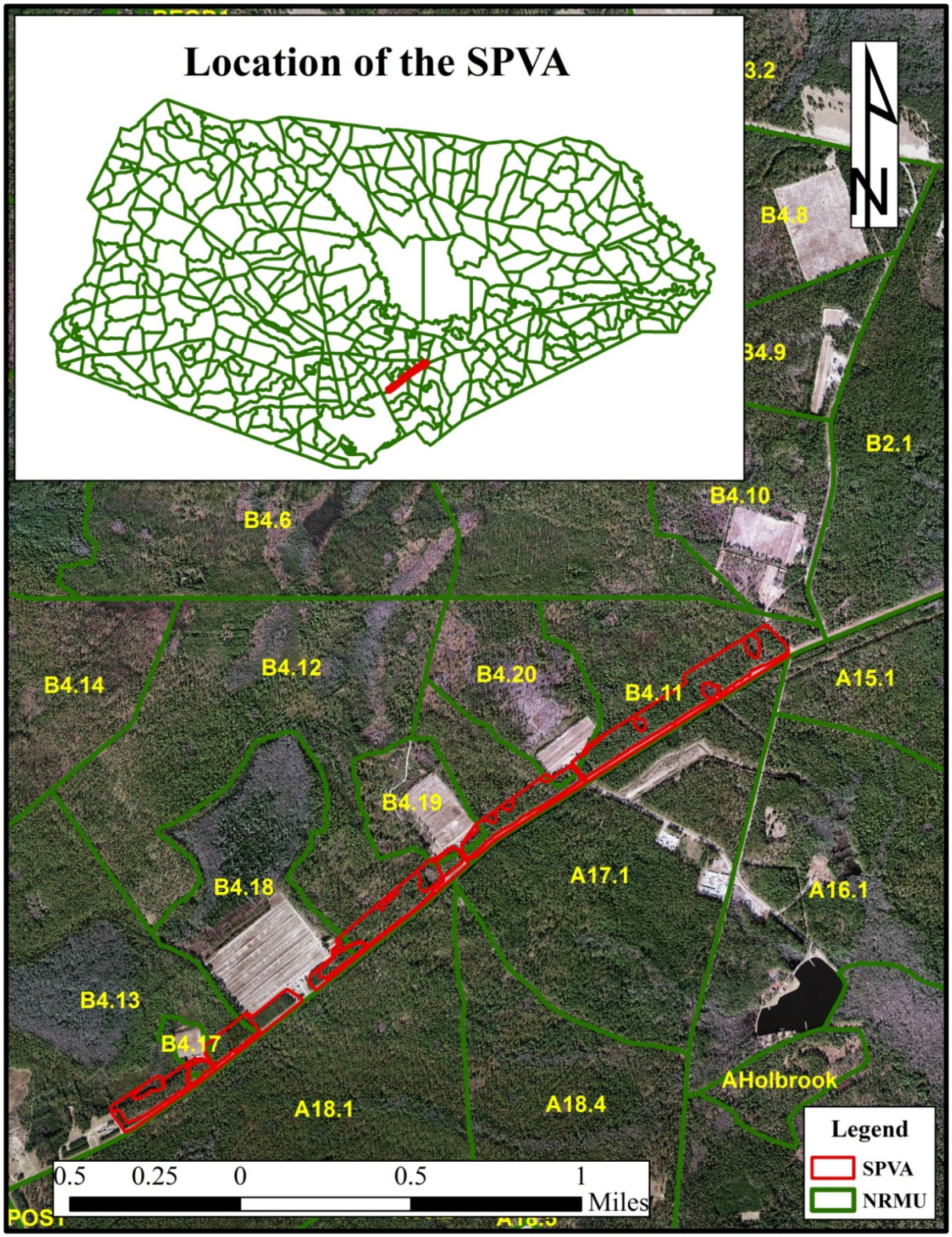


Figure 2. Red-cockaded Woodpecker Clusters Affected by the Proposed Project, Fort Stewart, Georgia.

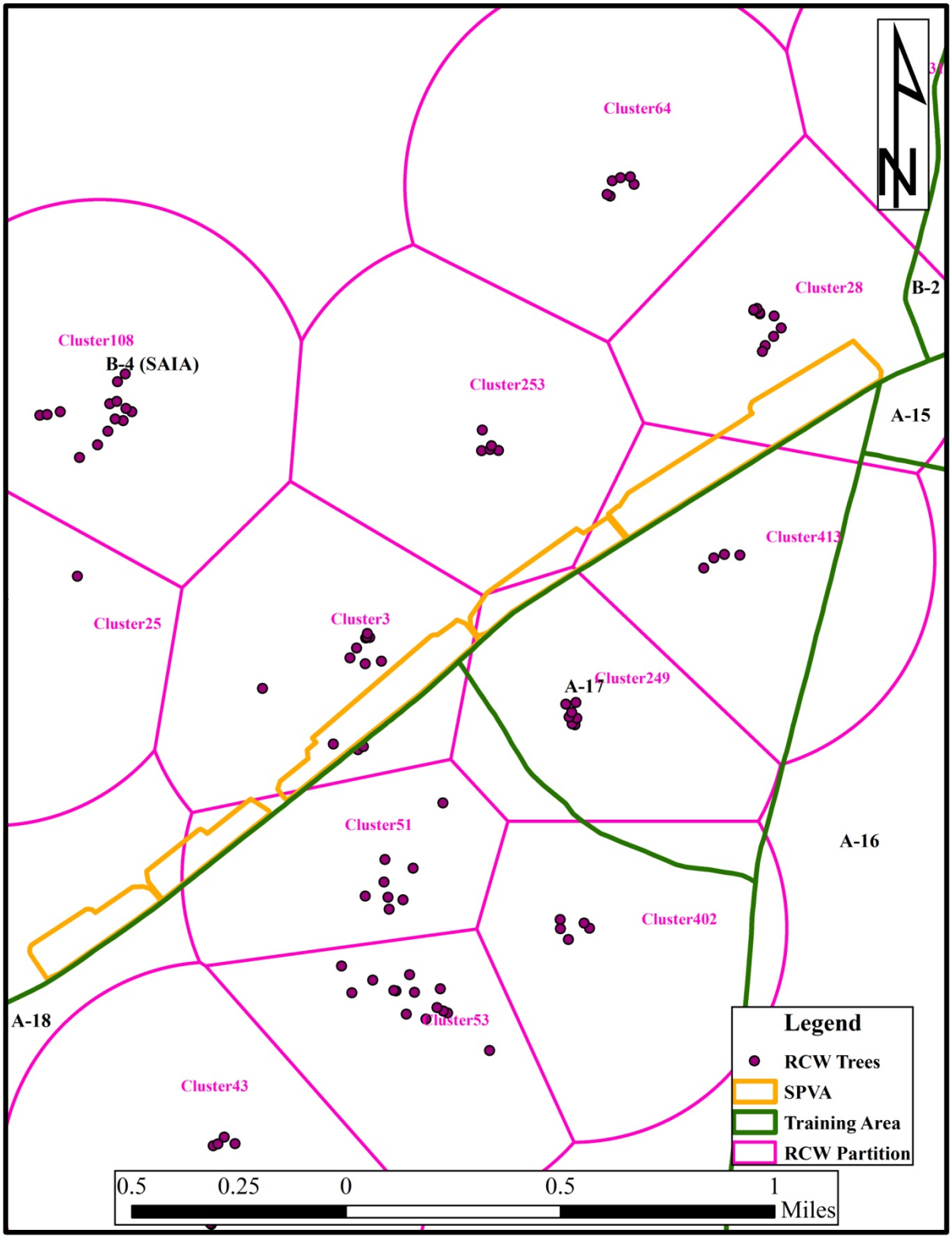


Figure 3. Red-cockaded Woodpecker Habitat Management Unit Affected by the Proposed Project, Fort Stewart, Georgia.

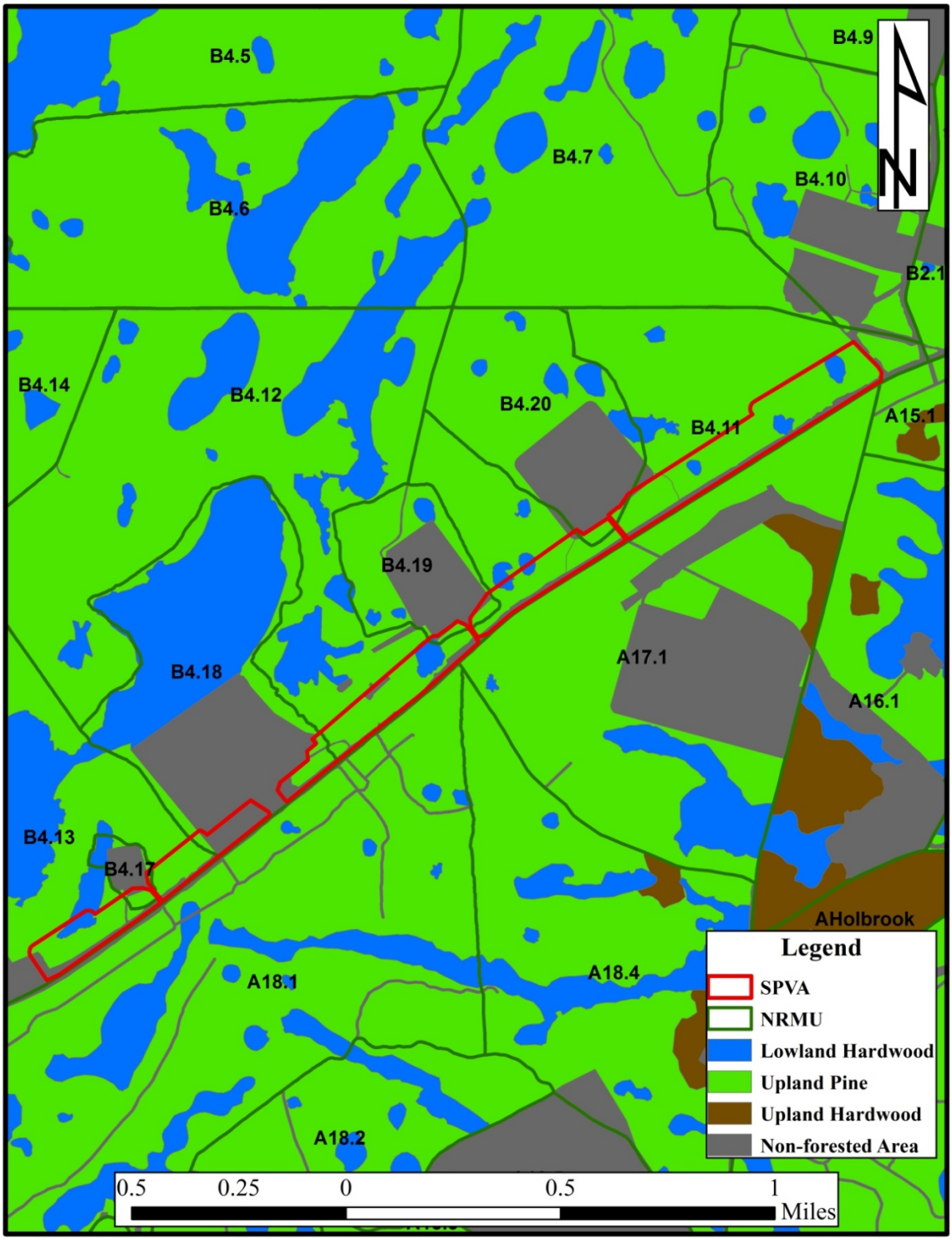


Figure 4. Wood Stork, Eastern Indigo Snake, and Gopher Tortoise Occurrences Near the Project Area, Fort Stewart, Georgia.

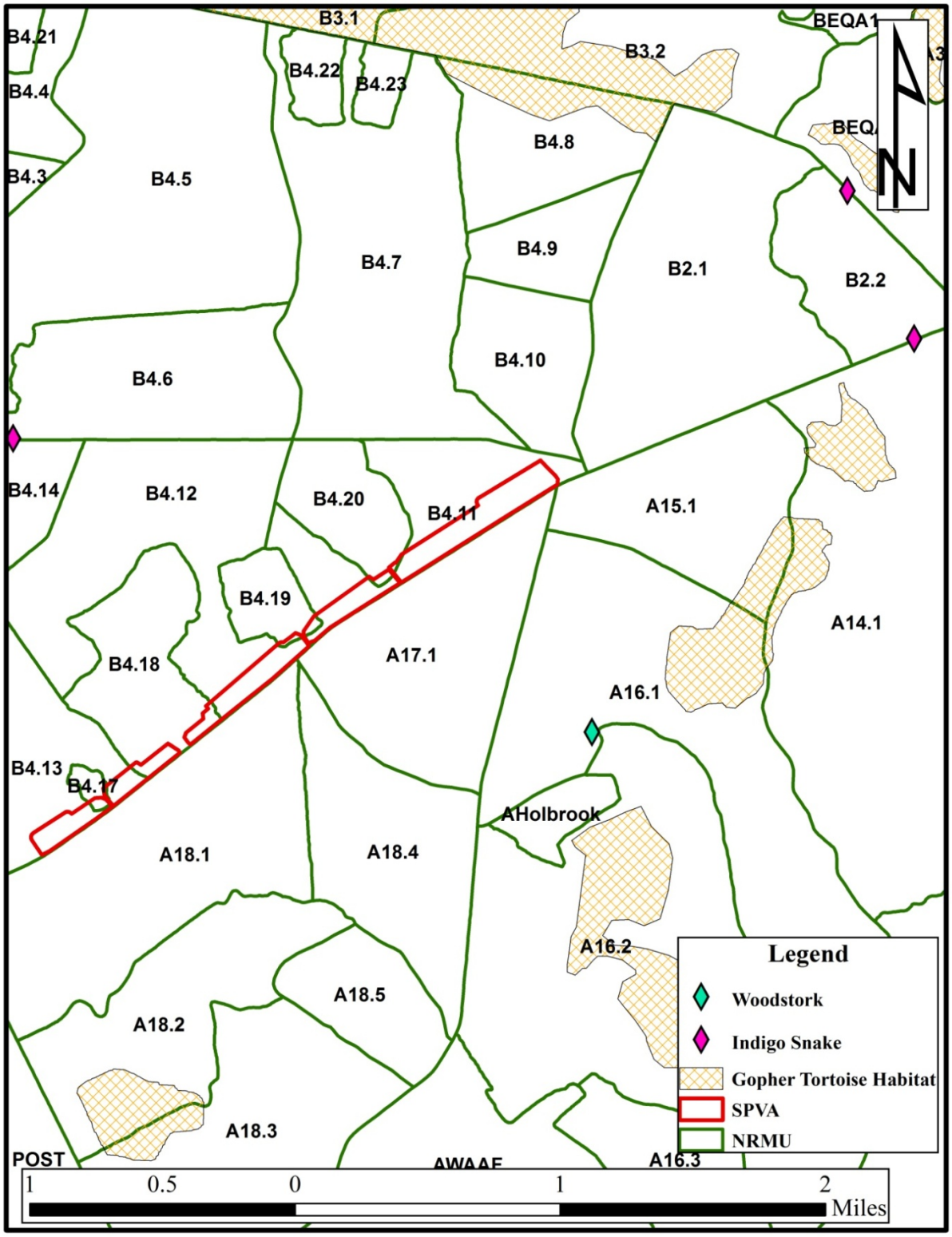


Figure 5. Frosted Flatwoods Salamander Habitat Impacted by Project Area, Fort Stewart, Georgia.

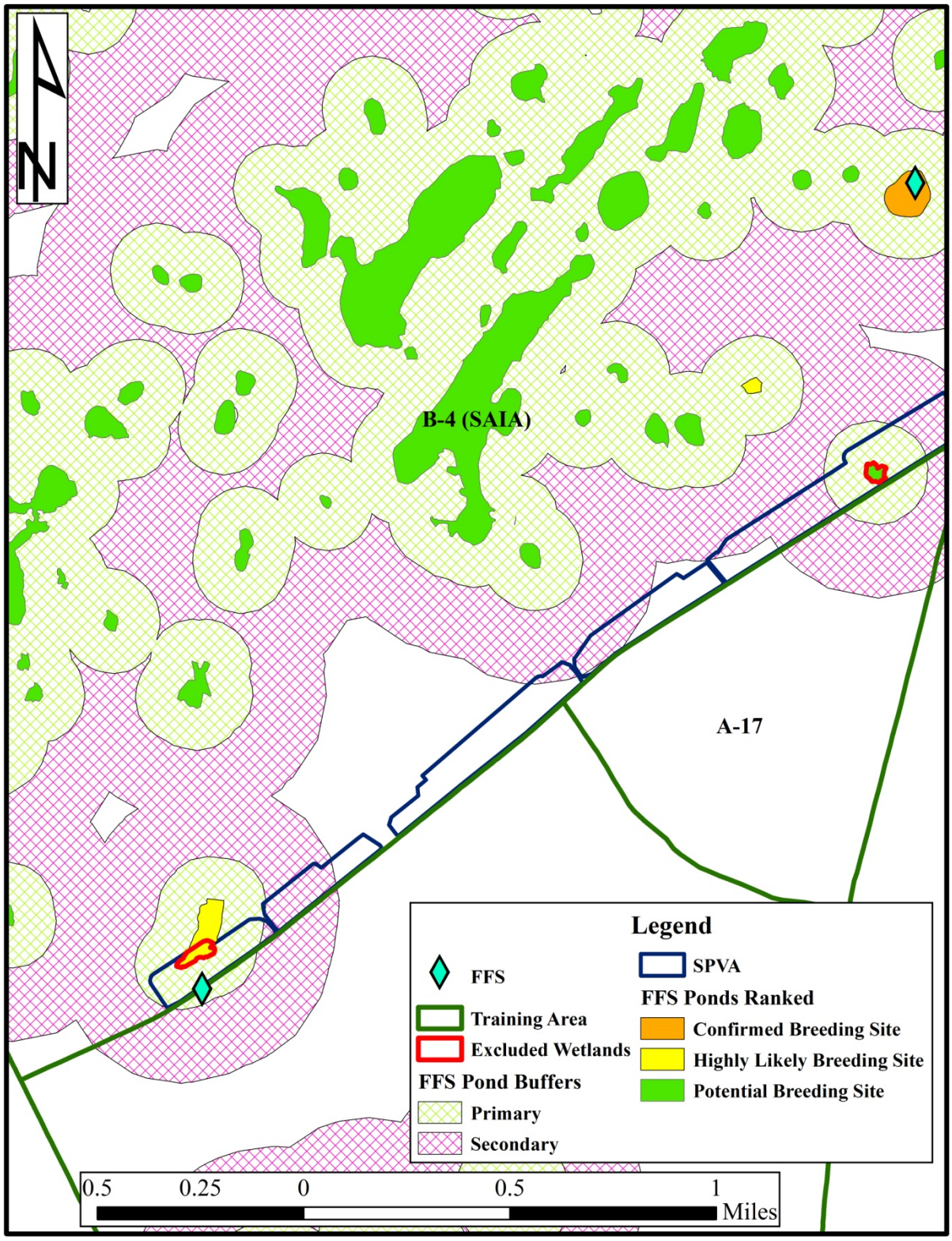


Figure 6. Smooth Coneflower Population, Fort Stewart, Georgia.

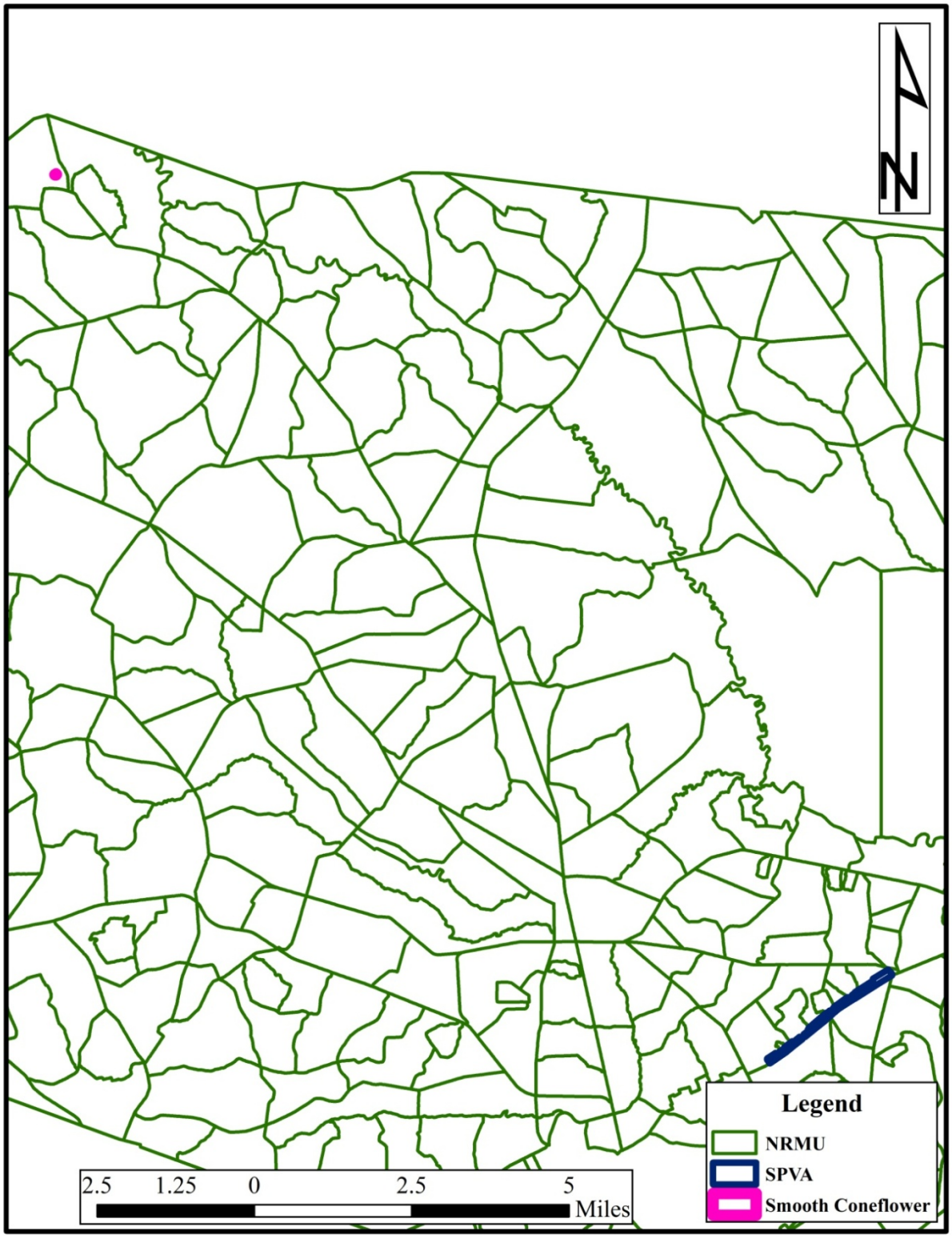


Table 1. Red-cockaded Woodpecker Habitat Management Unit Acres Affected per Partition.

RCW Partition	HMU Acres Affected
3	19.3
28	19.6
51	3.1
249	5.1
253	5.5
413	18.9
Non-Partition	14.1

Table 2. Managed Stability Values for Affected Red-cockaded woodpecker Partitions, Post-project.

Partition 3 - Partition Values (MS) *11/25/2013 02:21:14PM*

Total size of Partition (acres)	259.73	**Total Acres Forage Habitat 1/4-Mile***	67.30
Total Pine BA (sq feet) Pines > 10" dbh	4,298.53	**Contiguous Foraging Acres***	70.54
Total Acres Forage Habitat	93.03	**Meets Managed Stability**	Yes

Partition 28 - Partition Values (MS) *11/25/2013 11:01:26AM*

Total size of Partition (acres)	266.41	**Total Acres Forage Habitat 1/4-Mile***	54.83
Total Pine BA (sq feet) Pines > 10" dbh	9,628.40	**Contiguous Foraging Acres***	144.75
Total Acres Forage Habitat	144.78	**Meets Managed Stability**	Yes

Partition 51 - Partition Values (MS) *11/25/2013 10:58:39AM*

Total size of Partition (acres)	172.48	**Total Acres Forage Habitat 1/4-Mile***	86.25

Total Pine BA (sq feet) Pines > 10" dbh	6,368.25	**Contiguous Foraging Acres***	126.92
Total Acres Forage Habitat	127.31	**Meets Managed Stability**	Yes

Partition 249 - Partition Values (MS) *11/25/2013 11:04:12AM*

Total size of Partition (acres)	196.21	**Total Acres Forage Habitat 1/4-Mile***	84.65
Total Pine BA (sq feet) Pines > 10" dbh	5,494.90	**Contiguous Foraging Acres***	115.62
Total Acres Forage Habitat	115.62	**Meets Managed Stability**	Yes

Partition 253 - Partition Values (MS) *11/25/2013 11:02:14AM*

Total size of Partition (acres)	292.97	**Total Acres Forage Habitat 1/4-Mile***	99.32
Total Pine BA (sq feet) Pines > 10" dbh	11,525.48	**Contiguous Foraging Acres***	163.28
Total Acres Forage Habitat	169.89	**Meets Managed Stability**	Yes

Partition 413 - Partition Values (MS) *11/25/2013 10:59:39AM*

Total size of Partition (acres)	283.45	**Total Acres Forage Habitat 1/4-Mile***	57.65
Total Pine BA (sq feet) Pines > 10" dbh	6,893.99	**Contiguous Foraging Acres***	120.61
Total Acres Forage Habitat	127.57	**Meets Managed Stability**	Yes

LITERATURE CITED

Directorate of Public Works. 2001. Integrated Natural Resources Management Plan, 2001-2005. 172 pp. plus appendices.

Palis, John G. 2002. Distribution of Potential Habitat of the Federally Threatened Flatwoods Salamander (*Ambystoma cingulatum*) on Fort Stewart, Georgia. Contract #DAKF10-01-P-0265.

U.S. Fish and Wildlife Service. 2003. Recovery plan for the red-cockaded woodpecker (Picoides borealis): second revision. U.S. Fish and Wildlife Service, Atlanta, GA. 296 pp.

USFWS. 1992. Endangered and threatened wildlife and plants; *Echinacea laevigata* (smooth coneflower) determined to be endangered. 57 Federal Register, pp. 46340-46344.

APPENDIX E

SOP for ACCIDENTAL DISCOVERY OF ARCHAEOLOGICAL DEPOSITS AND / OR HUMAN REMAINS

Prior to approval of Individual Job Orders and other land disturbing activities, archaeological surveys are routinely conducted to identify areas of archaeological concern. If archaeological materials are encountered during your authorized work, you may have encountered a previously unrecorded archaeological site. In most cases, these archaeological sites are previously recorded and taken into consideration as part of the review process. However, there is potential for inadvertent damage to previously unrecorded archaeological sites that require further investigation.

Do the right thing when you discover archaeological artifacts or human remains on a job site —inform the authorities and cooperate with the Installation on getting the issue resolved. Cultural Resource personnel are on staff here to support your mission and resolve the discovery in a timely manner. The process consists of three simple steps: STOP, CONTACT, and COORDINATE.

SHOULD YOU DISCOVER ARTIFACTS (arrowheads, pottery, glass, brick, etc…):

1. STOP work in the immediate vicinity of the suspected artifacts (at least 30 feet).

2. CONTACT Cultural Resource Management (CRM) office immediately, Fort Stewart at 767-0992/1402/3359/2010 and HAAF at 315-6027.

3. COORDINATE with CRM prior to resuming work at the location where the artifact was found, although work can be continued in another location at least thirty feet from the initial discovery. If additional artifacts are discovered, return to step 1.

SHOULD YOU DISCOVER WHAT APPEARS TO BE HUMAN REMAINS (bones, headstone fragments, etc…):

1. STOP work immediately and protect the potential human burial from additional disturbance.

2. CONTACT Installation Police immediately, Fort Stewart at 767-2965/4895 and HAAF at 315-6133/6134, then CONTACT the Cultural Resource Management office, Fort Stewart at 767-0992/1402/3359/2010 and HAAF at 315-6027. Wait for on-scene investigators to arrive to make an initial assessment.

3. COORDINATE with on-scene investigators (CRM and Installation Police) prior to resuming work at that particular location where the incident occurred.

REMEMBER…STOP!...CONTACT!...COORDINATE!

And most importantly…failure to report damage to archeological sites or human burials may result in violations of the Archaeological Resources Protection Act (ARPA). Violations of ARPA may result in civil and/or criminal penalties up to $100,000 and up to one year in jail for the 1st offense. Furthermore, unauthorized collection of artifacts from federal land is also an ARPA violation.

IMSH-PWE 21 APR 14

MEMORANDUM FOR RECORD

SUBJECT: CRM Review and Comments of Implementation of Solar Photovoltaic Generating Systems at Fort Stewart, GA.

1. PURPOSE: This Memorandum for Record (MFR) summarizes the potential impacts to cultural resources and documents the efforts to analyze and determine effects for the purposes of complying with the National Historic Preservation Act and the Installation's Programmatic Agreement (PA) with the Georgia State Historic Preservation Office (SHPO) and other applicable cultural resource laws and regulations. The results of this MFR are summarized and incorporated into the Installation's Cultural Resource Management Annual Report to the SHPO in accordance with the PA.

2. PROPOSED ACTION AND AREA OF POTENTIAL EFFECT: The proposed action is to offer land for a 21-year lease and "in-kind" construction, operation, and maintenance of three solar photovoltaic generating systems to a developer qualified through the GA Power Advanced Solar Initiative. Three sites within or adjacent to the Installation cantonment have been identified totaling approximately 150 acres. Construction will include a utility corridor to connect to and utilize GA Powers' existing on-Post distribution grid on Hero Rd. The Army also proposes to enter into a 35-year easement with GA Power, in which it will allow GA Power the use of 200 acres of land on Ft. Stewart to construct, operate, and maintain one 30mw System and utility corridor which will be connected to the existing substation on Hero Rd. The Area of Potential Effect includes the following locations:

a. Action Area A – The APE is comprised of portions of the Small Arms Impact Area (SAIA), the Wastewater Treatment Plant (WWTP), and the Southwest Quadrant Site (see figure 1).

1. The SAIA has been previously surveyed for cultural resources with four sites (9LI1132, 9LI1133, 9LI1347, and 9LI1185) identified within the APE (PCI DO#7 & FSCRM) which were all determined ineligible for the National Register of Historic Places (NRHP).

2. The WWTP was surveyed for cultural resources and one Isolated Find (ISO-9LI-171.2) was encountered which was determined ineligible for the NRHP (FSCRM 2014).

3. The Southwest Quadrant was previously surveyed for cultural resources and no cultural resources were encountered (PCI DO#5).

b. Action Area B – The APE is comprised of portions of NRMU A18.1, A18.2, A18.3, and A18.5 which have been previously surveyed for cultural resources or are

categorically excluded from archaeological survey due to elevated risk of unexploded ordnance and/or within "Special Use Facility" areas in accordance with the PA with the GA SHPO (PCI DO#1, PTA DO#9, & FSCRM).

1. NRMU A18.1 has been previously surveyed for cultural resources (PCI DO#1) and three archaeological sites (9LI642, 9LI647, and 9LI643) have been recorded Within this portion of the APE and have been determined ineligible for the NRHP.

2. NRMU A18.2 has been previously surveyed for cultural resources (PTA DO#9) and one archaeological site (9LI1538) was recorded within this portion of the APE and was determined ineligible for the NRHP.

3. NRMU A18.3 has been previously surveyed for cultural resources (PTA DO#9) and two archaeological sites (9LI1535 and 9LI1536) were recorded within portions of the APE and were determined ineligible for the NRHP. The majority of the NRMU has not been surveyed for cultural resources due to elevated risk of UXO associated with the former Rifle-Grenade Range located between the two APEs. This location is exempt from archaeological survey per the terms of the PA and therefore is clear of cultural resource concerns.

4. NRMU A18.5 has been previously surveyed for cultural resources (PTA DO#9) and two archaeological sites (9LI1537 and 9LI1539) were recorded within this portion of the APE and was determined ineligible for the NRHP. A small portion of the northeast APE within NRMU A18.5 has not been surveyed; however, this location is categorically excluded from archaeological survey requirements due to its location within a "Special Use Facility" (Approach Area associated with WAAF).

5. Adjacent to the North-Northwest boundary of the APE within NRMU A18.2, an unmarked cemetery is indicated on the 1941 Government Acquisition maps (J. O. Rahn Cemetery). This location has been previously surveyed through standard subsurface investigations (PTA DO#9) and supplemented by intensive surface investigations of the suspected cemetery. No indication of a cemetery was observed by both surveys. According to archival records, this location was not fenced and managed as a cemetery in accordance with standard fencing and signage. According to the late 1960s and early 1970s survey of Installation cemeteries, it was not recorded. Based on the available evidence, it is possible that the unmarked cemetery was moved around the time of government acquisition or simply the markers have long since deteriorated. As a result, CRM monitoring of any ground disturbing activities located near the APE boundary grid coordinate E445507 N3529644 (NAD83) is required due to the margin of error associated with the 1940s era land acquisition boundaries. Should indications of an unmarked cemetery be encountered, refer to SOP# 3 of the ICRMP.

3. OTHER CULTURAL RESOURCE CONSIDERATIONS: No areas of Tribal Interest (i.e. Sacred Sites, Traditional Cultural Properties and/or NAGPRA-related concerns) have been previously identified within the APE.

4. CULTURAL RESOURCE IMPACTS: No cultural resource impacts are indicated by the proposed undertaking.

5. ACCIDENTAL DISCOVERY OF ARCHAEOLOGICAL DEPOSITS AND/OR HUMAN REMAINS: Although the risk is low, if the project uncovers artifacts and/or human remains, all work must cease and the Fort Stewart or HAAF CRM office (767-0992/2010 or 315-6027) must be notified. If human remains are encountered, the Military Police must also be notified. Standard Operating Procedure #3 regarding Accidental Discovery of Archaeological Deposits and/or Human Remains must be followed to remain in compliance with cultural resource laws and regulations and prevent Archaeological Resource Protection Act (ARPA) violations.

6. SUMMARY: As proposed, no significant impacts to cultural resources are anticipated to occur associated with the proposed undertaking. The potential for cultural resource concerns exceeding the threshold level of significance for cultural resource impacts in accordance with NEPA is negligible. The results of this MFR are summarized and incorporated into the Installation's Cultural Resource Management Annual Report to the SHPO in accordance with the PA.

7. Point of Contact for this action is Brian K. Greer, Consulting Archaeologist, Directorate of Public Works, Environmental Division, Prevention & Compliance Branch at (912) 767-4961/2010. Email correspondence can be directed to brian.k.greer2.ctr@mail.mil.

Brian K. Greer
Cultural Resource Program Manager
Consulting Archaeologist
DPW, ENV DIV, P&C Branch

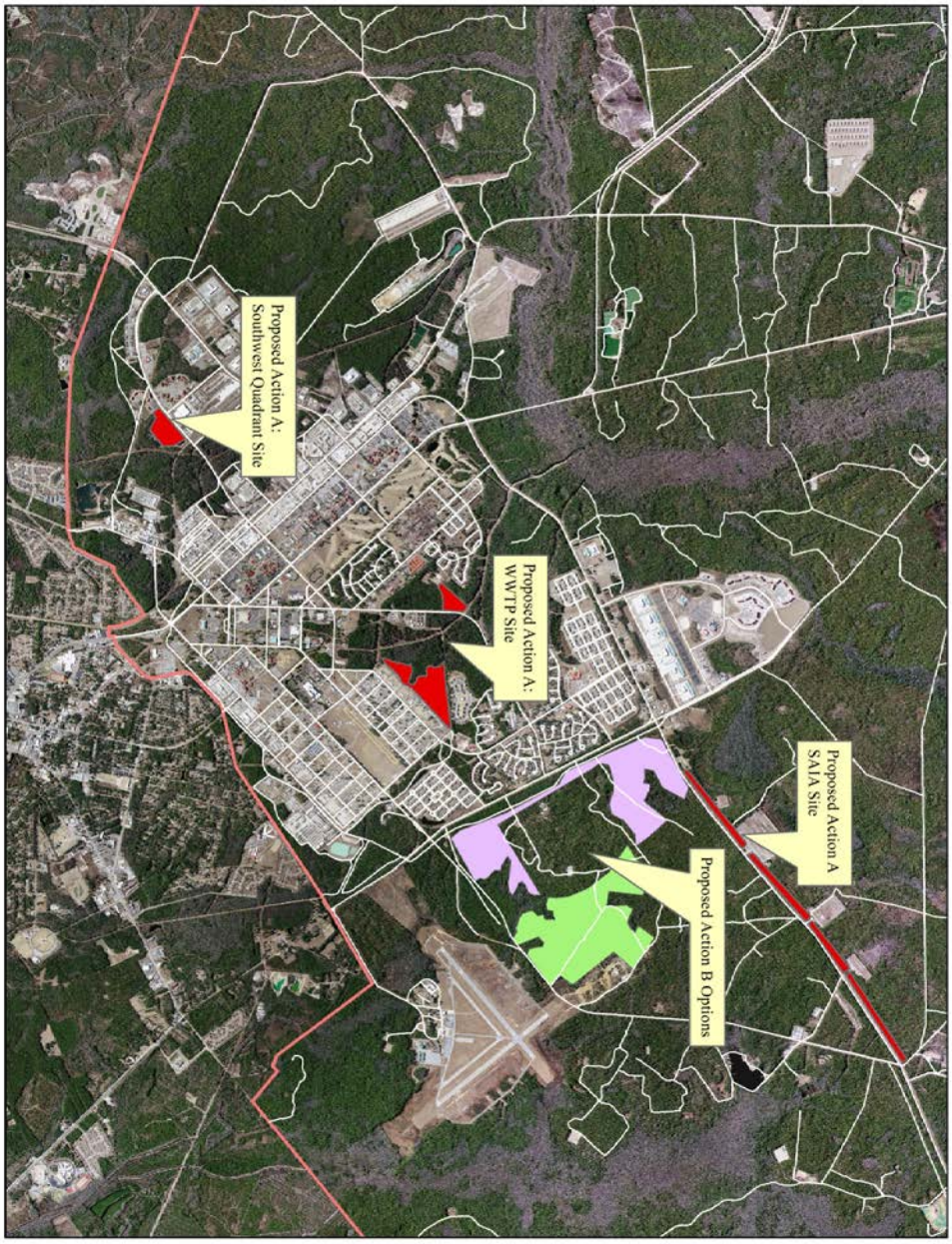


Figure 1: Proposed Solar Photovoltaic Sites.

APPENDIX F

FINAL MEC RECONNAISSANCE SURVEY REPORT

Georgia Power Advanced Solar Initiative Solar Lease Project

For

US Army Energy Initiatives Task Force

Fort Stewart, Georgia

Prepared by:

U.S. Army Engineering and Support Center Huntsville

December 2013

Wayne Galloway 12/6/13

WAYNE H. GALLOWAY
Chief, OED Safety

12 Dec 13

WILLIAM J. SARGENT
Chief, Military Munitions Design Center, OE Directorate

FINAL
FORT STEWART SOLAR FARM PROJECT
MEC RECON LETTER REPORT
December 5, 2013

1. Personnel: Dustin Ray Team Lead, Jason Burcham Data Collector

2. Survey Date: November 25 & 26, 2013

3. Project: Munitions and Explosives of Concern (MEC) Reconnaissance (Recon) of proposed Solar Farm Project, Fort Stewart, GA.

4. Personnel Contacts: Range Control and DPW Personnel

5. Field Activities: The US Army Engineering and Support Center Huntsville (USAESCH) mobilized one reconnaissance team to traverse the footprint for proposed Solar Farm footprint next to active ranges off highway 144. The team arrived at range control the afternoon of November 25, 2013. After range passes were administered the UXO Survey commenced. The survey continued through the following evening until all proposed transects had been traversed. The team collected data approximately every 50 meters. See Attachment 1 for risk map and recon path. Spacing varied due to avoidance of water features and the size of the footprint. All visible metallic surface items were entered into the dataset and all observed subsurface anomalies were recorded. See Attachment 2 for the fieldwork data collection table.

6. Technical Discussion: A Minelab Compact on setting 4 was used to record subsurface anomalies and aid in surface discoveries. The Minelab is an electromagnetic all metals detector. After a ground balance was executed, a MEC simulant was swept on the surface before and after fieldwork activities each day. The Minelab passed all functionality tests during the MEC Survey. No explosive hazards or evidence of explosive hazards were observed within the footprint. The site is located adjacent to active small arms ranges. A historic range fan map was evaluated to determine past use. The site appears to have been partially on a former firing line for anti-aircraft ordnance fan. No antiaircraft related munitions were observed. Most of the surface items consisted of cultural debris with some range debris. One small arms target was observed and a few pieces of small arms debris. See Attachment 3 for the historic range fan map.

7. Conclusion/Recommendations: Based on the field observations, this is a **low risk area** for MEC exposure. Due to the long military training history of Fort Stewart, recommend **contractor awareness training**. Note: Explosive hazards can exist anywhere on a military installation with an extensive history of combat training. Continued use of the active portions of the proposed footprint can introduce MEC items that were not present during the recon.

Attachment 1 – Risk Map
Attachment 2 – Data Table
Attachment 3 – Historic Range Fan

Attachment 1

Risk of Encountering MEC

Solar Farm Site

Fort Stewart, GA

444,000 444,500 445,000 445,500 446,000 446,500 447,000

3,532,500 3,532,000 3,531,500 3,531,000 3,530,500

State Route 144

Legend

- Proposed Boundaries
- Data Collection Point
- Walked Path (5.3 miles)
- Road

Risk Area (Acres)

- Low (104.3)

* Background Data Source: Bing Basemap Service

Area Overview

0 100 200 300 400 500 600 Meters

Drawn by: DBR	Date: 02DEC2013	Project Number: NA	MXD: \PROJECTS\States\GA\Ft_Stewart\Solar_Recon_2013
Coordinate System: WGS_1984_UTM_Zone_17N			PDF: \PROJECTS\States\GA\Ft_Stewart\Solar_Recon_2013\Report

U.S. Army Engineering & Support Center Huntsville

SITE GIS TEAM

Point ID	collectDate	teamLead	instln_id	instln_name	siteName	subEM	surfHits	mppeh	fe	nonFe	uxo	dmm	md	rrd	cd	pntType	desc1	desc1CNT	desc2	desc2CNT	desc3	desc3CNT	desc4	desc4CNT	notes	POINT_X	POINT_Y
1	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0	START	444339	3530439
2	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	1	0	1	0	0	0	0	0	1	Recon Point		0		0		0		0		444288	3530409
3	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444234	3530372
4	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444192	3530342
5	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	12	0	12	0	0	0	0	0	12	Recon Point		0		0		0		0		444155	3530320
6	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444135	3530348
7	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	3	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444112	3530385
8	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	12	0	8	4	0	0	0	0	12	Recon Point		0		0		0		0		444145	3530423
9	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	1	0	0	1	0	0	0	0	1	Recon Point		0		0		0		0		444178	3530440
10	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444209	3530400
11	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	5	1	0	1	0	0	0	0	0	1	Recon Point		0		0		0		0		444248	3530433
12	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	1	0	1	0	0	0	0	0	1	Recon Point		0		0		0		0		444285	3530462
13	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444271	3530497
14	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444311	3530519
15	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444353	3530541
16	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	3	4	0	4	0	0	0	0	0	4	Recon Point		0		0		0		0		444378	3530516
17	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	5	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444419	3530545
18	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	4	2	0	0	2	0	0	1	0	1	Recon Point	Small Arm Casings	1		0		0		0		444458	3530575
19	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	7	2	0	0	2	0	0	1	0	1	Recon Point	Small Arm Blank	1		0		0		0		444501	3530601
20	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	5	12	0	6	6	0	0	0	0	12	Recon Point		0		0		0		0		444541	3530628
21	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	7	5	0	5	0	0	0	0	0	5	Recon Point		0		0		0		0		444558	3530605
22	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	4	8	0	5	3	0	0	0	0	8	Recon Point		0		0		0		0		444517	3530572
23	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	11	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444480	3530543
24	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	10	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444439	3530514
25	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	12	10	0	10	0	0	0	0	0	10	Recon Point		0		0		0		0		444397	3530486
26	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	11	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444366	3530465
27	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	3	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0	STOP	444339	3530448
28	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0	START	445706	3531626
29	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	6	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445653	3531598
30	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445615	3531559
31	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	1	0	0	1	0	0	0	0	1	Recon Point		0		0		0		0		445571	3531532
32	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445533	3531485
33	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	1	0	0	1	0	0	0	0	1	Recon Point		0		0		0		0		445482	3531451
34	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	4	1	0	1	0	0	0	0	0	1	Recon Point		0		0		0		0		445436	3531417
35	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	15	2	0	2	0	0	0	0	2	0	Recon Point	SA Target	1		0		0		0	berms - possible SA targets?	445392	3531367
36	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	6	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445349	3531328
37	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	5	1	0	0	1	0	0	0	0	1	Recon Point		0		0		0		0		445308	3531303
38	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	3	10	0	6	4	0	0	0	0	10	Recon Point		0		0		0		0		445273	3531265
39	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	6	0	0	6	0	0	0	0	6	Recon Point		0		0		0		0		445227	3531244
40	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445194	3531196
41	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445144	3531157
42	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445111	3531126
43	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	1	0	0	1	0	0	0	0	1	Recon Point		0		0		0		0		445077	3531091
44	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	11	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445039	3531058
45	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	14	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445003	3531018
46	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	12	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444962	3530984
47	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	12	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444924	3530952
48	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	11	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444878	3530933
49	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	5	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444838	3530906
50	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	3	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444792	3530876
51	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444754	3530843
52	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444719	3530815
53	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444667	3530792
54	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444634	3530751
55	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444597	3530721
56	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	3	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444555	3530687
57	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	6	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444586	3530644
58	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	4	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444632	3530675
59	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444670	3530713
60	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	3	1	0	0	1	0	0	0	0	1	Recon Point		0		0		0		0		444712	3530740
61	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	3	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444750	3530775
62	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	1	0	0	1	0	0	0	0	1	Recon Point		0		0		0		0		444786	3530807
63	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	4	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444829	3530836
64	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	3	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444871	3530867
65	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	1	0	0	1	0	0	0	0	1	Recon Point		0		0		0		0		444905	3530899
66	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444950	3530919
67	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	3	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		444989	3530947
68	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	5	10	0	0	10	0	0	0	0	10	Recon Point		0		0		0		0		445031	3530990
69	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445072	3531018

Point ID	collectDate	teamLead	instln_id	instln_name	siteName	subEM	surfHits	mppeh	fe	nonFe	uxo	dmm	md	rrd	cd	pntType	desc1	desc1CNT	desc2	desc2CNT	desc3	desc3CNT	desc4	desc4CNT	notes	POINT_X	POINT_Y
70	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	2	0	0	2	0	0	0	0	2	Recon Point		0		0		0		0	drink cans	445104	3531050
71	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445145	3531088
72	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445184	3531116
73	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445231	3531156
74	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	5	0	0	5	0	0	0	0	5	Recon Point		0		0		0		0		445269	3531204
75	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	12	5	0	2	3	0	0	0	0	5	Recon Point		0		0		0		0		445294	3531243
76	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445335	3531267
77	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445383	3531298
78	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	1	0	0	1	0	0	0	1	0	Recon Point		0		0		0		0		445424	3531332
79	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445470	3531362
80	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	4	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445509	3531386
81	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445538	3531418
82	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445581	3531456
83	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445627	3531471
84	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445646	3531519
85	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445680	3531563
86	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445736	3531597
87	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	1	0	0	1	0	0	0	0	1	Recon Point		0		0		0		0		445794	3531638
88	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445844	3531684
89	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445884	3531717
90	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445934	3531754
91	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445974	3531777
92	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446018	3531801
93	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	2	0	0	2	0	0	0	0	2	Recon Point		0		0		0		0		446073	3531836
94	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	1	0	0	1	0	0	0	0	1	Recon Point		0		0		0		0		446112	3531866
95	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446149	3531885
96	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446187	3531904
97	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	2	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446228	3531935
98	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	3	2	0	0	2	0	0	0	0	2	Recon Point		0		0		0		0		446269	3531962
99	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446309	3531987
100	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	6	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446352	3532018
101	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	3	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446391	3532043
102	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	4	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446434	3532069
103	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446476	3532095
104	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446519	3532125
105	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446570	3532152
106	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446604	3532180
107	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446646	3532207
108	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446698	3532231
109	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446732	3532258
110	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	1	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446782	3532284
111	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446824	3532313
112	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446867	3532336
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114	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446950	3532393
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127	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		447006	3532490
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138	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446520	3532209

Point ID	collectDate	teamLead	instln_id	instln_name	siteName	subEM	surfHits	mppeh	fe	nonFe	uxo	dmm	md	rrd	cd	pntType	desc1	desc1CNT	desc2	desc2CNT	desc3	desc3CNT	desc4	desc4CNT	notes	POINT_X	POINT_Y
139	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		446483	3532168
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151	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445993	3531832
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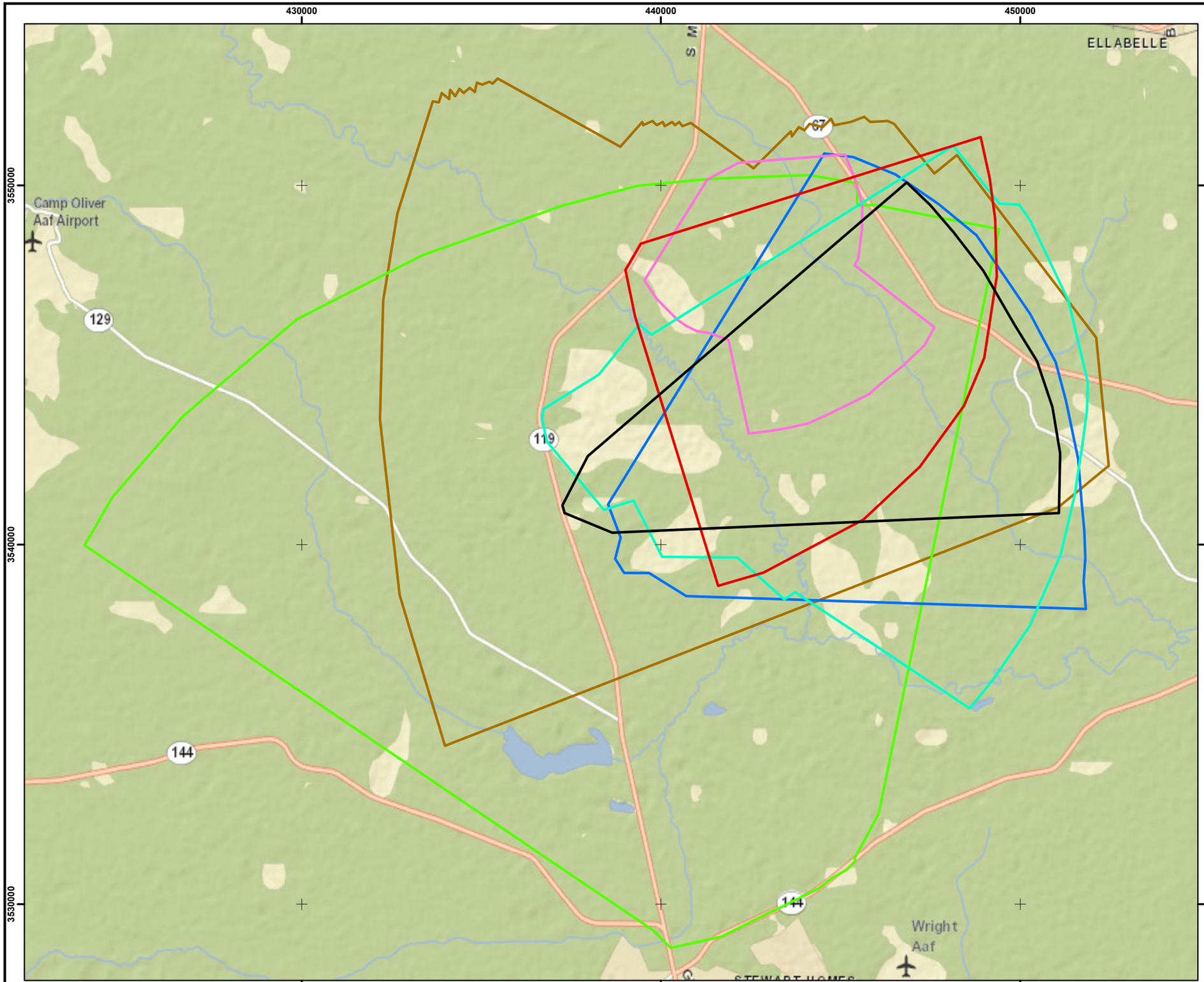
153	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445907	3531777
154	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445872	3531741
155	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	0	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445829	3531710
156	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	7	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0		445778	3531674
157	11/26/2013	Jason Burcham		Fort Stewart	Solar Farm	6	0	0	0	0	0	0	0	0	0	Recon Point		0		0		0		0	STOP	445737	3531635



Attachment 3

Historic Range Fans

DMPTR

Fort Stewart, GA

N
W E
S

0 1,050 2,100 4,200 6,300 8,400 Meters

Data is projected to the UTM Coordinate System: Zone 17 North, WGS84, Units in Meters.

Legend

Historic Range Fans

AG 1 Range

Unknown Anti-Aircraft Ordnance

C Range

9mm, 90mm Anti-Aircraft Ordnance

Echo Range

Unknown Ordnance

Foxtrot Range

Unknown Ordnance

Hotel Range

Unknown Ordnance

Multi-Purpose Range

Unknown Ordnance

Victor Range

Unknown Ordnance

Environmental Protection & Utilities Branch
EPUB-GIS TEAM

U.S. Army Engineering And Support Center Huntsville, AL

Drawn By:	Date Drawn:	Project Number:
DBR	10FEB2011	57794

MXD: PROJECTS\States\GA\Ft_Stewart\DMPTR_Recon_57794\MXD\DMPTR_fig7_historic.mxd

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APPENDIX G

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BUILDING 1137
City: FORT STEWART **State:** GA **Zip:** 31314

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Ad Id: 8003423

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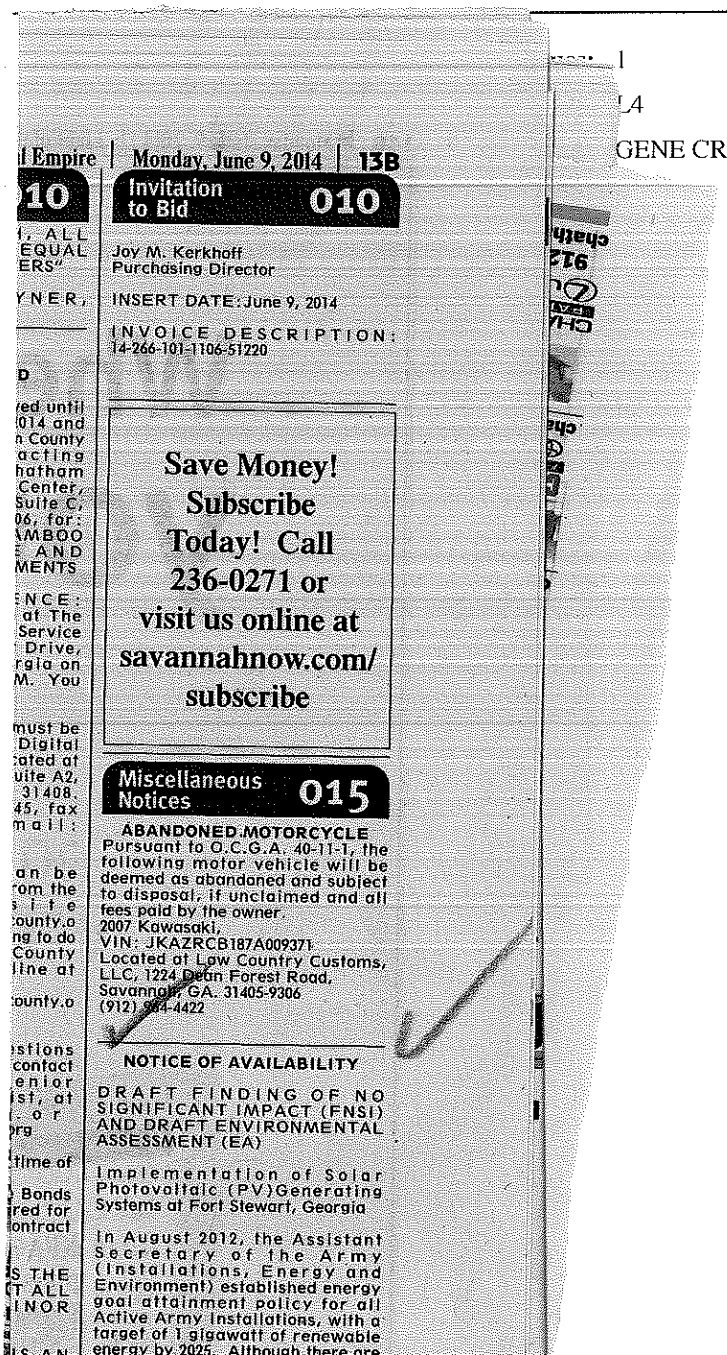

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Purchasing Director

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015 Miscellaneous Notices

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Pursuant to O.C.G.A. 40-11-1, the following motor vehicle will be deemed as abandoned and subject to disposal, if unclaimed and all fees paid by the owner.
2007 Kawasaki,
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Located at Low Country Customs, LLC, 1224 Dean Forest Road, Savannah, GA. 31405-9306
(912) 964-4422

NOTICE OF AVAILABILITY

DRAFT FINDING OF NO SIGNIFICANT IMPACT (FNSI) AND DRAFT ENVIRONMENTAL ASSESSMENT (EA)

Implementation of Solar Photovoltaic (PV)Generating Systems at Fort Stewart, Georgia

In August 2012, the Assistant Secretary of the Army (Installations, Energy and Environment) established energy goal attainment policy for all Active Army Installations, with a target of 1 gigawatt of renewable energy by 2025. Although there are

Stop: 06/09/2014
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NOTICE OF AVAILABILITY

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The Draft EA and its associated FNSI can be accessed via the following web address: http://www.stewart.army.mil/dpw/PC_NEPA.asp, and hard copies will be available at Savannah, Hinesville, and Fort Stewart libraries. If you would like to receive a hard copy of the Draft FNSI and EA to review, email Amber E. Franks, Fort Stewart Directorate of Public Works, Environmental Division, amber.e.franks.civ@mail.mil or Melissa B. Kendrick, Fort Stewart Directorate of Public Works, Environmental Division, melissa.b.kendrick.civ@mail.mil. Please submit comments during the public comment period, June 9 July 8, 2014, to Amber E. Franks or Melissa B. Kendrick, using the above provided contact information or by calling 912-767-2010.

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SAVANNAH, GA 31402-1088

AFFIDAVIT OF PUBLICATION

STATE OF GEORGIA

COUNTIES OF LIBERTY AND LONG

Personally appeared before me, the undersigned Notary Public, *S. Marshall Griffin*, who after being duly sworn stated under oath that he is the Publisher of the COASTAL COURIER, the official Legal Organ of Liberty and Long Counties, a newspaper published in the city of Hinesville, and who further states under oath that the advertisement attached hereto and made a part of this affidavit appeared in the ~~C~~OASTAL COURIER on the following date(s):

June 8, 2014

S. Marshall Griffin
PUBLISHER

Sworn to and subscribed before me,

This 18 **day of** June 2014

ELLY MATTINGLY NOTARY PUBLIC Comm. Exp. LIBERTY COUNTY, GA.

Notary Public

December 01, 2015
Commission expires

gpn14
NOTICE OF AVAILABILITY DRAFT FINDING OF NO SIGNIFICANT IMPACT (FNSI) AND DRAFT ENVIRONMENTAL ASSESSMENT (EA)
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DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
DIRECTORATE OF PUBLIC WORKS
1587 VETERANS PARKWAY
FORT STEWART, GEORGIA 31314

Office of the Directorate

U.S. Forest Service
Chattahoochee-Oconee National Forest
Attn: Mr. George Bain
1755 Cleveland Highway
Gainesville, GA 30501

Dear Mr. Bain:

Enclosed is a copy of the *Draft Finding of No Significant Impact (FNSI) and Draft Environmental Assessment (EA) for Implementation of Solar Photovoltaic (PV) Generating Systems at Fort Stewart, Georgia.*

In August 2012, the Assistant Secretary of the Army (Installations, Energy and Environment) established energy goal attainment policy for all Active Army Installations, with a target of 1 gigawatt of renewable energy by 2025. Although there are many renewable energy sources (solar, wind, biomass, landfill gas, etc.), the Army has increasingly turned to solar energy to meet its renewable energy target. At Fort Stewart, the Army proposes to work with the Georgia Power Company to generate renewable energy via the construction and operation of Solar PV Generating Systems on Fort Stewart lands. The Draft EA analyzes the potential environmental impacts of implementing this proposed action and the no action/status quo alternative, neither of which are expected to result in significant adverse impacts to the Installation's environmental resources.

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Sincerely,

Thomas C. Fry
Chief, Environmental Division
Directorate of Public Works

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
DIRECTORATE OF PUBLIC WORKS
1587 VETERANS PARKWAY
FORT STEWART, GEORGIA 31314

Office of the Directorate

U.S. Fish and Wildlife Service
Georgia Ecological Services Field Office
Attn: Mr. Strant T. Colwell
4980 Wildlife Drive NE
Townsend, GA 31331

Dear Mr. Colwell:

Enclosed is a copy of the *Draft Finding of No Significant Impact (FNSI) and Draft Environmental Assessment (EA) for Implementation of Solar Photovoltaic (PV) Generating Systems at Fort Stewart, Georgia.*

In August 2012, the Assistant Secretary of the Army (Installations, Energy and Environment) established energy goal attainment policy for all Active Army Installations, with a target of 1 gigawatt of renewable energy by 2025. Although there are many renewable energy sources (solar, wind, biomass, landfill gas, etc.), the Army has increasingly turned to solar energy to meet its renewable energy target. At Fort Stewart, the Army proposes to work with the Georgia Power Company to generate renewable energy via the construction and operation of Solar PV Generating Systems on Fort Stewart lands. The Draft EA analyzes the potential environmental impacts of implementing this proposed action and the no action/status quo alternative, neither of which are expected to result in significant adverse impacts to the Installation's environmental resources.

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Sincerely,

Thomas C. Fry
Chief, Environmental Division
Directorate of Public Works

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
DIRECTORATE OF PUBLIC WORKS
1587 VETERANS PARKWAY
FORT STEWART, GEORGIA 31314

Office of the Directorate

Georgia Department of Natural Resources
Environmental Review Coordination
Attn: Karen Anderson-Cordova
254 Washington Street, SW
Atlanta, GA 30334

Dear Ms. Anderson-Cordova:

Enclosed is a copy of the *Draft Finding of No Significant Impact (FNSI) and Draft Environmental Assessment (EA) for Implementation of Solar Photovoltaic (PV) Generating Systems at Fort Stewart, Georgia.*

In August 2012, the Assistant Secretary of the Army (Installations, Energy and Environment) established energy goal attainment policy for all Active Army Installations, with a target of 1 gigawatt of renewable energy by 2025. Although there are many renewable energy sources (solar, wind, biomass, landfill gas, etc.), the Army has increasingly turned to solar energy to meet its renewable energy target. At Fort Stewart, the Army proposes to work with the Georgia Power Company to generate renewable energy via the construction and operation of Solar PV Generating Systems on Fort Stewart lands. The Draft EA analyzes the potential environmental impacts of implementing this proposed action and the no action/status quo alternative, neither of which are expected to result in significant adverse impacts to the Installation's environmental resources.

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Sincerely,

Thomas C. Fry
Chief, Environmental Division
Directorate of Public Works

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
DIRECTORATE OF PUBLIC WORKS
1587 VETERANS PARKWAY
FORT STEWART, GEORGIA 31314

Office of the Directorate

City of Statesboro
Attn: R. Shane Haynes
City Manager
50 East Main Street
Statesboro, GA 30458

Dear Mr. Haynes:

Enclosed is a copy of the *Draft Finding of No Significant Impact (FNSI) and Draft Environmental Assessment (EA) for Implementation of Solar Photovoltaic (PV) Generating Systems at Fort Stewart, Georgia.*

In August 2012, the Assistant Secretary of the Army (Installations, Energy and Environment) established energy goal attainment policy for all Active Army Installations, with a target of 1 gigawatt of renewable energy by 2025. Although there are many renewable energy sources (solar, wind, biomass, landfill gas, etc.), the Army has increasingly turned to solar energy to meet its renewable energy target. At Fort Stewart, the Army proposes to work with the Georgia Power Company to generate renewable energy via the construction and operation of Solar PV Generating Systems on Fort Stewart lands. The Draft EA analyzes the potential environmental impacts of implementing this proposed action and the no action/status quo alternative, neither of which are expected to result in significant adverse impacts to the Installation's environmental resources.

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Chief, Environmental Division
Directorate of Public Works

DEPARTMENT OF THE ARMY
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HEADQUARTERS, US ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
DIRECTORATE OF PUBLIC WORKS
1587 VETERANS PARKWAY
FORT STEWART, GEORGIA 31314

Office of the Directorate

Savannah District Corps of Engineers
Wetland Regulatory Division
Attn: Donald Hendrix
100 W. Oglethorpe Avenue
Savannah, GA 31401

Dear Mr. Hendrix:

Enclosed is a copy of the *Draft Finding of No Significant Impact (FNSI) and Draft Environmental Assessment (EA) for Implementation of Solar Photovoltaic (PV) Generating Systems at Fort Stewart, Georgia.*

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Thomas C. Fry
Chief, Environmental Division
Directorate of Public Works

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US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
DIRECTORATE OF PUBLIC WORKS
1587 VETERANS PARKWAY
FORT STEWART, GEORGIA 31314

Office of the Directorate

U.S. Environmental Protection Agency
Federal Activity Branch
Attn: Mr. Heinz J. Mueller
61 Forsyth Street, SW
Atlanta, GA 30303-3104

Dear Mr. Mueller:

Enclosed is a copy of the *Draft Finding of No Significant Impact (FNSI) and Draft Environmental Assessment (EA) for Implementation of Solar Photovoltaic (PV) Generating Systems at Fort Stewart, Georgia.*

In August 2012, the Assistant Secretary of the Army (Installations, Energy and Environment) established energy goal attainment policy for all Active Army Installations, with a target of 1 gigawatt of renewable energy by 2025. Although there are many renewable energy sources (solar, wind, biomass, landfill gas, etc.), the Army has increasingly turned to solar energy to meet its renewable energy target. At Fort Stewart, the Army proposes to work with the Georgia Power Company to generate renewable energy via the construction and operation of Solar PV Generating Systems on Fort Stewart lands. The Draft EA analyzes the potential environmental impacts of implementing this proposed action and the no action/status quo alternative, neither of which are expected to result in significant adverse impacts to the Installation's environmental resources.

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Thomas C. Fry
Chief, Environmental Division
Directorate of Public Works

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US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
DIRECTORATE OF PUBLIC WORKS
1587 VETERANS PARKWAY
FORT STEWART, GEORGIA 31314

Office of the Directorate

City of Glennville
Attn: Ms. Amy W. Murray
134 South Downing Musgrove Highway
Glennville, GA 30457

Dear Ms. Murray:

Enclosed is a copy of the *Draft Finding of No Significant Impact (FNSI) and Draft Environmental Assessment (EA) for Implementation of Solar Photovoltaic (PV) Generating Systems at Fort Stewart, Georgia.*

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Sincerely,

Thomas C. Fry
Chief, Environmental Division
Directorate of Public Works

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
DIRECTORATE OF PUBLIC WORKS
1587 VETERANS PARKWAY
FORT STEWART, GEORGIA 31314

Office of the Directorate

Liberty Consolidated Planning Commission
Attn: Mr. Jeff Ricketson
The Historic Courthouse
100 Main Street, Suite 7520
Hinesville, GA 31313

Dear Mr. Ricketson:

Enclosed is a copy of the *Draft Finding of No Significant Impact (FNSI) and Draft Environmental Assessment (EA) for Implementation of Solar Photovoltaic (PV) Generating Systems at Fort Stewart, Georgia.*

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Chief, Environmental Division
Directorate of Public Works

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DIRECTORATE OF PUBLIC WORKS
1587 VETERANS PARKWAY
FORT STEWART, GEORGIA 31314

Office of the Directorate

Georgia Department of Natural Resources
Environmental Protection Division
Attn: Mr. Jud Turner
2 Martin Luther King Jr. Drive, SE
Atlanta, GA 30334-9000

Dear Mr. Turner:

Enclosed is a copy of the *Draft Finding of No Significant Impact (FNSI) and Draft Environmental Assessment (EA) for Implementation of Solar Photovoltaic (PV) Generating Systems at Fort Stewart, Georgia.*

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DIRECTORATE OF PUBLIC WORKS
1587 FRANK VETERANS PARKWAY
FORT STEWART, GEORGIA 31314

Office of the Directorate

Georgia Department of Natural Resources
Environmental Protection Division
Watershed Protection Branch
Attn: Ms. Jennifer H. Welte
4220 International Parkway, Suite 101
Atlanta, GA 30354

Dear Ms. Welte:

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