Draft Environmental Assessment

Construction of an Additional Warehouse Complex

MacDill Air Force Base, Florida

Prepared by the Department of the Air Force
June 2016

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Environmental Assessment

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Draft

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COVER SHEET

Title: Environmental Assessment for the Construction of an Additional Warehouse Complex, MacDill Air Force Base, Florida

Location: MacDill Air Force Base (AFB), Hillsborough County, Florida

Proponent: U.S. Air Force

Report Designation: Draft Environmental Assessment (EA)

Point of Contact: Mr. Jason Kirkpatrick, 6th Civil Engineer Squadron, (813) 828-0459, jason.kirkpatrick.2.ctr@us.af.mil

Abstract:

This EA evaluates the potential effects associated with the construction of a new warehouse complex on MacDill AFB, Florida. Under the Preferred Alternative, four 4,800-square-foot (SF) warehouses, totaling 19,200 SF, would be constructed at the corner of North Boundary Boulevard and West Boundary Boulevard on MacDill AFB to provide mission-essential storage space for the U.S. Central Command, the Defense Intelligence Agency, and other tenants. The proposed site is not within the 100-year or 500-year floodplain. The warehouse complex, including building footprint, paved areas, stormwater retention pond, septic system, and green spaces, would cover approximately 4.5 acres. The EA also evaluates the No Action Alternative, under a new warehouse complex would not be constructed at MacDill AFB. The No Action Alternative is required under the National Environmental Policy Act to provide a baseline against which the environmental consequences of the Proposed Action can be measured. After screening, three other alternatives were evaluated against selection standards, and no alternatives other than the Preferred Alternative were found to meet the purpose of and need for the new warehouse complex; the additional alternatives were eliminated from further analysis in the EA.

Public Review Period: 15 June 2016 – 18 July 2016

Letters or other written comments provided may be published in the Final EA. As required by law, substantive comments will be addressed in the Final EA and made available to the public. Any personal information provided will be kept confidential. Private addresses will be compiled to develop a mailing list of those requesting copies of the Final EA. However, only the names of the individuals making comments and their specific comments will be disclosed. Home addresses and personal phone numbers will not be published in the Final EA.

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DRAFT FINDING OF NO SIGNIFICANT IMPACT/FINDING OF NO PRACTICABLE ALTERNATIVE

Construction of an Additional Warehouse Complex, MacDill Air Force Base, Florida

Pursuant to provisions of the National Environmental Policy Act of 1969 (NEPA), Title 42 United States Code (U.S.C.) Sections 4321 et seq., implemented by Council on Environmental Quality (CEQ) Regulations at Title 40 Code of Federal Regulations (CFR) Parts 1500–1508, and the U.S. Air Force's (AF) NEPA regulations at 32 CFR Part 989, *Environmental Impact Analysis Process*, the AF assessed the potential environmental consequences associated with the construction of a new warehouse complex on MacDill Air Force Base (AFB), Tampa, Florida. The Proposed Action is needed to provide secure, covered warehouse space to store materials and supplies that support base operations. Old warehouse facilities were too small and scattered throughout the base, and unable to accommodate warehouse storage needs.

The Environmental Assessment (EA), which is herewith incorporated by reference into this finding, analyzes the potential environmental consequences of the Proposed Action, and provides measures to avoid or reduce adverse environmental effects. The EA considers all potential adverse effects of the Preferred Alternative and the No Action Alternative. It EA also considers cumulative environmental effects with other projects in the Region of Influence (ROI).

Preferred Alternative

MacDill AFB would construct a new warehouse complex on an undeveloped parcel at the corner of North Boundary Boulevard and West Boundary Boulevard. This site is outside the 100-year and 500-year coastal floodplains. The warehouse complex would provide mission-essential storage space for the U.S. Central Command (USCENTCOM), the Defense Intelligence Agency (DIA), and other tenants. It would comprise four 4,800-square-foot warehouses, totaling 19,200 square feet. The complex, including building footprint, paved areas, stormwater retention pond, septic system, and green spaces, would cover approximately 4.5 acres.

After screening three other alternatives against selection standards, no alternatives other than the Preferred Alternative were found to meet the purpose and need so the additional alternatives were eliminated from further consideration and not analyzed in the EA.

No Action Alternative

The Proposed Action would not occur. USCENTCOM and DIA would continue to work with the limited space in their existing storage facility. Other tenants would also continue to operate with current storage space. Current storage space for USCENTCOM, DIA, and other tenants is lacking and cannot accommodate the requirements for support equipment. The No Action Alternative does not meet the purpose and need, but it is carried forward for detailed analysis in the EA as a baseline for evaluation.

Summary of Findings

The analyses of the affected environment and environmental consequences of implementing the Preferred Alternative as presented in the EA concluded that by implementing standing environmental protection measures and operational planning, the AF would be in compliance with all state and federal reporting requirements for implementation and pose no significant adverse impacts in the short or long term. In addition, no significant, adverse, cumulative effects are expected when considered with past, present, or reasonably foreseeable future projects.

Finding of No Significant Impact

Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of NEPA, CEQ Regulations, and 32 CFR Part 989, I conclude that the construction of a warehouse complex on MacDill AFB, would not have a significant environmental impact, either by itself or cumulatively with other known projects. Accordingly, an Environmental Impact Statement is not required.

Finding of No Practicable Alternative

According to the AF Environmental Impact Analysis Process, Supplement 1 (32 CFR Part 989), a Finding of No Practical Alternative (FONPA) is required for activities in wetlands in compliance with Executive Order (EO) 11990, *Protection of Wetlands*. Construction at the Preferred Alternative site will require relocation of a man-made drainage feature (swale). This vegetated drainage swale that conveys stormwater may exhibit wetland characteristics but is exempt from wetland mitigation under Chapter 403.813(1)(j) Florida Statutes, Chapter 62-330.051 Florida Administrative Code. Relocation of the swale would result in a temporary impact on the water quality and wildlife functions. However, these water quality and wildlife benefits would be quickly re-established following construction of a new drainage swale, resulting in no permanent impacts on wetland functions.

Therefore, pursuant to the previously referenced EOs, and taking into consideration the findings of the EA, I find that there is no practicable alternative and the Preferred Alternative includes all practicable measures to minimize harm to the environment. There are no other available areas located on MacDill AFB that would satisfy the objectives of the Proposed Action. The AF has sent all required notices to federal agencies, single points of contact, the State of Florida, local government representatives, and the local news media.

The signing of this combined FONSI/FONPA completes the environmental impact analysis process under AF regulations.

_____ _____

ROWAYNE A. SCHATZ, JR. **DATE**
Major General, USAF
Vice Commander, Air Mobility Command

EXECUTIVE SUMMARY

This Environmental Assessment (EA) was prepared in accordance with the requirements of Section 102(2)(c) of the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [U.S.C.] 4321 et seq.); the Council on Environmental Quality (CEQ) NEPA-implementing regulations (40 Code of Federal Regulations [CFR] Parts 1500–1508); and the U.S. Air Force's (AF) NEPA regulations (32 CFR Part 989).

Purpose of and Need for the Proposed Action

This EA identifies, describes, and evaluates the potential environmental effects associated with the construction of a new warehouse complex on MacDill Air Force Base (AFB), Florida. The purpose of this action is to provide additional warehouse space for MacDill AFB to accommodate an expressed need for secure, covered warehouse capacity to store various materials and supplies to support base operations, the 6th Air Mobility Wing (6 AMW) mission, and tenant organizations. Due to budget constraints and the loss of an off-site warehouse location, U.S. Central Command (USCENTCOM) and the Defense Intelligence Agency (DIA) need a secure, covered facility for the storage of support equipment at MacDill AFB. Other existing facilities and warehouses on MacDill AFB are unable to accommodate the support equipment. Other tenants have also expressed a need for additional warehouse space.

Preferred Alternative

Under the Preferred Alternative, four 4,800-square-foot (SF) warehouses, totaling 19,200 SF, would be constructed to provide mission-essential storage space for USCENTCOM, DIA, and other tenants at MacDill AFB. The estimated cost for construction of one storage facility is approximately $880,000. The complex would consist of up to four warehouses with a total cost of approximately $3.5 million. The warehouse complex, including building footprint, paved areas, stormwater retention pond, septic system, and green spaces, would cover roughly 4.5 acres. The proposed location is an undeveloped parcel at the corner of North Boundary Boulevard and West Boundary Boulevard. This site is outside the 100-year and 500-year coastal floodplains.

No Action Alternative

Under the No Action Alternative, a new warehouse complex would not be constructed at MacDill AFB. USCENTCOM and DIA would continue to work with the limited space in their existing storage facility on the south end of the base. Other tenants would also continue to operate with current storage space. Current storage space for USCENTCOM, DIA, and other tenants is lacking and cannot accommodate the requirements for support equipment. The No Action Alternative does not meet the purpose of and need for action, but it is carried forward for detailed analysis in this EA as a baseline against which the environmental effects of the Proposed Action can be evaluated.

Alternatives Considered but Not Carried Forward

Three other alternatives were considered to determine whether they met the purpose of and need for additional warehousing at MacDill AFB. Alternative 2 would add to or alter an existing storage facility on MacDill AFB. There are currently no sufficiently sized storage facilities on-base, and the costs of retrofitting an existing storage facility would be high. Alternative 3 would lease or purchase off-base warehouse facilities. The closest warehouse facilities to MacDill AFB outside of the 100-year floodplain are 15 miles away from the base and cost-prohibitive. Alternative 4 would locate alternative siting options on MacDill AFB. Additional warehouse facility sites were considered but have substantial environmental constraints that make them less suitable than the Preferred Alternative. AF Environmental Impact Analysis Process selection standards were applied to each alternative to determine which could meet the requirements to fulfill the purpose of and need for the Proposed Action. Alternatives 2, 3, and 4 did not meet the purpose and need selection standards, and were not carried forward for analysis in this EA.

Environmental Consequences

The Preferred Alternative would have no significant adverse effects on any environmental or cultural resources, or socioeconomic conditions at MacDill AFB or the surrounding areas.

Implementation of the No Action Alternative would have no significant adverse effects on any environmental or cultural resources, or socioeconomic conditions at MacDill AFB or the surrounding areas.

Table ES-1 summarizes the consequences for each resource area evaluated for both the Preferred Alternative and the No Action Alternative.

Agency Consultation and Public Outreach

Agency consultation letters are in Appendix A. A summary of the agencies consulted and their responses are in Table ES-2.

The AF will publish a Notice of Availability (NOA) of this Draft EA in the *Tampa Bay Times*. In addition, the EA will be delivered to various agencies and organizations identified in the distribution list presented in Section 6. The EA will be made available for public review and comment.

Conclusion

The Preferred Alternative would not have a significant adverse impact on the natural or human environment at MacDill AFB. Therefore, an Environmental Impact Statement is not required, and a Finding of No Significant Impact is warranted.

Table ES-1. Summary of Effects from the Preferred Alternative and No Action Alternative

Environmental Resources	Preferred Alternative	No Action Alternative
Air Installation Compatible Use Zone (AICUZ), Noise, and Land Use	Short-term: Minor adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect
Air Quality	Short-term: Minor adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect
Water Resources	Short-term: Minor adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect
Safety and Occupational Health	Short-term: Minor adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect
Hazardous Materials and Wastes	Short-term: Minor adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect
Biological and Natural Resources	Short-term: Minor adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect
Cultural Resources	Short-term: No adverse effect Long-term: No adverse effect	Short-term: No effect Long-term: No effect
Geology, Topography, and Soils	Short-term: Negligible adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect

Table ES-2. Summary of Agency Consultation and Response

Agency	Response
U.S. Fish and Wildlife Service (USFWS)	(will be completed following consultation)
National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS), Southeast Region, Habitat Conservation Division	(will be completed following consultation)
Florida State Historic Preservation Officer	(will be completed following consultation)
Florida State Clearinghouse	(will be completed following consultation)
Miccosukee Tribe of Indians of Florida	On 20 July 2015, a representative for the Miccosukee Tribe of Indians contacted the 6 AMW front office. The Miccosukee Tribe does not have any concerns about the proposed warehouse district, but if human remains are found during excavation, construction activities should halt and the tribe should be contacted.
Seminole Tribe of Florida	The Seminole Tribe of Florida Tribal requested a Phase I Cultural Resources Assessment Survey of the proposed Warehouse District site, which was completed in December 2015. No cultural or archaeological resources were discovered. The Seminole Tribe of Florida did not object to the findings, and asked that they be informed in the event that any archaeological, historical, or burial resources are inadvertently discovered during project execution.

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1. PURPOSE OF AND NEED FOR ACTION

This Environmental Assessment (EA) identifies, describes, and evaluates the potential environmental impacts associated with the construction of a new warehouse complex on MacDill Air Force Base (AFB), Florida. This EA has been prepared pursuant to Section 102(2)(c) of the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality (CEQ) NEPA-implementing procedures (40 Code of Federal Regulations [CFR] Parts 1500–1508), and the U.S. Air Force's (AF) NEPA procedures (32 CFR Part 989).

1.1 INTRODUCTION

The Proposed Action would take place at MacDill AFB, Florida. The base occupies approximately 5,630 acres and is in Hillsborough County, adjacent to the city of Tampa, at the southern tip of the Interbay Peninsula (Figure 1-1). MacDill AFB is surrounded on three sides by Tampa Bay and Hillsborough Bay, and is bordered on the north by development within the city of Tampa. Approximately 80 percent (4,510 acres) of the landmass at MacDill AFB is in the 100-year coastal floodplain, which is in the Special Flood Hazard Zone of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map. The proposed site for construction of the new warehouse complex is located in the northwest area of the base, at the corner of North Boundary Boulevard and West Boundary Boulevard. The proposed site is not within the 100-year or 500-year floodplain. The complex would consist of up to four warehouses.

The 6th Air Mobility Wing (6 AMW) is the host unit at MacDill AFB and reports to Air Mobility Command (AMC), headquartered at Scott AFB, Illinois. The mission of the Wing is to provide worldwide aerial refueling and combatant command airlift in support of the AF's "Global Reach, Global Power" mission and to provide support to Headquarters U.S. Central Command (USCENTCOM), Headquarters U.S. Special Operations Command (USSOCOM), and 26 other mission partners that call MacDill AFB home (MacDill AFB 2015). In addition, MacDill AFB provides similar support to tenant agencies and the surrounding community, including more than 73,000 retirees and their families (MacDill AFB 2014). The organizational structure of the 6 AMW consists primarily of a maintenance group, medical group, operations group, and mission support group.

1.2 PURPOSE OF THE PROPOSED ACTION

The purpose of this action is to construct additional warehouse space at MacDill AFB. In 2010, an EA was prepared to analyze the construction of eight new 4,800-square-foot (SF) warehouses. The site originally assessed in the 2010 EA is on the western side of MacDill AFB and is built out; no additional warehouses can fit within the assessed site. Only five warehouses were able to be built within the site that was analyzed in 2010. Multiple organizations on MacDill AFB still identify the need for secure, covered warehouse space to store various materials and supplies to support base operations, the 6 AMW mission, and tenant organizations. Old warehouse facilities, which were too small and scattered throughout the base, would continue to be demolished to provide space for other mission-essential facilities (AMC 2010a).

Figure 1-1. MacDill Air Force Base and Surrounding Area

1.3 NEED FOR THE PROPOSED ACTION

Due to budget constraints and the loss of an off-site warehouse location, USCENTCOM and the Defense Intelligence Agency (DIA) need a secure, covered facility for the storage of support equipment at MacDill AFB. Other existing facilities and warehouses on MacDill AFB are unable to accommodate the additional support equipment. Other tenants have also expressed a need for additional warehouse space.

1.4 DECISION TO BE MADE

The decision to be made is the selection of an alternative for MacDill AFB to support the construction of additional warehouse space. The decision options are as follows:

- Continue with current operations (the No Action Alternative)
- Select an alternative and prepare a Finding of No Significant Impact (FONSI)/Finding of No Practical Alternative (FONPA)
- Prepare an Environmental Impact Statement (EIS) if the alternatives would result in significant environmental impacts

1.5 AGENCY AND INTERGOVERNMENTAL COORDINATION CONSULTATIONS

1.5.1 INTERAGENCY AND INTERGOVERNMENTAL COORDINATION AND CONSULTATIONS

Federal, state, and local agencies with jurisdiction that could be affected by the alternative actions were notified and consulted during the development of this EA.

Appendix A contains the list of agencies consulted during this analysis and copies of correspondence.

1.5.2 GOVERNMENT-TO-GOVERNMENT CONSULTATIONS

Executive Order (EO) 13175, *Consultation and Coordination with Indian Tribal Governments* (6 November 2000), directs federal agencies to coordinate and consult with Native American tribal governments whose interests might be directly and substantially affected by activities on federally administered lands. To comply with legal mandates, federally recognized tribes that are affiliated historically with the MacDill AFB geographic region are invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. The tribal coordination process is distinct from the NEPA consultation or the Interagency/Intergovernmental Coordination for Environmental Planning (IICEP) processes and requires separate notification to all relevant tribes. The timelines for tribal consultation are also distinct from those of intergovernmental consultations. The MacDill AFB point of contact for Native American tribes is the Base Commander. The MacDill AFB point of contact for consultation with the Tribal Historic Preservation Officer (THPO) and the Advisory Council on Historic Preservation is the Cultural Resources Manager.

The Native American tribal governments that will be coordinated with regarding this action are listed in Section 6; consultation letters are in Appendix A.

1.5.3 PUBLIC AND AGENCY REVIEW OF ENVIRONMENTAL ASSESSMENT

NEPA ensures that environmental information is made available to the public during the decision-making process and prior to actions being taken. The premise of NEPA is that the quality of federal decisions will be enhanced if proponents provide information on their actions to other federal, state, and local agencies and the public, and involve them in the planning process. The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require federal agencies to cooperate with and consider state and local views in implementing a federal proposal. Section 6 of this EA contains the agency contact list for this Proposed Action.

All agencies, organizations, and members of the public having a potential interest in the Proposed Action will be given an opportunity to provide comments on the EA during a 30-day review period. At the end of the 30-day review period, the AF will evaluate all comments received and will modify the EA and/or Proposed Action based on the comments as appropriate. The AF may then execute a FONSI/FONPA and proceed with the Preferred Alternative. If it is determined that implementation of the Preferred Alternative would result in significant effects, the AF will either publish in the Federal Register a Notice of Intent to prepare an EIS, revise the Preferred Alternative to avoid significant effects, incorporate mitigation to reduce the effect to less than significant, or not take the action. Appendix A contains all agency and public coordination.

A Notice of Availability (NOA) of the Draft EA and FONSI/FONPA will be published in the *Tampa Bay Times*, announcing the availability of the EA for review. The NOA will invite the public to review and comment on the Draft EA. Public and agency comments are provided in Appendix A.

Copies of the Draft EA and FONSI/FONPA will be made available for review on the MacDill AFB public website (www.macdill.af.mil) and at the following location:

Tampa/Hillsborough County Public Library
900 N. Ashley Drive
Tampa, FL 33606

1.5.4 APPLICABLE REGULATORY REQUIREMENTS

This environmental analysis has been conducted in accordance with the President's CEQ regulations, 40 CFR Parts 1500–1508, as they implement the requirements of NEPA, 42 U.S.C. 4321 et seq., and the AF Environmental Impact Analysis Process (EIAP), as promulgated in 32 CFR Part 989. These regulations require federal agencies to analyze the potential environmental effects of proposed actions and alternatives and to use these analyses to make decisions on a proposed action. Cumulative effects of other ongoing activities also must be assessed in combination with the Proposed Action. The CEQ was instituted to oversee federal policy in this process. The CEQ regulations direct that an EA be prepared in order to provide sufficient evidence and analysis to determine whether to prepare an EIS or a FONSI/FONPA. Furthermore, an EA aids in an agency's compliance with NEPA when an EIS is not necessary, and facilitates preparation of an EIS when one is necessary.

Title 32 CFR Part 989 specifies the AF procedural requirements for the implementation of NEPA and preparation of an EA. Other environmental regulatory requirements relevant to the Proposed Action and No Action Alternative are also identified in this EA. Regulatory requirements under the following programs, among others, are assessed: Noise Control Act, Clean Air Act (CAA), Clean Water Act, National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act, Occupational Safety and Health Act, and Coastal Zone Management Act (CZMA). Requirements also include compliance with EO 11988, *Floodplain Management*, amended in 2015 by EO 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*; EO 11990, *Protection of Wetlands*; and EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.*

1.5.5 COASTAL ZONE CONSISTENCY DETERMINATION

The CZMA creates a state-federal partnership to ensure the protection of coastal resources. The CZMA requires each federal activity within or outside the coastal zone that affects any land use, water use, or natural resources of the coastal zone, to be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of the state's coastal zone management or watershed protection program. Florida has a Coastal Management Program (CMP). The CZMA presumes that "direct Federal activities" will directly affect the coastal zone. According to the Florida CMP, "direct Federal activities" are those that "are conducted or supported by or on behalf of a Federal agency in the exercise of its statutory responsibilities, including development projects."

The CZMA instructs federal agencies carrying out activities that are subject to coastal zone consistency requirements to provide a "consistency determination" to the relevant state agency. The federal regulations implementing the CZMA then require the state agency to inform the federal agency of its agreement or disagreement with the federal agency's consistency determination. The Proposed Action analyzed in this EA requires a consistency determination to be submitted by the AF to the relevant Florida agency, and a response from the State of Florida of either agreement or disagreement with that determination. The AF's Consistency Determination is in Appendix B. This EA and the AF's Consistency Determination was submitted to the Florida State Clearinghouse for a multiagency review.

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2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 DETAILED DESCRIPTION OF THE PROPOSED ACTION

MacDill AFB personnel have an expressed need for secure, covered warehouse capacity to store various materials and supplies to support base operations, the 6th Air Mobility Wing (6 AMW) mission, and tenant organizations. Due to budget constraints and the loss of an off-site warehouse location, U.S. Central Command (USCENTCOM) and the Defense Intelligence Agency (DIA) need a secure, covered facility for the storage of support equipment at MacDill AFB. Other existing facilities and warehouses on MacDill AFB are unable to accommodate the support equipment. Other tenants have also expressed a need for additional warehouse space.

Under the Proposed Action, a new warehouse complex would be constructed to provide mission-essential storage space for USCENTCOM, DIA, and other tenants at MacDill AFB. The Preferred Alternative would consist of up to four warehouses with a total cost of approximately $3.5 million.

Each facility would be designed using standard engineering principles and constructed to comply with the *MacDill AFB Architectural Compatibility Plan*. The buildings would be designed to withstand hurricane-force winds of up to 150 miles per hour in accordance with current building standards. The facilities would comply with Department of Defense (DOD) minimum anti-terrorism/force protection (AT/FP) construction standards.

2.2 SELECTION STANDARDS

NEPA and CEQ regulations mandate the consideration of reasonable alternatives for a proposed action. "Reasonable alternatives" are those that also could be utilized to meet the purpose of and need for a proposed action. Per the requirements of 32 CFR Part 989, the AF EIAP regulations, selection standards are used to identify alternatives for meeting the purpose of and need for the Proposed Action.

The Proposed Action alternatives must meet the following selection standards:

1. provide secure, covered warehouse space to store various materials and supplies
2. meet current AT/FP requirements
3. may not be within the 100-year floodplain, to meet storage needs for computer systems and support equipment
4. minimize environmental effects.

2.3 SCREENING OF ALTERNATIVES

The following potential alternatives that might meet the purpose of and need for additional warehousing at MacDill AFB were considered:

- **Alternative 1** (Preferred Alternative) – Construct the Proposed Action on an undeveloped parcel at the corner of North Boundary Boulevard and West Boundary Boulevard. Alternative 1, herein after referred to as the Preferred Alternative, is described in more detail in Section 2.4.1.

- **Alternative 2** – Add to or alter an existing storage facility on MacDill AFB. There are currently no sufficiently sized storage facilities on base, and the costs of retrofitting an existing storage facility would be high.
- **Alternative 3** – Lease or purchase off-base warehouse facilities. The closest warehouse facility to MacDill AFB outside of the 100-year floodplain is 15 miles away from the base.
- **Alternative 4** – Alternative siting options on MacDill AFB for the construction of the Proposed Action. Additional warehouse facility sites were considered but had substantial environmental constraints that make them less suitable than the Preferred Alternative.

The selection standards described in Section 2.2 were applied to these alternatives to determine which alternative(s) could meet the requirements for construction of a new warehouse complex at MacDill AFB and would fulfill the purpose of and need for the Proposed Action (see Table 2-1).

Table 2-1. Screening of Alternatives

Alternative Descriptions	Selection Standards			
	(1)	(2)	(3)	(4)
Alternative 1 (Preferred Alternative)	Yes	Yes	Yes	Yes
Alternative 2	Yes	No	Yes	Yes
Alternative 3	Yes	No	Yes	Yes
Alternative 4	Yes	Yes	No	No

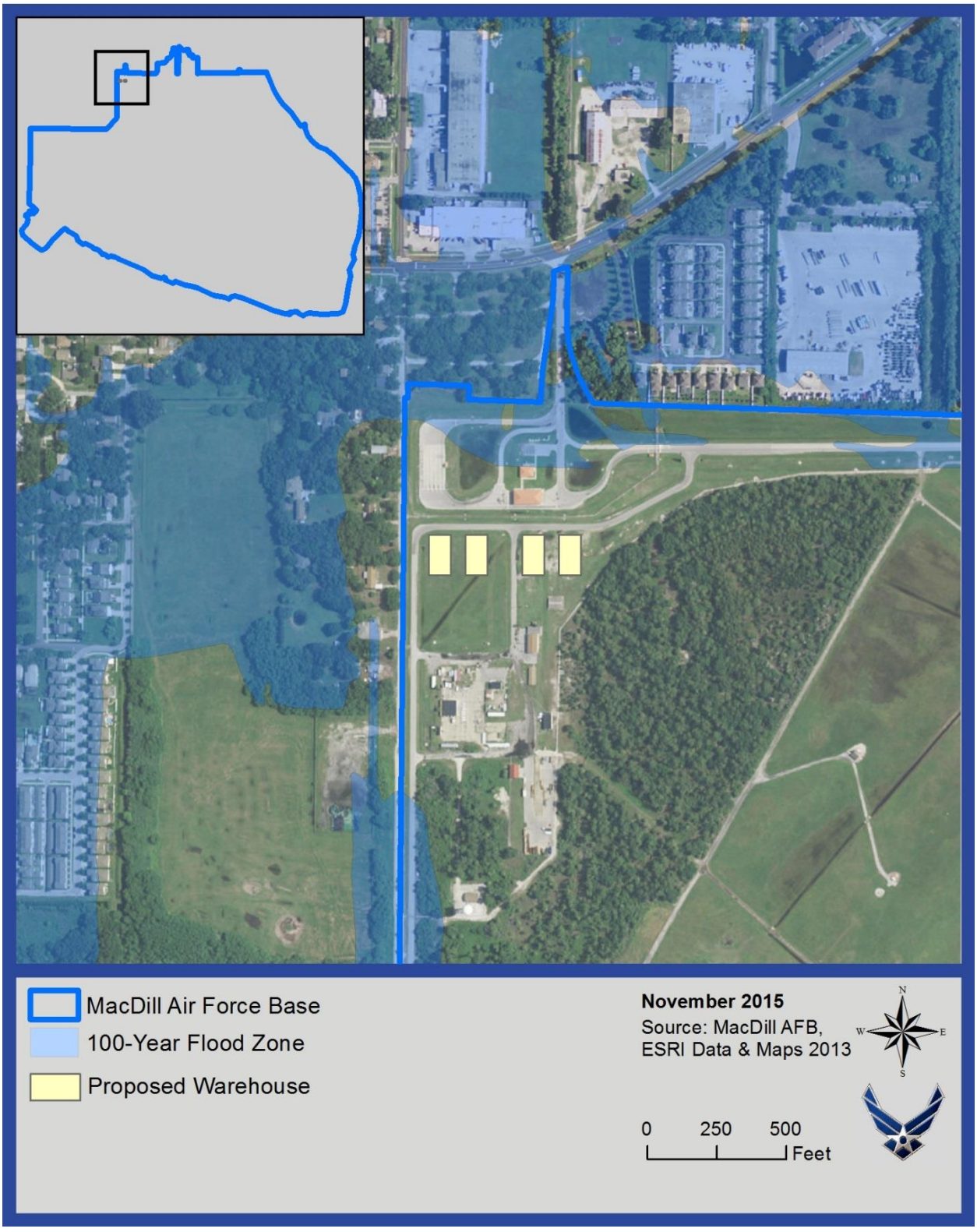
2.4 DETAILED DESCRIPTION OF THE ALTERNATIVES

Five alternatives, which are Alternative 1 (Preferred Alternative), Alternative 2, Alternative 3, Alternative 4, and the No Action Alternative, are considered in the detailed description of the alternatives.

2.4.1 ALTERNATIVE 1: PREFERRED ALTERNATIVE

The Preferred Alternative would provide mission-essential storage space for USCENTCOM, DIA, and other tenants at MacDill AFB in the form of four 4,800 SF warehouses totaling 19,200 SF. The estimated cost for constructing one warehouse facility is approximately $880,000. It would utilize an undeveloped parcel at the corner of North Boundary Boulevard and West Boundary Boulevard. This site is outside the 100-year and 500-year coastal floodplains (see Figure 2-1). An Environmental Restoration Program (ERP) site, Solid Waste Management Unit (SWMU) 28, is just south of the site. The boundaries of SWMU 28 are well defined, and the constituents of concern at this site do not represent an immediate threat. SWMU 28 underwent remedial action in fiscal year 2015 to remove all contaminated soils. Groundwater monitoring is continuing to achieve closeout for soil. If soil or groundwater contamination is encountered during construction activities, work would be halted until coordination with the MacDill AFB ERP office could be completed to determine the appropriate management strategy for the site.

Figure 2-1. Warehouse Complex under the Preferred Alternative



Each of the four warehouses would be constructed on a new concrete slab measuring approximately 48 feet by 100 feet. The facilities would be constructed using steel I-beams for the interior frame, or skeleton. The walls would be constructed using two-inch-thick textured wall panels. The roofs would consist of a VSR™ roof system with a minimum R-19 insulation rating. One end of each facility would have an 18-foot-wide roll-up metal door to allow vehicles to drive into the building to pick up or drop off materials and supplies. A lockable, three-foot-wide metal door would be located next to the large roll-up door. A small area inside each storage facility would be enclosed to create a restroom. A concrete driveway to the new storage facilities would be constructed to provide access to the warehouses. A septic system would be constructed on-site. The USCENTCOM and DIA storage facility would be the first of four warehouses within this new warehouse complex. The typical elevation view of a similar project is shown in Figure 2-2.

Each warehouse would result in the installation of approximately 6,000 SF of new impervious surface (4,800 SF facility plus 1,200 SF pavement). In total, the warehouse complex could require up to 24,000 SF of new impervious surfaces, including the facilities and concrete driveways. No existing impervious surfaces would be removed.

To compensate for the increased impervious surfaces, an on-site stormwater detention basin would be constructed to collect stormwater runoff from the building and parking areas. The proposed stormwater detention areas would not be wet ponds. The stormwater detention basin would allow collected stormwater to infiltrate the ground slowly, recharging the surficial aquifer. The stormwater detention basin would be designed and sized to meet the requirements of the Southwest Florida Water Management District (SWFWMD). Prior to disturbing the site, a silt fence would be installed around the construction site to reduce erosion that results from wind and surface-water runoff. Once the warehouse has been constructed and landscaping has been installed, any remaining disturbed areas of the site would be covered with sod.

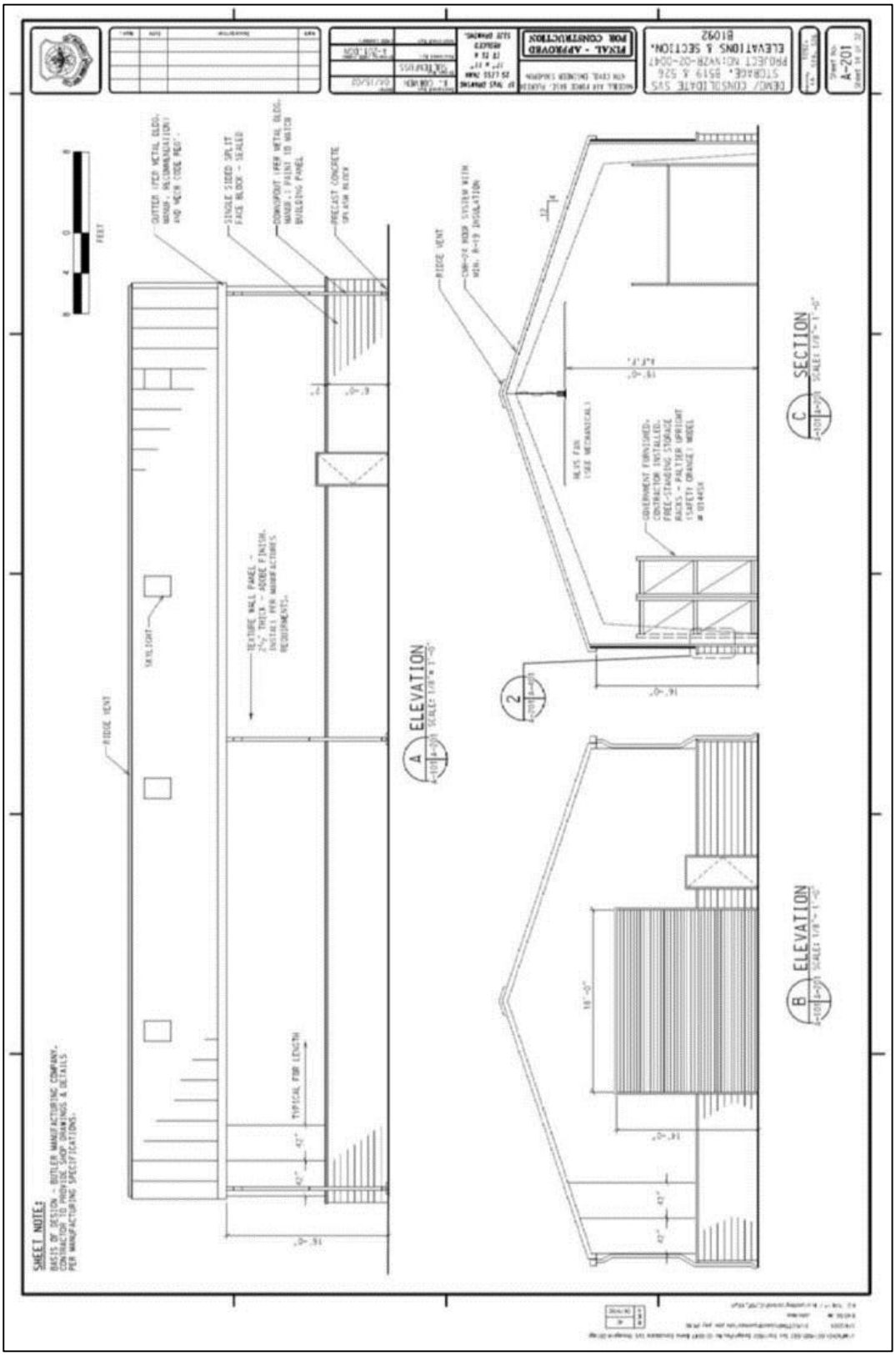
2.4.2 ALTERNATIVE 2: ADD TO OR ALTER EXISTING STORAGE FACILITY

This alternative would renovate and expand an existing storage facility on-base to meet the mission needs of USCENTCOM and DIA for storage of their supplies and equipment. Storage facilities are in short supply throughout the base, and at this time a sufficiently sized storage facility is unavailable. The costs associated with expanding and retrofitting an existing building to serve as a storage facility were estimated to exceed the cost of new construction (6 CES/CEP 2014). New construction is always preferred over renovation if costs are similar; therefore, this alternative was not reasonable and removed from further consideration.

2.4.3 ALTERNATIVE 3: LEASING OR PURCHASING AN OFF-BASE WAREHOUSE

Leasing or purchasing warehouse space in a local off-base support facility was considered and determined to be impracticable for communications, security, response-time, and transportation reasons. The closest available warehouse space of sufficient size that is located outside of the 100-year floodplain is approximately 15 miles (at least 30 minutes of driving time) from MacDill AFB.

Figure 2-2. Typical Elevation View of Project Similar to the Preferred Alternative



Source: 6 CES/CEP 2014

Typical lease rates for warehouse space in the Tampa Bay area range from $4 to $10 per square foot per month. The combined total need for warehouse space for the Proposed Action is 19,200 SF; therefore, the annual lease cost would range from $921,600 to $2,304,000. The cost to construct all four warehouses on MacDill AFB is estimated to be $3.5 million. The payback, excluding the additional costs for utilities, maintenance, and upkeep of the property; transportation costs; and renovations for AT/FP requirements, would range from 1.5 to 3.8 years (6 CES/CEP 2014).

Typical purchase prices for a warehouse comparable to the size needed by MacDill AFB in the Tampa Bay area ranges from $1.5 million to $2.5 million. Augmentation of the warehouse space to meet current AT/FP requirements would result in additional expenses following purchase of the warehouse. Annual costs for utilities, maintenance, and upkeep of the property would also be incurred (6 CES/CEP 2014).

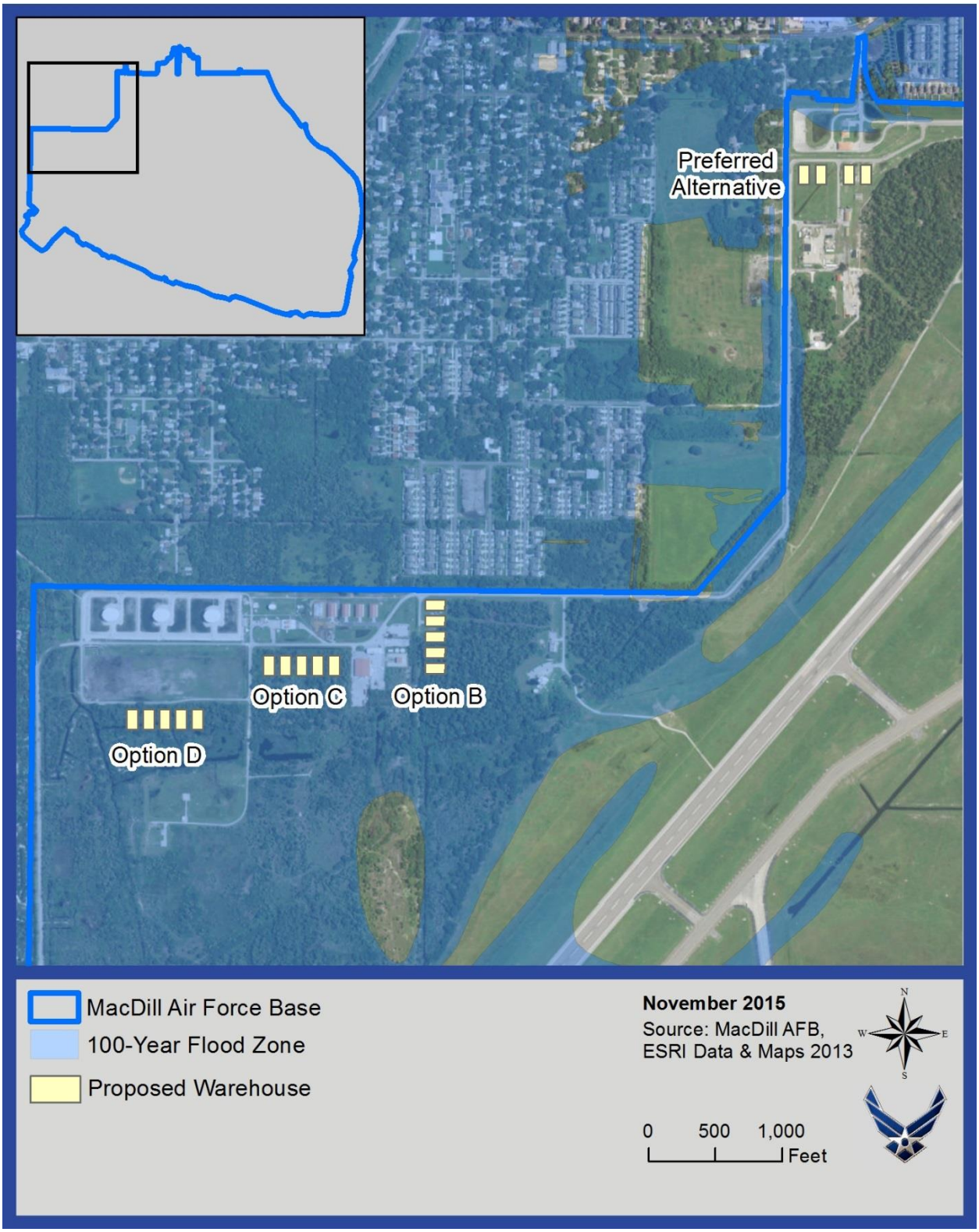
In summary, storing materials and supplies at an off-base location would require military and civilian personnel to travel off-base, taking them away from their jobs for longer periods, increasing off-base traffic, creating unnecessary traffic at the base security gates, and needlessly consuming additional gasoline, which creates additional greenhouse gas (GHG) emissions. The increased logistical requirements for storing, obtaining, and using the supplies diminishes the feasibility of the off-base warehouse option. In addition, the leased facility and associated parking area would require additional renovations to meet the current DOD AT/FP standards, found in Unified Facilities Criteria (UFC) 4-010-01, *DOD Minimum Antiterrorism Standards for Buildings*. Leasing or purchasing warehouse space at an off-base location outside the floodplain is therefore not reasonable and removed from further consideration.

2.4.4 ALTERNATIVE 4: ALTERNATIVE SITING OPTIONS

Three additional siting options for construction of the Proposed Action were initially considered on MacDill AFB. These siting options are identified as Options B, C, and D, and are shown in Figure 2-3. Option B is located on a parcel south of North Boundary Boulevard and west of Radar Road. Option C is located on a parcel south of North Boundary Boulevard. Option D is located on a parcel south of North Boundary Boulevard, east of West Boundary Boulevard, and west of Transmitter Road (6 CES/CEV 2014). All of these options are near warehouses that were constructed as proposed in the 2010 Warehouse EA.

Options B, C, and D are all within the 100-year floodplain, and all would require tree clearing. Option B would require the demolition of Building 1101. Option D is near a wetland/drainage ditch that could be directly affected by warehouse construction activities. In comparison with Option A, which is the preferred siting alternative considered under the Proposed Action, these sites were determined to be less desirable because they have greater potential for adverse environmental effects. In addition, the Preferred Alternative is a practicable alternative outside of the 100-year and 500-year coastal floodplain. Therefore, Options B, C, and D were removed from further consideration.

Figure 2-3. Alternative 4, Siting Options



2.4.5 NO ACTION ALTERNATIVE

Under the No Action Alternative, a new warehouse complex would not be constructed at MacDill AFB. USCENTCOM and DIA would continue to work with the limited space in their existing storage facility on the southern end of the base. Other tenants would also continue to operate with current storage space. Current storage space for USCENTCOM, DIA, and other tenants is lacking and cannot accommodate the requirements for support equipment. The No Action Alternative does not meet the purpose of and need for action, but it is carried forward for detailed analysis in this EA as a baseline against which the environmental effects of the Proposed Action can be evaluated.

2.5 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

The AF EIAP requires the analysis of reasonable alternatives to the Proposed Action and the No Action Alternative. Reasonable alternatives are those that "meet the underlying purpose and need for the Proposed Action and that would cause a reasonable person to inquire further before choosing a particular course of action" (32 CFR Part 989). Alternatives may be eliminated from further analysis based on operational, technical, or environmental standards that are applicable to the project.

As none of the other alternatives that were considered would meet the purpose and need, the following alternatives have been eliminated from further consideration and are not carried forward for analysis in this EA:

- Alternative 2
- Alternative 3
- Alternative 4

3. AFFECTED ENVIRONMENT

The Region of Influence (ROI) for the Proposed Action is MacDill AFB, unless otherwise specified for a particular resource area where that resource would have a different ROI.

3.1 SCOPE OF THE ANALYSIS

This section describes the current conditions of the environmental resources, either man-made or natural, that would be affected by implementing the Preferred Alternative or the No Action Alternative.

Based on the scope of the Proposed Action, issues with minimal or no effects were identified through a preliminary screening process. The following describes those resource areas not carried forward for a detailed analysis, along with the rationale for their elimination.

Regardless of the alternative selected, the following resources would not be affected by the Proposed Action and are not discussed in detail in this EA:

Asbestos and Lead-based Paint. The Preferred Alternative and the No Action Alternative do not involve the construction or demolition of facilities containing asbestos or lead-based paint. Therefore, the AF excluded asbestos and lead-based paint from any further evaluation.

Environmental Justice and Protection of Children. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* assures that federal agencies focus attention on the potential for a proposed federal action to cause disproportionately high and adverse health effects on minority and/or low-income populations. Potential health and safety effects that could disproportionately affect children are considered under the guidelines established by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. The project area is entirely on MacDill AFB property, so no environmental justice areas of low-income and/or minority or child populations are located immediately adjacent to the project area, and site construction would not adversely affect low-income and/or minority or child populations. After a careful analysis of the Proposed Action and alternatives, it has been determined that no minority or low-income group would be unduly affected by the Preferred Alternative or No Action Alternative. Consequently, the AF has eliminated environmental justice from detailed evaluation.

Socioeconomics. The Preferred Alternative would cost approximately $3.5 million, based on cost estimates for materials, transport, and installation. This is less than 0.001 percent of the nearly $2.9 billion annual economic impact that MacDill AFB provides to the local economy, and would therefore constitute a negligible, beneficial effect on the workforce in the region during the warehouse complex construction (MacDill AFB 2014). Consequently, the AF determined that the socioeconomic impact from the Preferred Alternative did not warrant further evaluation and eliminated it from further consideration in this EA.

Issues Studied in Detail

Preliminary analysis, based on the scope of the Preferred Alternative and the No Action Alternative, identified the following potential environmental issues warranting detailed analysis: Air Installation Compatible Use Zone (AICUZ), land use, and noise; air quality; water resources; safety and occupational health; hazardous materials and wastes; biological and natural resources; cultural resources; and geology, topography, and soils.

3.2 AIR INSTALLATION COMPATIBLE USE ZONES, NOISE, AND LAND USE

The AICUZ program is used to protect public safety and health, and the AF mission. An AICUZ study identifies and analyzes many factors, including noise levels, aircraft flight paths, and accident potential zones (APZs). The study results can be used to identify land uses that are either compatible or incompatible with noise and safety concerns from aircraft in the area surrounding a runway and AF base.

3.2.1 NOISE

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, and can involve a number of sources and frequencies. The human response to increased sound levels varies according to source, characteristics of the sound source, distance between a source and a receptor, receptor sensitivity, and time of day. To evaluate the total daily community noise environment, a day-night average sound level (DNL) is used. Guidelines that relate DNL values to compatible land uses were published in 1980 by the Federal Interagency Committee on Urban Noise. Since their issuance, federal agencies have generally adopted the committee's guidelines for noise analysis. Most federal agencies have identified the 65 A-weighted decibel (dBA) DNL as a criterion that protects those most affected by noise and that can often be achieved on a practical basis.

Base activities with the highest potential noise effects are the aircraft/airspace operations. The 2008 MacDill AFB AICUZ study, which was reevaluated with no major changes in 2014, plotted the DNL from 65 to 80 dBA for a typical busy day at MacDill AFB; the DNL contours reflect the aircraft operations at MacDill AFB (MacDill AFB 2014). The 65 dBA DNL contour covers the main runway, and extends about one mile southwest over Tampa Bay, and about 1.5 miles northeast over Hillsborough Bay.

The Preferred Alternative site is located in an industrial area of MacDill AFB near the base's northwestern boundary. The closest off-base sensitive noise receptors include low-density housing approximately 175 feet west of the westernmost portion of the Preferred Alternative site, along South Manhattan Avenue. Principal noise sources in the vicinity include aircraft operations and military and civilian vehicle traffic on proximate roadways.

3.2.2 LAND USE

MacDill AFB comprises 5,866 acres of land and easements. The *2011 MacDill AFB Installation Development Plan* classifies six specific districts to guide future development of the base. The Installation Development Plan (IDP) identifies desired functional relationships within each district, identified as North Area, Industrial "A," Industrial "B," Airfield, Core, and Outdoor Activity (AMC 2011a). The Preferred Alternative site falls within the Industrial "A" area, which provides industrial support to the airfield activity mission (AMC 2011a).

Land use surrounding the Preferred Alternative site is classified as Aircraft Operations and Maintenance, which includes aircraft hangars, aircraft maintenance shop, general purpose shop, aerospace support equipment, squadron operations, control tower, and others (AMC 2011a).

3.3 AIR QUALITY

3.3.1 AIR POLLUTANTS AND REGULATIONS

The CAA of 1970 directed the United States Environmental Protection Agency (USEPA) to develop, implement, and enforce strong environmental regulations that would ensure cleaner air for all Americans. To protect public health and welfare, the USEPA developed concentration-based standards called National Ambient Air Quality Standards (NAAQS). The USEPA established both primary and secondary NAAQS. Primary standards define levels of air quality necessary to protect public health with an adequate margin of safety. Secondary standards define air quality levels necessary to protect public welfare (i.e., soils, vegetation, property, and wildlife) from any known or anticipated adverse effects. NAAQS currently are established for six air pollutants (known as criteria air pollutants): carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O_3), sulfur oxides (SO_x) (measured as sulfur dioxide [SO_2]), lead (Pb), and particulate matter. Particulate matter standards incorporate two particulate classes: (1) particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM_{10}), and (2) particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers ($PM_{2.5}$). Carbon dioxide (CO_2) is not a criteria pollutant but it is important as a GHG. As promulgated in the FAC 62-204.800, the State of Florida has adopted each of the NAAQS as the Florida standards (see Table 3-1).

The CAA requires each state to promulgate a State Implementation Plan (SIP) that provides for implementation, maintenance, and enforcement of the NAAQS. Federal actions must conform to the provisions of the approved SIP, which is developed and maintained locally by the Florida Department of Environmental Protection (FDEP) under Chapter 62 of the Florida Administrative Code (FAC). Title V of the CAA requires identification and characterization of emissions from all minor sources, including aircraft maintenance facilities, fuel storage tanks, and emissions from aircraft and motor vehicles.

All areas within each AQCR are assigned a designation of attainment, nonattainment, maintenance, unclassifiable attainment, or not designated attainment for each criteria air pollutant. An attainment designation indicates that the air quality within an area is as good as or better than the NAAQS. Nonattainment indicates that air quality within a specific geographical area exceeds applicable NAAQS. Maintenance indicates that an area was previously designated nonattainment but is now attainment. Unclassifiable and not designated indicate that the air quality cannot be or has not been classified on the basis of available information as meeting or not meeting the NAAQS. Areas designated as unclassifiable or not designated are treated as attainment per the CAA Amendments of 1990.

Table 3-1. National Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	Primary NAAQS	Secondary NAAQS	Form
Carbon Monoxide	8-hour 1-hour	9 ppm 35 ppm	No standard No standard	Not to be exceeded more than once year
Lead [a]	Quarterly	0.15 µg/m^3	0.15 µg/m^3	Not to be exceeded
Nitrogen Dioxide	1-hour 1-year	100 ppb 53 ppb	No standard 53 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years Annual Mean
Ozone [b]	8-hour	0.070 ppm	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
$PM_{2.5}$	1-year 24-hour	12.0 µg/m^3 35 µg/m^3	15.0 µg/m^3 35 µg/m^3	Annual mean, averaged over 3 years 98th percentile, averaged over 3 years
PM_{10}	24-hour	150 µg/m^3	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide	1-hour 3-hour	75 ppb [c] No standard	No standard 0.5 ppm	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years Not to be exceeded more than once per year

ppm=parts per million; ppb=parts per billion; µg/m^3=microgram per cubic meter

Notes:

a In areas designated nonattainment for the lead standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m^3 as a calendar quarter average) also remain in effect.

b Final rule signed 1 October 2015, and effective 28 December 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

c The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)).

Source: USEPA 2016

MacDill AFB is located in Hillsborough County within the West Central Florida Intrastate AQCR as defined in 40 CFR 81.96. The Environmental Protection Commission (EPC) of Hillsborough County has received full air permitting delegation from the State. This allows the EPC to exclusively conduct permitting determinations, process applications, and issue air pollution permits for most facilities. A small portion of Hillsborough County is currently designated as a nonattainment area for SO_2, and a small portion of Tampa, is designated as a nonattainment area for lead (USEPA 2011). Specifically, the Hillsborough County area that is not in attainment for SO_2 is a polygon surrounding the Mosaic Fertilizer LLC Facility in Riverview, Florida, as designated in 40 CFR 81.310. Specifically, the Tampa area that is not in attainment for lead is bounded by a 1.5-kilometer radius centered at Universal Transverse Mercator (UTM) coordinates 364,104 meters, 3,093,830 meters N, Zone 17, which surrounds the EnviroFocus Technologies Facility in eastern Tampa. These areas do not overlap MacDill AFB. The area encompassed by MacDill AFB is currently classified as being "in attainment" for all criteria pollutants under the NAAQS; therefore, the Conformity Rule does not apply to MacDill AFB.

Federal Prevention of Significant Deterioration (PSD) regulations also define air pollutant emissions from proposed major stationary sources or modifications to be "significant" if (1) a proposed project is within 10 kilometers of any Class I area, and (2) regulated pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1.0 $\mu g/m^3$ or more (40 CFR 52.21(b)(23)(iii)). PSD regulations also define ambient air increments, limiting the allowable increases in any area's baseline air contaminant concentrations, based on the area's designation as Class I, II, or III (40 CFR 52.21(c)). MacDill AFB is not within 10 kilometers of a Class I area; therefore, the PSD regulations do not apply.

Based primarily on the scientific assessments of the United States Global Change Research Program (USGCRP) and the National Research Council, USEPA has issued a finding that the changes in our climate caused by increased concentrations of atmospheric GHG emissions endanger public health and welfare. CEQ issued draft guidance directing federal agencies to consider the potential effects of a proposed action on climate change, as indicated by its estimated GHG emissions, and the implications of climate change for the environmental effects of a proposed action. Furthermore, an agency's climate change analysis should be commensurate with projected GHG emissions and climate impacts (CEQ 2014).

FAC Chapter 62-296 requires that no person shall allow the emissions of unconfined particulate matter from any activity (e.g., vehicular movement, transportation of materials, construction, demolition, or wrecking) without taking reasonable precautions to prevent such emissions. Reasonable precautions include the following:

- paving and maintenance of roads, parking areas, and yards
- applications of water or chemicals (foam) to control emissions from activities such as demolition, grading roads, construction, and land clearing
- application of asphalt, water, or other dust suppressants to unpaved roads, yards, open stock piles, and similar areas
- removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent re-entrainment, and from building or work areas to prevent particulates from becoming airborne
- landscaping or planting of vegetation

3.3.2 BASELINE AIR EMISSIONS

An air emissions inventory is an estimate of the total mass emissions of pollutants generated by a source or sources over a period of time, typically a year. The quantity of air pollutants is generally measured in pounds per year. Emissions sources can be categorized as stationary or mobile. Stationary sources can be identified by name and operated at a fixed location. Mobile sources are vehicles or equipment with gasoline or diesel engines (e.g., an airplane or a ship). Mobile sources are divided into two types: highway and off-highway. Highway mobile sources are vehicles such as cars, light trucks, heavy trucks, buses, engines, and motorcycles. Off-highway sources are aircraft, locomotives, diesel and gasoline boats and ships, personal watercraft, lawn and garden equipment, agricultural and construction equipment, and recreational vehicles. Accurate air emissions inventories are needed for estimating the relationship between emissions sources and air quality. The most recent (2011) National Emission Inventory data from the USEPA filtered for Hillsborough County, which includes MacDill AFB, are provided in Table 3-2.

MacDill AFB operates under a non-Title V Air Operation Permit No. 0570141-009-AO, which expired 25 June 2018, and was issued concurrently with Air Construction Permit No. 0570141-010-AC. The construction permit establishes the facility as a Synthetic non-Title V source from its previous Title V source status, by limiting the hours of operation of the emergency generators/engines. The facility is a military base and includes an airfield, associated aircraft maintenance and support activities, and a wide variety of military and nonmilitary support operations. The operations at the National Oceanic and Atmospheric Administration were exempted from air permitting on 2 June 2010, due to the low level of emissions from its operations. In addition, the operations of the 1.2-million-gallon-per-day wastewater treatment plant (WWTP) and the associated 11 stationary and portable engines were exempted when the WWTP facility was privatized. The emissions sources at MacDill AFB are predominantly emergency internal combustion engines and generators, totaling 71 units; and multiple exempt sources, such as natural gas-fired external combustion heating units, fuel storage tanks, parts washers, woodworking activities, painting, and enclosed blasting operations.

Table 3-2. Year 2011 Baseline Emissions Inventory for Hillsborough County, Florida

Criteria Air Pollutant	CO (tpy)	NO_x (tpy)	PM_{10} (tpy)	SO_x (tpy)	VOC (tpy)	CO_2 (tpy) [b]
Stationary Sources [a]	24,555	8,345	14,337	14,829	20,926	165,200
Mobile Total	170,026	28,103	2,364	1,608	17,303	8,456,395
Highway Vehicle	*113,304*	*18,533*	*1,557*	*139*	*11,732*	*7,609,582*
Off-Highway	*56,722*	*9,570*	*807*	*1,469*	*5,571*	*846,813*
Grand Total	**194,581**	**36,448**	**16,701**	**16,437**	**38,229**	**8,621,595**

Notes:

a Stationary sources include the Tier 1 categories of fuel combustion electric utilities, fuel combustion industrial, fuel combustion other, metals processing, petroleum and related industry, other industrial, solvent utilization, storage and transport, waste disposal and recycling, and miscellaneous.

b CO_2 (not a criteria air pollutant) includes carbon dioxide from all sectors.

Source: USEPA 2011

3.4 WATER RESOURCES

MacDill AFB is located in the southern west-central Florida groundwater basin of the Tampa Bay watershed, and the base is immediately adjacent to both Tampa Bay and Hillsborough Bay (Figure 1-1). Tampa Bay is the largest open-water estuary in Florida, and extends approximately 35 miles inland from the Gulf of Mexico (FDEP 2015). MacDill AFB has 8.7 miles of shoreline along Tampa Bay and Hillsborough Bay.

3.4.1 SURFACE WATER AND DRAINAGE

No natural surface waters enter or leave MacDill AFB boundaries prior to final discharge into Tampa Bay, and surface water on-base primarily originates from stormwater runoff (AMC 2010b). According to topographic maps, the entire base is an independent drainage area with no natural surface waters entering or leaving the site prior to final discharge into Tampa Bay. Most of the base drains toward the southern tip of the Interbay Peninsula; however, the easternmost section of the base drains toward Hillsborough Bay. About 25 percent of the base's surface cover is impervious. The drainage system consists of a series of drainage ditches, culverts, storage ponds, and other infrastructure, and feeds directly into tidal creeks and canals or directly into Tampa Bay or Hillsborough Bay (AMC 2011a). Man-made ponds exist primarily on the southeast portion of the base. In the southern portion of the base, a poorly drained area includes Raccoon Hammock Creek and Broad Creek; this area is subject to shallow flooding by the highest of normal tides (AMC 2010b).

The USEPA issued a National Pollutant Discharge Elimination System (NPDES) multisector stormwater general permit (No. FLR05E128) to MacDill AFB in May 2011. This permit authorizes the discharge of stormwater associated with industrial activity. Areas of potential runoff contamination at the base are the runways and the airfield aprons.

The base also maintains a Spill Prevention Control and Countermeasures Plan to satisfy 40 CFR Part 112. Per the same regulation, a Facility Response Plan was developed because the base adjoins navigable waters and shorelines, and because of the amount of fuel storage capacity that exists on MacDill AFB.

The Preferred Alternative site for the Proposed Action is relatively flat with no surface water features other than one shallow drainage swale. The swale runs from the northeast to southwest diagonally across the project site conveying temporary water drainage southward. It is 520 linear feet long and is frequently maintained by mowing and trimming.

3.4.2 GROUNDWATER

Two aquifer systems underlie MacDill AFB: the surficial aquifer and the Floridan aquifer. The surficial aquifer system generally consists of sand, clayey sand, and shell, is unconfined, and is approximately 20 feet thick; however, the surficial aquifer is not used for water supply at MacDill AFB (AMC 2010b). In residential areas beyond the base boundaries, small-diameter wells are installed in the surficial aquifer to supply small irrigation systems. The Floridan aquifer underlies the surficial aquifer and is separated from it by a clay confining layer. The Floridan aquifer is a major source of groundwater in the region, but it is not used for water supply at

MacDill AFB (AMC 2010b). Potable water is supplied to MacDill AFB by the City of Tampa, which obtains most of its drinking water from surface water sources.

The water table in the surficial aquifer is shallow and ranges from land surface near Tampa Bay and tidal creeks to approximately five feet below ground surface at inland locations. Groundwater levels and flow directions generally are determined by low gradients and are tidally influenced by ditches and canals and by Hillsborough and Tampa Bays. The direction of groundwater flow in the surficial aquifer is generally radial from the north-central portion of the base toward the coastline. Groundwater mounding, or a localized elevation of the water table above natural levels, has been shown to occur in the golf course area where reclaimed water from the on-base WWTP is applied by spray irrigation.

Recharge of the surficial aquifer is primarily through precipitation and is highly susceptible to groundwater contamination due to its shallow water table depth and permeable sediments. Groundwater quality has been affected by past and present base activities (AMC 2010b). Elevated volatile organic compound (VOC) concentrations have been found in surficial aquifer groundwater at various sites that contain or contained petroleum storage tanks. Elevated metals concentrations have been found in areas of former landfills, such as SWMU 28, which are discussed in Section 3.6. Elevated nitrate, nitrite, and pesticide concentrations have been identified in golf course areas.

3.4.3 FLOODPLAINS

A floodplain is an area that is susceptible to being inundated by a flood from any water source. FEMA defines floodplains by the likelihood that a given area will be flooded in a year. A 100-year floodplain is an area that has a one percent chance of flooding in any given year; a 500-year floodplain has a 0.2 percent chance of flooding in any given year. Eighty percent of MacDill AFB is within the 100-year floodplain (AMC 2010b).

Tropical storms and hurricanes can cause flooding on much of or the entire base. The southern portion of the base is the most susceptible to flooding during storm events. Street flooding also can occur during heavy rains in the densely developed areas of MacDill AFB (AMC 2011a).

Since 1977, EO 11988, *Floodplain Management*, has charged Federal agencies with avoiding to all practicable extents any effects on the floodplain that would significantly and adversely affect human safety, health, and welfare. A new EO 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, signed in January 2015, revises the former guidance and provides for a Federal Flood Risk Management Standard, which incorporates stakeholder inputs. Incorporating the Federal Flood Risk Management Standard ensures that the Proposed Action is located away from the current base flood level to a higher vertical elevation, and addresses current and future flood risk.

3.5 SAFETY AND OCCUPATIONAL HEALTH

For this EA, the focus of safety and occupational health is workers' health and safety during construction activities, and public safety during construction activities and subsequent operations of those facilities.

Construction site safety is largely achieved through adherence to regulatory requirements imposed for the benefit of employees and the implementation of practices that reduce risks of illness, injury, death, and property damage. Numerous DOD and AF regulations are designed to comply with standards that are issued by the Occupational Safety and Health Administration (OSHA) and the USEPA to protect the health and safety of on-site military and civilian workers. These standards stipulate the amount and type of training required for industrial workers, the use of personal protective equipment (PPE) and clothing, engineering controls, and maximum exposure limits for workplace stressors.

All contractors performing construction activities are responsible for following ground safety and OSHA regulations, and are required to conduct construction activities in a manner that does not pose a risk to workers or base personnel. Industrial hygiene programs address exposure to hazardous materials, use of PPE, and use and availability of Material Safety Data Sheets. Industrial hygiene is the responsibility of contractors and AF personnel, as applicable. Contractor responsibilities are to review potentially hazardous workplaces; to monitor exposure to workplace chemical (e.g., asbestos, lead, hazardous material), physical (e.g., noise propagation), and biological (e.g., infectious waste) agents; to recommend and evaluate controls (e.g., ventilation, respirators) to ensure personnel are properly protected or unexposed; and to ensure that a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures or engaged in hazardous waste work.

Explosives Safety

Portions of MacDill AFB are constrained by quantity-distance (QD) arcs, which are buffers around facilities that contain high-explosive munitions or flammable elements. The size and shape of QD arcs depend on the type of facility and net explosive weight of the munitions being housed. QD arcs establish a minimum safe distance around areas where explosions could occur. No nonmunitions-related development may occur within the QD arcs. No QD arcs exist on or near the Preferred Alternative site.

Surface danger zones (SDZs) are buffers that are generated around small-arms and skeet ranges to establish a minimum safe distance within areas where munitions are actively exploded. There are no SDZs or firing fans on or near the Preferred Alternative site.

3.6 HAZARDOUS MATERIALS AND WASTES

3.6.1 HAZARDOUS MATERIALS

Approximately 105 operations base-wide use hazardous materials. Hazardous materials on-base include various organic solvents, chlorine, Freon, paints, thinners, oils, lubricants, compressed gases, pesticides, herbicides, nitrates, and chromates. A detailed tracking and accounting system is in place to identify potentially hazardous materials and to ensure that organizations are approved to use specific hazardous materials. MacDill AFB follows AF guidelines to identify and eliminate the use of ozone-depleting chemicals.

3.6.2 WASTES

MacDill AFB generates two classifications of wastes: nonhazardous solid waste and hazardous waste. Nearly 80 percent of the solid waste generated from various residential and industrial sources is incinerated as an energy source at the Tampa incineration facility off-base. The remainder is disposed at Hillsborough County landfill facilities. Curbside recycling is available in military family housing areas, and cardboard, paper, and aluminum recycling is conducted throughout the base.

Hazardous wastes generated at MacDill AFB include solvents, fuels, lubricants, stripping materials, used oils, waste paint-related materials, and other miscellaneous wastes. The responsibility for managing hazardous waste lies with the generating organization and the 6th Civil Engineer Squadron, Environmental Flight (6 CES/CEV). Wastes come from approximately 50 locations throughout the base and are managed at satellite accumulation points base-wide. Satellite accumulation points are located at or near the points of hazardous waste generation and are operated in accordance with environmental regulations and AF guidelines. The former hazardous waste storage facility at Building 1115 is now in RCRA closure status; it is currently classified as a 90-day accumulation point and operated by 6 CES/CEV. At a 90-day accumulation point, hazardous waste can be accumulated for up to 90 days before it is disposed of. The Defense Reutilization and Marketing Office (DRMO) is responsible for the sale, reclamation, or disposal of hazardous materials and wastes generated at MacDill AFB.

Used oil is accumulated at sites around the base and is periodically picked up by an outside contractor for recycling. Waste antifreeze, tires, batteries, and fluorescent bulbs are also picked up by outside contractors for recycling. These types of wastes, though requiring special handling procedures, are not considered hazardous.

3.6.3 ENVIRONMENTAL RESTORATION PROGRAM

The ERP, formerly known as the Installation Restoration Program, is a subcomponent of the Defense ERP that became law under the Superfund Amendments and Reauthorization Act (SARA). The ERP requires each DOD baseto identify, investigate, and clean up hazardous waste disposal or release sites.

MacDill AFB began its ERP in 1981 with 38 sites originally identified. This consisted of a Phase I Records Search to identify potential sites of concern, which warranted further investigation. In accordance with AF policy, all ERP sites at MacDill AFB are addressed in a manner consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or RCRA processes. Restoration projects on MacDill AFB are conducted under two regulatory programs: those governing petroleum releases from underground storage tanks (USTs), and those governing cleanup of SWMUs in accordance with the base's RCRA permit. There are 49 SWMUs and ERP sites scattered throughout the base. Of the 49 SWMUs and ERP sites, 21 are No Further Action (NFA), one is pending NFA, and 27 are Remedy in Place (RIP). None of these sites have been identified on the National Priorities List under CERCLA. Plans for future development in the areas of any of the ERP sites should take into consideration the possible restrictions and constraints that they represent.

The FDEP, which regulates cleanup activities at petroleum sites, has entered into a Petroleum Contamination Agreement with MacDill AFB. The investigation and cleanup of SWMUs is conducted in accordance with the Hazardous and Solid Waste Amendments (HSWA) permit issued to the base under USEPA ID No. FL6 570 024 582.

3.7 BIOLOGICAL AND NATURAL RESOURCES

3.7.1 VEGETATIVE COMMUNITIES

MacDill AFB contains urban, light industrial, residential, or improved vacant land. Improved vacant land includes cleared open fields, grassed areas, treated wastewater spray fields, and the golf course. In all, approximately 60 percent of the land on MacDill AFB is considered to be either developed or semideveloped. The undeveloped areas within the base boundaries have all experienced some degree of disturbance, such as ditching, clearing, or the encroachment of exotic vegetation.

The unimproved vegetative communities on MacDill AFB include forested uplands and shrub-scrub wetlands. Forested land, including mixed coniferous hardwoods and upland coniferous forests, primarily consist of remnant natural and planted pine communities with slash pine (*Pinus elliottii*) the dominant species. Remnant natural stands are dominated by longleaf pine (*Pinus palustris*), oaks (*Quercus* spp.), maples (*Acer* spp.), cabbage palm (*Sabal palmetto*), and southern magnolia (*Magnolia grandiflora*). The understory of these forested lands and the shrub and brushland communities contains a mixtures of shrubs dominated by wax myrtle (*Myrica cerifera*), salt bush (*Baccharis halimifolia*), saw palmetto (*Serenoa repens*), and gallberry (*Ilex glabra*).

3.7.2 WETLANDS

Previous wetland studies identified, delineated, and classified approximately 1,195 acres of wetlands on MacDill AFB. Wetland systems included palustrine wetlands (317 acres) and scrub/shrub wetlands (880 acres). Mangrove wetlands are the principal scrub/shrub wetland community on-base. Black mangrove (*Avicennia germinans*) and white mangrove (*Laguncularia racemosa*) are the dominant species. Red mangrove (*Rhizophora mangle*) is also present at the waterward fringes of the community. The mangroves have been negatively affected by historic dredge-and-fill activities and the excavation of mosquito ditches. However, despite these effects, this community provides valuable wildlife habitat and is protected by state and local regulations.

The site of the Preferred Alternative contains a man-made drainage feature, recognized as a swale. The swale runs from the northeast to southwest diagonally across the project site and is 520 linear feet long. It is frequently maintained by mowing and trimming. This swale conveys stormwater and may exhibit wetland characteristics but is exempt from wetland mitigation under Chapter 403.813(1)(j) Florida Statutes, Chapter 62-330.051 Florida Administrative Code. A replacement swale would be constructed in the northern and western site boundary along the adjacent roadway with the goal of maintaining hydrologic characteristics exhibited by the original swale.

3.7.3 WILDLIFE

Representatives from the Florida Fish and Wildlife Conservation Commission (formerly the Florida Game and Freshwater Fish Commission), National Audubon Society, and the Tampa Bay Sanctuaries completed an evaluation of the wildlife habitat on MacDill AFB in 1994. These surveys determined that the habitat quality ranged from poor to excellent, with the upland forested communities considered poor and the mangrove wetlands considered excellent. The upland forested habitat has been degraded for native fauna due to the suppression of the natural fire cycle, the fragmentation of the habitat, and the invasion of exotic vegetation. The mangrove wetland habitat has been degraded somewhat by the excavation of mosquito ditches and the deposition of spoil within the wetlands. However, the large contiguous habitat area that the mangroves provide and the relative inaccessibility to humans has increased the habitat value (FNAI 1996).

The surveys also included an evaluation of the wildlife species present and potentially present on-base. The species observed during the surveys included one reptile, ten mammals, and 79 birds. Based on habitat availability, the survey concluded that 20 reptiles, 17 mammals, and 155 birds could occur within the boundaries of the base. The Preferred Alternative site is cleared of all trees and shrubs and is composed primarily of maintained grass; therefore, it provides minimal habitat for any wildlife species.

3.7.4 ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

Wildlife species listed by federal or state agencies as endangered, threatened, or of special concern and known to occur permanently or periodically, or have the potential to occur on-base, are shown in Table 3-3. The majority of the listed species at MacDill AFB is associated with the mangrove community and includes shore birds, wading birds, and raptors. These species use the mangrove community primarily for foraging and nesting.

The forested upland communities provide habitat for several state- and federally listed species. The southeastern American kestrel (*Falco sparverius paulus*), the burrowing owl (*Athene cunicularia*), and gopher tortoise (*Gopherus polyphemus*) have been observed within this community on-base. In addition, burrowing owl and gopher tortoise burrows have been located in areas within the active airfield. Other listed species that could occur in this habitat include gopher frog (*Rana capito*), Florida pine snake (*Pituophis melanoleucus mugitus*), short-tailed snake (*Stilosoma extenuatum*), Bachman's warbler (*Vermivora bachmanii*), and Florida mouse (*Podomys floridanus*).

A pair of bald eagles (*Haliaeetus leucocephalus*) has repeatedly nested on MacDill AFB for the past several years. Over the years the eagles have occupied three different nest locations. The first nest was abandoned around 1998 in favor of a new location closer to the South Ramp. A nest tree location was blown over a few years later during tropical storm Gabriel in September 2001. In 2003, the eagles constructed a new nest in a longleaf pine tree in the middle of the munitions storage area. Most recently, bald eagles successfully nested in two locations on either side of the base as documented in the *Threatened and Endangered Species Study* (AF 2012). In 2015, the nest located atop a rotating tower on the western side of the airfield was cited by United States Department of Agriculture as a safety concern, and the inactive nest was removed under permit from USFWS.

Table 3-3. Summary of Protected Species Identified at MacDill Air Force Base

Common Name	Scientific Name	Status	
		Federal	State
Reptile/Amphibians			
American alligator	*Alligator mississippiensis*	T (SA)	SSC
Atlantic loggerhead turtle	*Caretta caretta*	T	T
Atlantic green turtle	*Chelonia mydas*	E	E
Gopher tortoise	*Gopherus polyphemus*	-	T
Gopher frog	*Rana capito*	C2	SSC
Florida pine snake	*Pituophis melanoleucus mugitus*	C2	SSC
Short-tailed snake	*Stilosoma extenuatum*	C2	T
Birds			
Roseate spoonbill	*Ajaia ajaja*	-	SSC
Limpkin	*Aramus guarauna*	-	SSC
Burrowing owl	*Athene cunicularia*	-	SSC
Piping plover	*Charadrius melodus*	T	T
Southeastern snowy plover	*Charadrius alexandrinus tenuirostris*	C2	T
Little blue heron	*Egretta caerulea*	C2	SSC
Reddish egret	*Egretta rufescens*	C2	SSC
Snowy egret	*Egretts thula*	-	SSC
Tricolored heron	*Egretta tricolor*	-	SSC
Peregrine falcon	*Falco peregrinus tundris*	T	E
Southeast American kestrel	*Falco sparverius paulus*	C2	E
Florida sandhill crane	*Grus canadensis pratensis*	-	T
American oystercatcher	*Haematopus palliatus*	-	SSC
Bald eagle	*Haliaeetus leucocephalus*	T	T
Wood stork	*Mycteria americana*	E	E
Brown pelican	*Pelecanus occidentalis*	-	SSC
Least tern	*Sterna antillarum*	-	T
Roseate tern	*Sterna dougalii*	T	T
Bachman's warbler	*Vermivora bachmanii*	E	E
Black skimmer	*Rynchops niger*	-	SSC
White ibis	*Eudocimus albus*	-	SSC
Mammals			
Florida mouse	*Podomys floridanus*	C2	SSC
West Indian (FL) manatee	*Trichechus manatus*	E	E
Fish (none are known to occur on-base)			
Plants (none are known to occur on-base)			

Notes: T = Threatened, T(SA) = Threatened/Similarity of Appearance, E = Endangered, SSC = Species of Special Concern, C2 = Candidate for listing

Source: AF 2012

In 1996, the *Endangered Species Management Plan of MacDill AFB* and the *Biological Survey of MacDill AFB* identified the general locations of protected species at MacDill AFB (AF 1996a, 1996b). In 2005, MacDill AFB completed an updated Endangered Species Population Survey (AF 2005).

3.8 CULTURAL RESOURCES

In 2011, MacDill AFB completed an Integrated Cultural Resources Management Plan (ICRMP). The ICRMP supports MacDill AFB in ongoing compliance with the NHPA of 1966, as amended, and AF guidance on cultural resources. The ICRMP presents information and maps showing areas that have been subject to archaeological and architectural history surveys, including known archaeological sites. A base-wide evaluation of MacDill AFB by the National Park Service (NPS) in 1986 concluded that 85 percent of the base has been disturbed by construction, development of recreational areas, and periodic uses including firing ranges, tree plots, fill sites, and explosive storage (AMC 2011b). The NPS determined that the disturbed areas have already been extensively modified and offer little possibility of finding intact cultural resources. The remaining 15 percent of the base underwent a Phase I survey by NPS, which did not identify any additional archaeological sites and determined that no further cultural resources investigations were needed on MacDill AFB. The Florida State Historical Preservation Officer (SHPO) concurred with the NPS findings and found the survey to constitute a complete and sufficient Phase I survey of the base (AMC 2011b). The Seminole Tribe of Florida Tribal Historic Preservation Office has clarified that the 1986 NPS survey did not sufficiently evaluate the base and that a potential for discovery of archaeological resources may still exist. The tribe requested a Phase I Cultural Resources Assessment Survey of the proposed Warehouse District site. A Phase 1 Archaeological Survey was completed in December 2015 and it found no cultural resources within the site of the Preferred Alternative. The SHPO affirmed the conclusion of no effect on cultural resources.

Five archaeological sites have been recorded on MacDill AFB property. Of these sites, two have been found eligible for the National Register of Historic Places (NRHP). The Gadsden Point Site (8Hi50) underwent a Phase II evaluation in 1996. It is located in the southeastern portion of MacDill AFB near the Hillsborough Bay shoreline, and has yielded human bone, lithic, shell, ceramic, and faunal remains (AMC 2011b). The Runway Site (8Hi3382) is located in the northern portion of MacDill AFB near the runway and underwent a Phase II evaluation in 1991. The site was definitively determined to be a lithic (stone) reduction site dating to the Archaic Period and was determined to have the potential to further the knowledge of local and regional prehistory and, thus, it is eligible for the NRHP (AMC 2011b).

Within MacDill AFB, there are two historic districts eligible for NRHP listing. The MacDill Field Historic District was delineated as part of a 1994 Historic American Buildings Survey (HABS), and its boundaries were revised as part of the 2011 ICRMP with SHPO concurrence (AMC 2011b). The MacDill Field Historic District meets NRHP Criterion A eligibility for its association with events that have made a contribution to American history and Criterion C eligibility for its embodiment of a distinctive type, period, or method of construction. Furthermore, MacDill Field Historic District meets the NRHP general guidelines in displaying integrity of location; cohesiveness of design; definable setting; and continuity of materials, workmanship, and feeling (AMC 2011b).

The Staff Officer's Quarters Historic District comprises five residential quarters constructed in 1941 to house officers and their families (AMC 2011b). The District meets NRHP eligibility criteria for its architectural integrity (Criterion C) and contribution to the World War II training mission (Criterion A) (AMC 2011b). The Staff Officer's Quarters Historic District meets the NRHP general guidelines in displaying integrity of location; cohesiveness of design; definable setting; and continuity of materials, workmanship, and feeling (AMC 2011b). Both historic districts are located in the developed eastern side of MacDill AFB.

Twelve buildings on MacDill AFB were identified as individually eligible for listing as designated historic properties under Section 106 of NHPA. All 12 buildings are located within the historic districts and include five hangars (buildings 0001–0005); fire station (building 0026); engineer admin (building 0030); theater (building 0041); and four houses within the Staff Officer's Quarters Historic District (buildings 0401, 0402, 0404, 0405) (AMC 2011b).

3.9 GEOLOGY, TOPOGRAPHY, AND SOILS

Geological resources comprise the earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography, soils, geology, minerals, and, where applicable, paleontology.

MacDill AFB is situated in the Gulf Coastal Lowlands geomorphological province, characterized by gently sloping sand dunes and marine terraces. The base is located on the Pamlico marine terrace, which rises gently from the coast to about 25 feet above sea level. Elevations on-base range from sea level at the southern edge to about 15 feet above sea level in the northern portions. Much of the base is less than 5 feet above mean sea level (amsl) (AMC 2010b).

There are three principal lithologic sequences in the MacDill AFB area. The top unit is unconsolidated sand, clay, and marl. Sands in this unit range from 5 to 20 feet thick with clay layers up to 40 feet thick (AMC 2010a). This surficial layer is very thin or even absent on the eastern side of the base, and underlying limestone formations sometimes outcrop in this area. The next deepest layer is composed of Tampa and Suwannee limestones, which range from 250 to 500 feet thick. Below this layer are the Ocala Group; Avon Park, Lake City, and Oldsmar Limestones; and Cedar Keys Limestone, which are about 2,300 feet deep (AMC 2010a). Although sinkholes are common in Hillsborough County, they are uncommon on MacDill AFB because of overlying impervious layers of clay, limited groundwater recharge, and the presence of a slow discharge zone for the Floridan aquifer (AMC 2010a).

Eight different soil series cover the base: Myakka, Urban Land, St. Augustine, Wabasso, Malabar, Arents, Pomello, and Tavares (AMC 2010a). Two soils on-base are hydric and, thus, could have jurisdictional wetland implications. Myakka fine sand (frequently flooded) is within tidal areas and occurs mainly within mangrove areas. These soils are subject to tidal flooding, are very level, and are poorly drained. Malabar fine sand is generally adjacent to the Myakka fine sand. They are nearly level and poorly drained, often occurring in low-lying sloughs and shallow flatwoods depressions. The soils on-base include a considerable amount of fill material, most of which originated from dredging activities in the surrounding bays (AMC 2010a). There are no prime or unique farmland soils on MacDill AFB (NRCS 2014).

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4. ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This section describes the potential environmental consequences that are likely to occur as a result of implementation of all alternatives that are being considered and analyzed. Environmental effects described in this section are evaluated in terms of type (positive/beneficial or adverse), context (setting or location), intensity (none, negligible, minor, moderate, severe), and duration (short-term/temporary or long-term/permanent). The type, context, and intensity of an effects on a resource are explained under each resource area. Unless otherwise noted, short-term effects are those that would result from the activities associated with a project's construction and/or demolition phase, and would end upon the completion of those phases. Long-term effects are generally those that result from the operation of a proposed project.

4.2 AIR INSTALLATION COMPATIBLE USE ZONES, LAND USE, AND NOISE

4.2.1 PREFERRED ALTERNATIVE

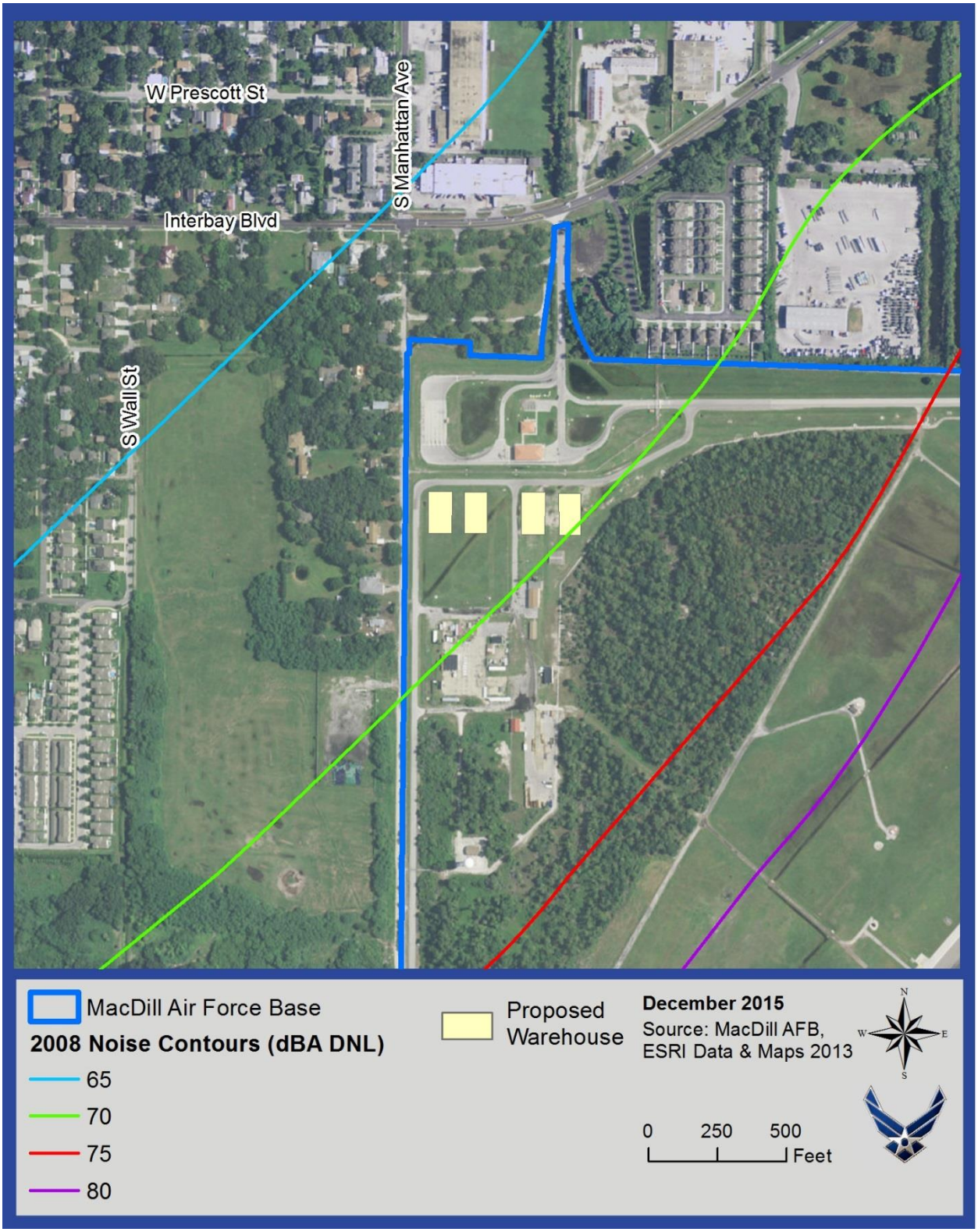
Minor, short-term, adverse effects on AICUZ and noise would be expected under the Preferred Alternative, and no effects would be expected on land use on MacDill AFB. The short-term noise effects would be associated with the new construction of the proposed warehouse complex.

The AICUZ was most recently reevaluated in 2014, with no significant changes (MacDill AFB 2014). The Preferred Alternative site is located between the 65 dBA DNL and 75 dBA DNL noise contours west of the runway indicating a high noise exposure during normal operations at the base (see Figure 4-1). These exposure levels are considered compatible with industrial land uses, including the warehousing activities proposed at the site (MacDill AFB 2008). The degree of noise effects would be a function of the noise generated by construction equipment, the location and sensitivity of nearby land uses, and the timing and duration of the noise-generating activities. Construction activities are normally carried out in stages, and each stage has its own noise characteristics based on the mixture of construction equipment in use.

The highest calculated cumulative energy equivalent sound levels from construction activities are estimated to be approximately 85 decibel (dB) at 50 feet from the center of the project site. Typical noise levels at 50 feet for various equipment that would be used during construction include 80 dB for bulldozers, 83 dB for cranes, 85 dB for backhoes, and 91 dB for trucks (USEPA 1971). The closest sensitive-noise receptors include low-density housing, located 0.03 miles (160 feet) west of the Preferred Alternative site, along South Manhattan Avenue. The closest facilities to the construction site that are regularly occupied are associated with the Port Tampa Gate, located approximately 150 feet north of the Preferred Alternative site.

Each of the adjacent receptors would probably experience some noise effects from construction. The magnitude of these effects would be directly tied to the proximity of the occupied facility to the construction site. The effects would vary according to the activity occurring on any particular day, and effects would cease when construction is completed. Based on a cumulative average construction noise level of approximately 85 dB at 50 feet from the center of the project site, no on- or off-base noise-sensitive receptors would be affected by the Preferred Alternative.

Figure 4-1. Expected Noise Levels in the Vicinity of the Preferred Alternative Site



Under the Preferred Alternative, noise effects would occur during the construction activities. However, these effects would be considered both temporary and minor. Overall, noise levels produced during operation of the proposed warehouse complex would be consistent with normal base activities and would be considered insignificant. The warehouses would not be permanently occupied, which would minimize any long-term AICUZ and noise effects associated with being located in the 65 to 75 dBA DNL noise zones.

The AICUZ also establishes APZs based on statistical analysis of past DOD aircraft accidents. Based on accident analysis, three zones are established as having the highest potential for accidents: the clear zone, APZ 1, and APZ 2. The clear zone is at the start of each runway and has the highest accident potential of the three zones. It is important for the AF to try to establish compatible land uses within these zones to protect the public and minimize encroachment. There are no clear zones or APZs near the Preferred Alternative site.

No land use effects would be expected under the Preferred Alternative. The Preferred Alternative site does not fall within the MacDill AFB clear zone or APZs, and is compatible with AICUZ land use requirements within the noise contours. The Preferred Alternative site is located within the Industrial "A" district as listed in the MacDill AFB IDP. Construction of the proposed warehouse complex at the preferred site would be in keeping with the planned industrial nature of this part of the base. Therefore, no significant effects on AICUZ, land use, or noise would result from implementation of the Proposed Action.

4.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no change to the current conditions, and no effects on AICUZ, noise, or land use would occur.

4.3 AIR QUALITY

4.3.1 PREFERRED ALTERNATIVE

Minor, short-term, adverse effects would be expected from the Preferred Alternative. Air quality effects would occur during construction of the new warehouse complex and associated demolition of a septic system and construction of a new septic system; however, these air quality effects would be temporary. Fugitive dust ($PM_{2.5}$ and PM_{10}) and construction vehicle exhaust emissions would be generated by (1) equipment traffic, and (2) entrainment of dust particles by the action of the wind on exposed soil surfaces and debris. The quantity of fugitive dust emissions from the construction site is proportional to the land being worked and the level of construction activity. These emissions would be greater during the new area site grading and would vary daily. Dust would be generated by equipment travel over temporary roads and would decline rapidly within a short distance from the source.

Pollutants from construction equipment and vehicle engine exhausts include CO_2, NO_x, CO, PM_{10}, and VOCs. Internal combustion engine exhausts would be temporary and, like fugitive dust emissions, would not result in long-term effects.

In order to evaluate the air emissions and their effect on the overall region, the emissions associated with construction activities were compared to the total emissions on a pollutant-by-pollutant basis for the Hillsborough County's 2011 inventory data, as presented in Section 3.3.2. Emissions were compared to the individual county (Hillsborough) potentially affected, which is a smaller area.

Pollutant emissions estimates, as presented in Appendix C and summarized in Table 4-1, assumed construction of two warehouses per year. The USEPA estimates that the effects of fugitive dust from construction activities would be reduced significantly with an effective soil-watering program. Watering the disturbed area of the construction site twice per day with approximately 3,500 gallons per acre per day would reduce total suspended particle emissions as much as 50 percent (USEPA 2006).

As shown in Table 4-1, the Proposed Action would generate emissions well below the emissions inventory for Hillsborough County. In addition, the emissions would be short term. The Proposed Action would generate negligible CO_2 and GHG emissions. Therefore, no significant effect on regional or local air quality would result from implementation of the Proposed Action.

Table 4-1. Proposed Action Estimated Emissions

Pollutant	Proposed Action Annual Emissions (tpy)	Hillsborough County Emissions Inventory (tpy) *	Net Change (%)	Significance Criteria (tpy)	Above/ Below
NO_x	4.65	8,345	0.056	100	below
VOC	0.48	20,926	0.002	100	below
CO	2.05	24,555	0.008	100	below
SO_x	0.36	14,829	0.002	100	below
PM_{10}	5.41	14,337	0.038	100	below
$PM_{2.5}$	0.84	182,503	<0.001	25	below
CO_2	527	165,200	0.319	16,520	below

Note: * Based on 2011 USEPA National Emissions Inventory, Stationary Emissions from Table 3-2.

4.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no change to the current conditions, and no effects on air quality would occur.

4.4 WATER RESOURCES

4.4.1 PREFERRED ALTERNATIVE

Short-term, minor, adverse effects on water resources at MacDill AFB would be expected. Site drainage would be directed to a stormwater management system, permitted by the SWFWMD and designed to retain and treat stormwater prior to discharge off site. Therefore, the Preferred Alternative would have no long-term effects on surface waters.

Minor, short-term, localized adverse effects on water quality could occur from soil disturbance and erosion during construction of the warehouses and associated infrastructure since the soil surface would be exposed and disturbed at each location during the project. Soil erosion would result in increased levels of sediment in stormwater runoff, reaching receiving surface waters on base. Sediment- and erosion-control procedures (permits and/or best management practices [BMPs]) would minimize and offset temporary soil disturbance from construction projects. The following BMPs are included in the Preferred Alternative to diminish the effects of the increases in impervious surface and construction activities.

- A registered professional engineer or architect would develop or review structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction are in accordance with the accepted standards of practice.
- New stormwater retention areas would be established for all projects that add impervious surfaces. A new surface water drainage feature (swale) will be constructed along the northern and western perimeter of the construction site to replace the swale that was filled by construction of the warehouse complex.

These actions would keep adverse effects minor. Prior to construction, a silt fence would be installed to reduce erosion resulting from wind and surface water runoff. Once construction has been completed and landscaping installed, any remaining disturbed areas would be covered with sod. Once the fill and sod is in place, erosion would be minimal. There would be no long-term effects on water resources once the project is complete.

The Preferred Alternative site does not lie within a floodplain (see Figure 2-1; AMC 2006; FEMA 2008), and the preferred facility location would be located outside the 100-year and 500-year floodplains. The ground surface elevation at the site is approximately 12 feet amsl. Therefore, no effects on the floodplains are expected from the Preferred Alternative.

Under the Preferred Alternative there would be no direct or indirect discharges to groundwater. No negative effects on groundwater would occur with implementation of the Preferred Alternative. Potable water would be required for up to four restrooms at the proposed warehouse complex; however, the amount of water required for operation of the restroom would not represent a significant effect on existing water supply on-base. Therefore, no significant effect on water resources would result from implementation of the Preferred Alternative.

4.4.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no change to the current conditions and no effects on water resources would occur.

4.5 SAFETY AND OCCUPATIONAL HEALTH

4.5.1 PREFERRED ALTERNATIVE

Short-term, minor, adverse effects would be expected from the Preferred Alternative; no long-term effects would be expected. Construction of the proposed warehouses would pose safety hazards to the workers, similar to those associated with typical industrial construction projects, such as falls, slips, head stress, and machinery injuries. Safety hazards are expected to occur only during

construction in the short term. Construction would not involve any unique hazards, and all construction methods would comply with OSHA requirements to protect workers and the general public during construction. Government oversight of contractor activities would ensure OSHA compliance. Since the Proposed Action does not include any demolition activities, no effects from asbestos or lead-based paint are expected. A safe proximity to fuel transport lines, which are found near the warehouse complex site, would need to be maintained during construction under the Preferred Alternative. The 6th Air Mobility Wing, Ground Safety (6 AMW/SEG) should be consulted before any digging occurs.

As stated in Section 2.4.1, the Preferred Alternative site is adjacent to SWMU 28. The lateral extent of soil and groundwater effects from the site is well-defined and does not extend into the areas proposed for construction. SWMU 28 also underwent remedial action in fiscal year 2015 to remove all contaminated soils. Consequently, soil and groundwater contamination are not expected to have an effect on worker health and safety.

However, if contaminated media is encountered during construction activities, work would be stopped until coordination with the MacDill AFB ERP office could be completed and management in accordance with ERP guidelines was determined. Implementation of this work approach would dramatically reduce the potential for effects on worker health and safety; therefore, the Preferred Alternative would not have a significant effect on worker health and safety.

The Preferred Alternative site is not within any QD arcs or SDZs, so there are no expected safety or occupational health hazards associated with explosives.

Long-term operation of the warehouse complex is not expected to have any effects on safety and occupational health. The warehouses are expected to be used for storage of support equipment, and they are not expected to pose any safety threats to the public during operation. Therefore, no significant effect on safety and occupational health would result from implementation of the Proposed Action.

4.5.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no change in the existing conditions of the proposed site, so there would be no expected effects on safety or occupational health.

4.6 HAZARDOUS MATERIALS/WASTE

4.6.1 PREFERRED ALTERNATIVE

Potential short-term, minor, adverse effects would be expected from the Preferred Alternative; no long-term effects would be expected. Construction activity would require the on-site use and storage of hazardous materials, such as paint, adhesives, and solvents. All hazardous materials would be temporarily stored and disposed of, per base procedures. All construction-related hazardous materials, including petroleum products, would be removed and disposed of according to base procedures following the completion of tasks. No effects from hazardous materials would occur during operation of the new warehouse complex.

A short-term increase in the generation of solid waste would occur during construction of the proposed warehouse complex and demolition of the septic system and drain field. Local off-base waste handling services/facilities have sufficient capacity to handle this increased output. Because there is no proposed change in the number of personnel or the function of the multiple organizations on-base with the Preferred Alternative, there would be no long-term increase in solid waste generation after completion of the project.

It is anticipated that the quantity of hazardous wastes generated from proposed construction activities would be negligible. Contractors would be required to manage and dispose of their own hazardous waste properly. Therefore, the implementation of the Preferred Alternative would result in a negligible overall effect on the base's hazardous waste management program. No effects from hazardous waste are anticipated to occur during operation of the new warehouse complex because no hazardous materials or wastes would be stored at the complex.

An ERP site, SWMU 28, is just south of the Preferred Alternative site. The boundaries of SWMU 28 are well-defined, and the constituents of concern at this site do not represent an immediate threat. SWMU 28 underwent remedial action in fiscal year 2015 to remove all contaminated soils. Groundwater monitoring is continuing to achieve closeout for soil. If soil or groundwater contamination were encountered during construction activities, work would be halted until coordination with the MacDill AFB ERP office could be completed to determine the appropriate management strategy for the site. It is possible that remediation of any contamination encountered would result in a lesser effect on the environment. Therefore, no significant effect on hazardous materials or waste would result from implementation of the Preferred Alternative.

4.6.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no change in the existing conditions of the proposed site, so there would be no expected effects on hazardous materials or waste.

4.7 BIOLOGICAL AND NATURAL RESOURCES

4.7.1 PREFERRED ALTERNATIVE

Minor, short-term, adverse effects on biological and natural resources would be expected from the Preferred Alternative since the project site is currently maintained lawn with no trees or shrubs. The site is separated by a paved access road with the eastern portion of the site being mostly disturbed with some areas of grass or lawn. Section 3.7.4 lists the federal- and state-listed species that could occur at MacDill AFB. No federal- or state-listed species or species habitat is present at the Preferred Alternative site, nor would any be affected. Coordination with USFWS and NMFS is underway to ensure compliance with the ESA and to confirm that the project would have no effect on listed species. As noted in Section 3.7.4, surveys did not show evidence of nesting sites or other habitat for protected species at or in the vicinity of the Preferred Alternative site.

As noted in Section 3.7.2 a shallow man-made drainage swale is present at the proposed construction site. The swale may exhibit wetland characteristics and was thus evaluated for potential impacts according to EO 11990. Despite potentially providing temporary wetlands functions, the swale is not a regulated wetland in the State of Florida and is exempt from wetland mitigation under Chapter 403.813(1)(j) Florida Statutes, Chapter 62-330.051 Florida

Administrative Code. In accordance with FAC 62-312.050, Dredge and Fill Activities, the dredging or filling of an upland cut drainage swale is exempt from mitigation. Under the Preferred Alternative, the swale would be relocated to the northern and western site boundary along the adjacent roadway. The new drainage swale will collect stormwater and drain it to the south to an existing culvert at the southwestern corner of the site. Relocation of the drainage swale at the Preferred Alternative site would result in a temporary impact on the water quality and wildlife functions provided by the swale. However, these water quality and wildlife benefits would be quickly re-established following construction of the new drainage swale, resulting in no permanent impacts on wetland functions. Therefore, the Preferred Alternative would have no significant effect on biological and natural resources.

4.7.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no change in the existing conditions of the proposed site, so there would be no expected effects on biological resources.

4.8 CULTURAL RESOURCES

4.8.1 PREFERRED ALTERNATIVE

No effect would be expected from the Preferred Alternative. Construction of the warehouse complex and associated infrastructure would result in unavoidable ground disturbance that might disturb previously unknown cultural resources. A Phase I Cultural Resources Assessment Survey was conducted at the site; no cultural resources were identified. Therefore, at this time, no cultural or archaeological resources are known to exist on the Preferred Alternative site. In addition, the Preferred Alternative would not directly or indirectly affect any previously identified listed, individually eligible, or contributing historic resources on MacDill AFB. The proposed construction activities would not occur within the viewshed of the historic districts or the NRHP-eligible historic structures. Therefore, the Preferred Alternative is expected to have no effect on cultural resources.

Consultation with the Miccosukee Tribe of Indians and the Seminole Tribe of Florida was initiated by the AF regarding the Preferred Alternative. Tribal consultation letters and responses are in Appendix A. The Miccosukee Tribe of Indians had no concern with the Preferred Alternative, but requested that if human remains are found during ground-disturbing activities, construction should be halted and the tribe contacted.

The Seminole Tribe of Florida THPO requested a Phase I Cultural Resource Assessment Survey for the Preferred Alternative site. An Archaeological Survey of the Preferred Alternative site was completed in December 2015 and no archaeological resources were discovered. As such, the Preferred Alternative is expected to have no effect on cultural resources at MacDill AFB. The Seminole Tribe of Florida THPO found no objection to this finding, but asked that they be informed in the event that any archaeological, historical, or burial resources that are inadvertently discovered during the undertaking.

In a letter dated 5 February 2016, the Florida SHPO also concurred with the finding of the Phase I Cultural Resources Assessment Survey that the Preferred Alternative would have no effect on

cultural resources listed or eligible for listing on the NRHP or otherwise of archaeological, historical, or architectural significance within the survey area.

If archaeological resources were unearthed during ground-disturbing activities, MacDill AFB staff would notify the base Cultural Resources Manager and follow procedures identified in the 2011 ICRMP to protect these resources, including the Standard Operating Procedure "Inadvertent Discovery of Cultural Materials" (AMC 2011b).

4.8.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no change in the existing conditions of the proposed site, no effects would be expected on cultural resources.

4.9 GEOLOGY, TOPOGRAPHY, AND SOILS

4.9.1 PREFERRED ALTERNATIVE

Negligible adverse effects would be expected on geology, topography, and soils from the Preferred Alternative. Site preparation for construction activities would require vegetative clearing, grading, and small-scale excavation, further disturbing the site's previously disturbed topography. Soils exposed during site grading and construction activities are subject to erosion, and a small amount of soil erosion would be expected during construction activities since portions of the soil surface would be exposed and disturbed. This would temporarily increase sedimentation in on-site stormwater management systems and could increase sediment loads in off-site discharges. Soil erosion in areas that are disturbed would be controlled by implementation of a sediment- and erosion-control plan, which would include BMPs.

All pervious areas disturbed during construction activities would, at a minimum, be covered with a clean layer of fill, then graded and covered with sod. Revegetating areas of exposed soil created during construction would significantly reduce the potential for erosion. The soils that would be disturbed by the Preferred Alternative site are Myakka-Urban land complex soils, consisting of poorly drained, fine sands with high runoff. These soils are not considered prime farmland (NRCS 2014). Therefore, effects on soils would be minimal and temporary and not considered significant.

4.9.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no change in the existing conditions of the proposed site, so no effects would be expected on geology, topography, or soils.

4.10 OTHER NEPA CONSIDERATIONS

4.10.1 UNAVOIDABLE ADVERSE EFFECTS

This EA identifies any unavoidable adverse effects that would be required to implement the Preferred Alternative and the significance of the potential impacts on resources and issues. Title 40 CFR 1508.27 specifies that a determination of significance requires consideration of context and intensity. Construction of the warehouse complex would affect the local project area at MacDill AFB. The severity of potential adverse effects would be limited by regulatory compliance for the protection of the human and natural environment.

Unavoidable, short-term, adverse effects associated with implementing the Preferred Alternative would include a temporary increase in noise during construction activities, a temporary increase in air emissions, temporary erosion and sedimentation from soils disturbance and the associated increase in sediment in stormwater runoff, potential safety hazards during construction activities, and the temporary increase in solid waste and the storage of hazardous materials. However, these effects are considered minor and would be confined to the immediate area. Use of environmental controls and implementing controls required in the permits and approvals that must be obtained would minimize these potential adverse effects.

Unavoidable, long-term, adverse effects would result from the 24,000-SF increase in impervious surfaces. Due to the nature of the Preferred Alternative, and planned stormwater retention basin, these long-term potential adverse effects would be expected to be minor. The action is required to provide secure, covered warehouse facilities for USCENTCOM, DIA, and other tenants on MacDill AFB. No other alternatives meet the requirements for construction of a new warehouse complex at MacDill AFB or fulfill the purpose of and need for the action.

4.10.2 RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The relationship between the short-term uses and enhanced long-term productivity that result from implementation of the Proposed Action is evaluated from the standpoint of short-term effects and long-term effects. Short-term effects would be those associated with the construction of the warehouse complex. Long-term enhancement of productivity would be those effects associated with the operation of new on-site warehouse facilities after implementation of the Preferred Alternative.

The Preferred Alternative represents an enhancement of long-term productivity for operations at MacDill AFB. The negative effects of short-term operational changes during warehouse construction activities would be minor in comparison to the positive benefits from constructing a new warehouse complex. Immediate and long-term operational benefits would be realized after completion of the Preferred Alternative.

4.10.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

This EA identifies any irreversible and irretrievable commitments of resources that would be involved in the Preferred Alternative, if implemented. An irreversible effect results from the use or destruction of resources (e.g., energy) that cannot be replaced within a reasonable time. An irretrievable effect results from loss of resources (e.g., endangered species) that cannot be restored as a result of the Proposed Action.

The short-term irreversible commitments of resources that would occur would include planning and engineering costs, building materials and supplies and their cost, use of energy resources during construction, use of petroleum fuel and oil products, human labor, generation of fugitive dust emissions, and creation of temporary construction noise. No long-term irretrievable commitments of resources are expected with implementation of the Preferred Alternative.

4.11 CUMULATIVE EFFECTS

This EA also considers the effects of cumulative effects as required in 40 CFR 1508.7 and concurrent actions that are required in 40 CFR 1508.25[1]. A cumulative effect, as defined by the CEQ (40 CFR 1508.7), is the "…effect on the environment which results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (Federal or non-Federal) or person undertakes such actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time."

Actions announced for the ROI for this project that could occur during the same time period as the Preferred Alternative were reviewed.

The MacDill AFB IDP identifies 41 construction projects, 13 demolition projects, 33 infrastructure improvement projects, two natural infrastructure management projects, and one strategic sustainability performance project between fiscal year 2012 and fiscal year 2017 (AMC 2013). Although some of the IDP projects will have been completed prior to implementation of the Preferred Alternative, cumulative effects also take past projects into consideration. Very few IDP projects are in close proximity to the location of the Preferred Alternative site, but some that are nearby include the following:

- *Infrastructure Improvement Project 20: Widen Road to Accommodate Rapidscan GaRDS System; Port Tampa Gate Improvements.* This project, constructed in 2014, is north of the Preferred Alternative site. It widened the north entry road into the commercial gate area between the perimeter gate and the prescreen waiting area for moving the operation of the Rapidscan GaRDS truck. A 1,830-SF, traffic-control facility with traffic lanes was constructed to process entry of privately owned vehicles and to alleviate congestion. Roads were reconfigured to accommodate the new system and gate improvements (AMC 2013).
- *Infrastructure Improvement Project 22: Bury Communication Infrastructure.* This project, constructed in 2015, is south of the Preferred Alternative site and it involved excavating a three-foot-deep trench for direct burial of fiber cable from two Air Traffic Control and Landing Systems weather stations (buildings 1201 and 1202) to the Air Traffic Control Tower (building 1180). The fiber cable was installed between buildings 1201 to 1202 along the tree line if possible, and then branched out to building 1180. It replaced existing copper communications infrastructure (AMC 2013).
- *Airfield Drainage Improvement Projects.* This project, constructed in 2015, filled low-lying depressions on the airfield that periodically flood and attract birds (AMC 2010b).

MacDill AFB is bordered by Tampa and Hillsborough Bays to the west, south, and east, and by the city of Tampa to the north. Environmental effects of the Preferred Alternative would be confined to the base boundaries, and it is not anticipated that associated construction activities would affect off-base areas. No specific development projects have been identified in the areas directly adjacent to MacDill AFB that would cumulatively affect the analyzed resource areas.

For this EA analysis, these announced actions are addressed from a cumulative perspective and are analyzed in this section. These other actions are evaluated under separate NEPA analyses conducted by the appropriate involved federal agency. Based on the best available information

for these proposals by others, the AF cumulative effects analysis for this Proposed Action considers these other actions.

Descriptions of the cumulative effects for the resource areas follow.

Air Installation Compatible Use Zones, Noise, and Land Use

Aircraft activities, automobile traffic, and, in some areas of the base, ground and weapons training are all typical noise sources on MacDill AFB. Construction activities occurring in the same vicinity of these noise sources and other planned construction and demolition activities could result in short-term, localized, minor, adverse cumulative effects on the noise environment. Other projects planned in the vicinity are expected to be completed at a different time than the Preferred Alternative construction, so cumulative noise effects are not expected to be significant.

Land use at MacDill AFB is steered by the IDP, which helps to guide safe, compatible development on-base. The cumulative base development activities, when considered in addition to the Proposed Action, would not be expected to result in increased potential for incompatible land use on the base.

Air Quality

The cumulative air effects would include air sources from other proposed construction and demolition projects on MacDill AFB during the time period needed to complete the construction of the warehouse complex. The following are other proposed construction and demolition projects planned for fiscal years 2016 and 2017:

- Construct FAMCAMP Annex
- Dormitory (120-Room)
- Fuels Management Facility
- Base Civil Engineering Complex
- Construct Wing Headquarters
- Construct Bike Paths/Lanes
- Repair DFSP Fire Hydrant System; Repair DFSP Overhead
- Repair Water Distribution System (AMC 2013)

Details of the other proposed construction and demolition projects are included in Appendix C. Pollutant emissions estimates are presented in Appendix C and summarized in Table 4-2. Based on the calculations provided in Appendix C and presented in Table 4-2, the cumulative annual emissions estimates fall below the significance level of 100 tons per year (tpy) for all criteria pollutants evaluated, and they are a small percentage of the CO_2 emissions.

Table 4-2. Cumulative Estimated Air Emissions from Stationary Sources

	Stationary Sources						
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**	**CO_2 (tpy)**
Hillsborough County Emissions	8,345	20,926	24,555	14,829	14,337	182,503	165,200
10% of Hillsborough County Emissions	834	2,093	2,456	1,483	1,434	18,250	16,520
Cumulative Emissions	**26.45**	**2.73**	**11.51**	**1.87**	**26.12**	**4.61**	**2,999**
Cumulative Construction %	0.32%	0.013%	0.047%	0.013%	0.182%	0.003%	1.820%
Regionally Significant?	**no**	**no**	**no**	**no**	**no**	**no**	**no**

Water Resources

A small amount of soil erosion could occur during construction and demolition activities since the soil surface would be exposed and disturbed at each location during the project. Soil erosion in areas that are disturbed would be minimized by implementing a sediment- and erosion-control plan, adopting BMPs. This EA has been prepared under the assumption that each construction site would, at a minimum, be covered with a clean layer of fill, then graded and covered with sod. Once the fill and sod are in place, erosion from active construction sites would be minimal. There would be no anticipated long-term, cumulative effects on water resources.

Under the Preferred Alternative, there would be no direct or indirect discharges to groundwater or negative effects on groundwater. The Preferred Alternative would have negligible demands for potable water; therefore, it would not contribute to cumulative effects on potable water supply on MacDill AFB.

Planned demolition and construction activities are expected to result in increased potential for erosion and transport of sediment into surface water bodies. The MacDill AFB IDP will add 687,970 SF of new impervious surface to MacDill AFB (AMC 2013). Considered cumulatively with the Preferred Alternative, there would be long-term, minor, adverse effects on water resources expected. However, these effects would be minimized through permitting and adherence to BMPs. Therefore, these effects would not be expected to be significant.

Safety and Occupational Health

All demolition and construction activities on MacDill AFB would be expected to result in increased potential for safety hazards. However, when considering the Preferred Alternative cumulatively with other construction activities on the base, no significant effects on safety and occupational health on the base are expected.

Hazardous Materials and Wastes

All demolition and construction activities on MacDill AFB would be expected to result in generation of small amounts of hazardous materials and wastes. However, MacDill AFB has several planning documents including Hazardous Materials Management Plan, Pollution Prevention Management Action Plan, Hazardous Waste Management Plan, Asbestos Management and Operations Plan, Lead-Based Paint Management Plan, and Integrated Pest Management Plan. These programmatic plans guide the use, handling, storage, and disposal of regulated materials in accordance with AF, federal, state, and local laws and regulations. When considered cumulatively with other projects on MacDill AFB, the Preferred Alternative is not expected to result in a significant adverse effect on hazardous materials and wastes.

Biological and Natural Resources

MacDill AFB's Integrated Natural Resources Management Plan (INRMP) is the primary reference and planning document for managing the base's biological and natural resources. The INRMP establishes baseline conditions for natural resources on MacDill AFB and outlines the base's approach to the management of these resources. The INRMP, which utilizes an ecosystem management approach, addresses a wide range of management issues including threatened and endangered species, wetlands, watershed protection, fish and wildlife, forest management, grounds maintenance, outdoor recreation, and coastal management. The INRMP is updated annually and submitted to the state and federal fish and wildlife resource agencies for review, comment, and approval. MacDill AFB's current INRMP was updated and approved by all parties in September 2015.

Much of the natural vegetation on MacDill AFB has been highly modified, and the southern portion contains the best wildlife habitat (AMC 2013). Because the Preferred Alternative site contains only maintained lawn groundcover, no vegetation or habitat would be lost during construction. Therefore, when considered cumulatively with other planned projects on the base, it is not expected that the Preferred Alternative would result in a significant adverse effect on biological and natural resources.

Cultural Resources

MacDill AFB's ICRMP is the primary reference and planning document for managing the base's cultural resources. The ICRMP provides guidance and procedures for MacDill AFB to meet its legal responsibilities for identification, evaluation, and treatment of cultural resources in a manner consistent with the base's military mission. The ICRMP incorporates guidelines, schedules, and standard operating procedures for cultural resources management so that base staff can efficiently fulfill management responsibilities. The ICRMP is reviewed annually, and updated every five years. MacDill AFB's current ICRMP was finalized in September 2011.

Proposed and ongoing projects on MacDill AFB would not be expected to have an effect on known archaeological resources. However, any new ground-disturbing activities have the potential to uncover previously unknown archaeological resources. Present and future development actions on MacDill AFB must all undergo Section 106 consultation to consult with interested tribes and the SHPO. Any inadvertent discoveries will be immediately addressed with the SHPO and

associated Native American tribes following the procedures outlined in the 2011 ICRMP. When considered cumulatively with other planned projects on the base, it is not expected that the Proposed Action would result in a significant adverse effects on known cultural resources.

Geology, Topography, and Soils

All demolition and construction activities associated with the Preferred Alternative would be expected to result in minor, short-term, adverse effects as a result of vegetation removal, compaction of surrounding soils, and increased soil erosion and sedimentation. The implementation of soil and sediment BMPs and environmental protection measures would be expected to limit the potential cumulative adverse effects.

4.12 COMPARISON OF ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION AND NO ACTION ALTERNATIVE

Table 4-3 summarizes the potential environmental effects of the Preferred Alternative and No Action Alternative for each resource area evaluated in this EA.

Table 4-3. Summary of Effects from the Preferred Alternative and No Action Alternative

Environmental Resources	Preferred Alternative	No Action Alternative
AICUZ, Noise, and Land Use	Short-term: Minor adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect
Air Quality	Short-term: Minor adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect
Water Resources	Short-term: Minor adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect
Safety and Occupational Health	Short-term: Minor adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect
Hazardous Materials and Wastes	Short-term: Minor adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect
Biological and Natural Resources	Short-term: Minor adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect
Cultural Resources	Short-term: No adverse effect Long-term: No adverse effect	Short-term: No effect Long-term: No effect
Geology, Topography, and Soils	Short-term: Negligible adverse effect Long-term: No effect	Short-term: No effect Long-term: No effect

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5. LIST OF PREPARERS

This EA has been prepared under the direction of the Air Force Civil Engineer Center, AF, and MacDill AFB.

The following individuals contributed to the preparation of this EA.

Table 5-1. List of Preparers

Name/ Organization	Education	Resource Area	Years of Experience
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7. REFERENCES

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APPENDIX A. AGENCY COORDINATION AND CONSULTATION, AND PUBLIC PARTICIPATION

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DEPARTMENT OF THE AIR FORCE
6TH AIR MOBILITY WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

Colonel Daniel H. Tulley
6th Air Mobility Wing Commander
8208 Hangar Loop Drive, Suite 1
MacDill Air Force Base, Florida 33621-5407

JUN 2 3 2015

Mr. Fred Dayhoff
Miccosukee Tribe of Indians of Florida
HC 61, SR BOX 68, Old Loop Road
Ochopee, FL 34141

Dear Mr. Dayhoff;

The United States Air Force proposes to construct a new warehouse district on the west side of MacDill Air Force Base. The first of four warehouses proposed for construction is a 4,800 square foot warehouse facility to provide storage space for U.S. Central Command. Each of the four warehouses would be approximately the same size and the remaining three warehouses would be constructed as funding becomes available. The area proposed for construction of the new warehouse district is presented in Figure 1.

The initial warehouse would be constructed on a concrete foundation with a steel I-beam interior frame which would be sheathed with insulated, metal wall panels. The warehouse would have a concrete driveway and associated access road. Construction of the follow-on warehouses is expected to be of similar in size, materials and method to the initial facility. The project would involve limited earth disturbing activities for construction of the building foundation, driveway, access road and stormwater retention pond.

There are no known archeological sites within or adjacent to the proposed warehouse district. The closest archeological sites in the vicinity of proposed project area are the Runway Site (Site 8Hi3382) which lies roughly three quarters of a mile east of the warehouse district site (Figure 2).

In accordance with Executive Order 13175 and Section 106 of the NHPA (36 CFR Sections 800.2, 800.3, and 800.4), the Air Force would like to initiate government-to-government consultation regarding the proposed maintenance dredging event. The Air Force desires to discuss the proposal in detail with you so that we may understand and consider any comments, concerns, and suggestions you may have.

Please let us know when you would like to meet to discuss the proposal and your expectations on how we should proceed with consultation. Do not hesitate to call me at (813) 828-4444 to arrange dates and times for consultation.

DANIEL H. TULLEY, Colonel, USAF
Commander

Attachment
1. Figures 1 & 2: Location and Affected Areas for the Proposed Warehouse District

RAPID GLOBAL MOBILITY…UNMATCHED INSTALLATION SUPPORT!

ATTACHMENT 1

Figures 1: General Location of the Proposed Warehouse District on MacDill Air Force Base
Figure 2: Location of Warehouse District in Relation to Runway Site (8Hi3382)

MacDill Air Force Base Environmental
6 CES/CEV
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MacDill AFB, FL 33621
https://cs.eis.af.mil/a7cportal/eDASH/AMC/macdill/default.aspx

MEMORANDUM FOR RECORD

JUL 2 2 2015

FROM: 6 CES/CEVN

SUBJECT: Consultation with Miccosukee Tribe of Indians Regarding 11 Proposed Construction Projects at MacDill AFB

1. A package containing individual consultation letters for 11 upcoming construction projects at MacDill Air Force Base was sent to the Miccosukee Tribe of Indians. The consultation letters, each dated 23 June 2015, were received by Mr. Fred Dayhoff, the Section 106 Native American Grave Protection and Repatriation Act (NAGPRA) representative for the Miccosukee Tribe of Indians. Mr. Dayhoff contacted the 6 AMW front office on 20 July 2015 and talked with Lt. Machado (6 AMW/CCE) to let him know that the Miccosukee Tribe of Indians had no input on the 11 construction projects. The 11 projects included in the consultation package are listed below:

- U.S. Army Reserve Helicopter Unit Bed Down, planned for FY18
- Maintenance Dredging of the Marina Channel and Basins
- Clearing and Grading of Wooded Area to Remove Obstructions in Airfield Clear Zone
- Construct an Active Shooter Training Facility
- Construct a Fire Suppression System in Hangars 1 thru 3
- Demolish and Relocate Vehicle Operations Facility to Building 52
- Construct New Sidewalks around Central Command Facility
- Construct Drug Demand Reduction Facility
- Construct Addition and Renovate Building 1066 for New Pass & ID Facility
- Aerial Application of Pesticide for Mosquito Control and Vegetation Maintenance
- Construct a New Warehouse District

2. On 22 July 2015, I made a follow-up phone call to Mr. Dayhoff to double check that he was satisfied with the consultation process. I have been Mr. Dayhoff's primary point of contact from MacDill AFB over the last several years and wanted to speak with him personally. During our conversation, Mr. Dayhoff reaffirmed that the Miccosukee Tribe did not have any concerns about the proposed construction projects. He mentioned that if human remains are found during excavation, construction activities should halt and the tribe should be contacted. He also commented that he contact the front office directly because he could not find contact information for me in the consultation letter package.

JASON W. KIRKPATRICK, Contractor, IAP Worldwide Services Inc.
Natural Resources Program Manager, 6th Civil Engineer Squadron

Commit to Serve, Commit to Conserve

DEPARTMENT OF THE AIR FORCE
6TH AIR MOBILITY WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

Colonel Daniel H. Tulley
6th Air Mobility Wing Commander
8208 Hangar Loop Drive, Suite 1
MacDill Air Force Base, Florida 33621-5407

JUN 2 3 2015

Dr. Paul Backhouse
Seminole Tribe of Florida
30290 Josie Billie Hwy, PMB 1004
Clewiston, FL 33440

Dear Dr. Backhouse;

The United States Air Force proposes to construct a new warehouse district on the west side of MacDill Air Force Base. The first of four warehouses proposed for construction is a 4,800 square foot warehouse facility to provide storage space for U.S. Central Command. Each of the four warehouses would be approximately the same size and the remaining three warehouses would be constructed as funding becomes available. The area proposed for construction of the new warehouse district is presented in Figure 1.

The initial warehouse would be constructed on a concrete foundation with a steel I-beam interior frame which would be sheathed with insulated, metal wall panels. The warehouse would have a concrete driveway and associated access road. Construction of the follow-on warehouses is expected to be of similar in size, materials and method to the initial facility. The project would involve limited earth disturbing activities for construction of the building foundation, driveway, access road and stormwater retention pond.

There are no known archeological sites within or adjacent to the proposed warehouse district. The closest archeological sites in the vicinity of proposed project area are the Runway Site (Site 8Hi3382) which lies roughly three quarters of a mile east of the warehouse district site (Figure 2).

In accordance with Executive Order 13175 and Section 106 of the NHPA (36 CFR Sections 800.2, 800.3, and 800.4), the Air Force would like to initiate government-to-government consultation regarding the proposed maintenance dredging event. The Air Force desires to discuss the proposal in detail with you so that we may understand and consider any comments, concerns, and suggestions you may have.

Please let us know when you would like to meet to discuss the proposal and your expectations on how we should proceed with consultation. Do not hesitate to call me at (813) 828-4444 to arrange dates and times for consultation.

DANIEL H. TULLEY, Colonel, USAF
Commander

Attachment
1. Figures 1 & 2: Location and Affected Areas for the Proposed Warehouse District

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SEMINOLE TRIBE OF FLORIDA
TRIBAL HISTORIC PRESERVATION OFFICE
AH-TAH-THI-KI MUSEUM

TRIBAL HISTORIC
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July 29, 2015

Mr. Jason Kirkpatrick
Contractor, IAP Worldwide Services Inc.
6th Civil Engineer Squadron
7621 Hillsborough Loop Dr.
MacDill AFB, FL 33621
(813) 695-3206
jason.kirkpatrick.2.ctr@us.af.mil

Subject: Consultation Requests: 11 Letters Regarding Upcoming Projects at MacDill AFB.
THPO#: 0028679 - 0028690

The Tribal Historic Preservation Office of the Seminole Tribe of Florida (STOF-THPO) thanks you for consulting with the Tribe regarding the 11 Upcoming Projects at MacDill AFB. We appreciate your efforts to implement the new Air Force cultural resource regulations regarding Tribal consultation and compliance with Section 106/110 of the National Historic Preservation Act (NHPA). The THPO has reviewed each of the 11 proposed undertakings and would like to submit the following comments. In addition to project-specific comments, the final comment is intended to provide a framework for evaluating actions/situations that we feel warrant Tribal consultation under Section 106 of NHPA and other applicable legislation (i.e. NEPA, NAGPRA):

1) The STOF-THPO has **no objection** the following undertakings and does not wish to continue consultation at this time. Please contact the STOF-THPO if any historical, archaeological, or burial resources are inadvertently encountered during the construction process.
   - Maintenance Dredging of the Marina Channel and Basin
   - Construct a Fire Suppression System in Hangars 1 thru 3
   - Construct New Sidewalks around Central Command Facility
   - Construct Drug Demand Reduction Facility
   - Construct Addition and Renovate Building 1066 for New Pass & ID Facility
   - Aerial Application of Pesticide for Mosquito Control and Vegetation Maintenance

2) The STOF-THPO respectfully requests that **consultation continue** for the following projects. Given the information provided, we recommend that a Cultural Resource Assessment Survey be performed within these APEs unless it can be demonstrated that the APEs have been extensively disturbed by prior activities:
   - U.S. Army Reserve Helicopter Unit Bed Down (Primary Location only)
   - Construct an Active Shooter Training Facility
   - Clearing and Grading of Wooded Area to Remove Obstructions in Airfield Clear Zone

- Demolish and Relocate Vehicle Operations Facility to Building 52 (New parking lot construction only)
- Construct a New Warehouse District

3) The STOF-THPO appreciates your invitation to meet with THPO representatives and Tribal leadership to discuss these projects and set the standards for future consultation with the Tribe. After reviewing the projects proposed in your letter, we do not consider it necessary to have a face-to-face consultation meeting at this point. However, if any future projects warrant a consultation meeting, the STOF would be happy to meet with members of your staff.

   The projects listed above (#2) demonstrate the type of actions that we feel warrant Tribal consultation under Section 106 of the NHPA. As a general rule, the STOF would like to be consulted on any undertaking that includes ground disturbance or involves the transfer of federal property to a non-federal entity. Certain undertakings have little or no potential to impact the Tribe – routine building maintenance, building renovations, repaving roads/lots, etc. – and it is not necessary to initiate consultation unless historical, archaeological, or burial resources are inadvertently encountered during the undertaking. As a general rule, it is best to err on the side of consultation if there is any question whether the Tribe may have an interest in reviewing the undertaking. As always, the STOF-THPO reserves the right to use its discretion on a project-to-project basis in determining whether consultation is required.

Once again, thank you for the opportunity to comment on these projects. Please do not hesitate to contact the STOF-THPO with any questions or concerns and we look forward to working with you in the future.

Respectfully,

Andrew J. Weidman, MA, RPA
STOF-THPO, Compliance Review Specialist
30290 Josie Billie Hwy, PMB 1004
Clewiston, FL 33440
Office: 863-983-6549 x12216
Email: andrewweidman@semtribe.com

cc: Bradley M. Mueller, Compliance Review Supervisor, THPO

DEPARTMENT OF THE AIR FORCE
6TH AIR MOBILITY WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

September 2, 2015

Mr. Robert B. Hughes
6th Civil Engineer Squadron
7621 Hillsborough Loop Drive
MacDill Air Force Base FL 33621

Mr. Andrew J. Weidman
Seminole Tribe of Florida
30290 Josie Billie Highway PMB 1004
Clewiston FL 33440

Dear Mr. Weidman

Thank you for your response to our consultation letters. We note the Seminole Tribe of Florida (STOF) has no objections to six of the eleven projects and we consider consultation complete on those projects. The STOF asked that consultation continue on the remaining five projects and suggested the need for a Cultural Resource Assessment Survey to be performed in the areas of potential effects (APEs) for each of the five project sites. As part of the continuing consultation process we want to ensure you are fully aware of MacDill Air Force Base's (AFB) prior efforts to document areas of cultural significance on the installation and solicit your thoughts on the need for a Cultural Resource Assessment Survey in light of the work that has previously been accomplished.

MacDill AFB has been surveyed a number of times for archaeological resources. A summary of the significant archaeological investigations at MacDill AFB include a University of South Florida investigation of the Gadsden Point area in 1952, an extensive survey of the golf course in 1983, a Cultural Resources Reconnaissance Survey of the entire installation by the National Park Service (NPS) in 1986, a survey of a proposed utility corridor along the perimeter of the installation in 1988, a Phase II evaluation of the Runway Site (8Hi3382) in 1991, and a Phase II evaluation of the Gadsden Point Site (8Hi50) and EOD Site (8Hi5656) in 1996. Those surveys resulted in the discovery of five recorded prehistoric archaeological sites, including two that are eligible for listing in the National Register of Historic Places (NRHP).

The NPS base wide evaluation of MacDill AFB in 1986 determined that 85 percent of the installation has been disturbed by construction, development of recreational areas, and periodic use including firing ranges, tree plots, fill sites, and explosive storage. The NPS determined that these disturbed areas have been extensively modified and offer little possibility of finding intact cultural resources. The remaining 15 percent of the installation, deemed largely undisturbed, underwent a Cultural Resources Reconnaissance Survey by the NPS. The Cultural Resources Reconnaissance Survey and testing efforts did not identify any additional archaeological sites and it was the opinion of the NPS that further cultural resources investigations of MacDill AFB were not warranted. The Florida SHPO concurred with the results of the NPS survey and considered the Cultural Resources

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Reconnaissance Survey of MacDill AFB to be complete and sufficient. Records of the consultation between MacDill AFB and the SHPO regarding the NPS Cultural Resources Reconnaissance Survey are attached, and records from the other archeological investigations can be provided upon request.

The Runway Site (8Hi3382) was discovered during the 1988 utility corridor survey. This site was determined to be eligible for the NRHP following a Phase II investigation in 1991.

The SHPO has more recently clarified the possibility of discovering unidentified archaeological resources on the installation could still exist. However, we feel this possibility is very low. Over the last two decades the base has undergone an extensive redevelopment effort involving the construction and demolition of buildings, roadways, utilities, and other infrastructure which has disturbed hundreds of acres of land throughout the entire installation. During this vigorous construction program, no archeological resources or sites have been discovered. To safeguard against the potential for impacts to archeological resources which could result from construction activities, all construction projects that involve subsurface excavation include language in the environmental documents to address the issue of inadvertent discovery. MacDill's Standard Operating Procedure (SOP) for inadvertent discovery requires all Air Force personnel, work crews, contractors or anyone else who finds known or likely human remains, unmarked graves, Native American and Euro-American artifacts or archeological features to stop all work when an inadvertent discovery is found and establish a 30-meter buffer around the discovery. The base Cultural Resources Manager must confirm all work has stopped and the area is secured and then notify the SHPO, Tribal Historic Preservation Officer, and any other appropriate state and or Federal agency. The (SOP) requires the discovery to be evaluated within 24 hours by appropriate experts.

Given the number of prior archaeological surveys of MacDill, the limited area of undisturbed land, the lack of any new discoveries of archeological sites since 1988, our Standard Operating Procedure for dealing with inadvertent discovery, and the limited potential for the proposed projects to adversely affect cultural resources we believe we have adequate safeguards in place to address the discovery of any future cultural resources.

We are very interested in meeting the expectations of the Seminole Tribe of Florida Tribal Historic Preservation Office with regard to historical, archeological, or burial resources on MacDill AFB. We wanted to make you aware of the information provided above as part of the continuing consultation process. We welcome your comments on this additional information and your thoughts on the need for a Cultural Resource Assessment Survey for these projects in light of this additional information.

Sincerely

ROBERT B. HUGHES, GS-14, DAF
Director, 6th Civil Engineer Squadron

3 Attachments:
1. NPS Cultural Resources Reconnaissance, February 1986
2. NPS Letter to SHPO, August 1987
3. SHPO Letter to NPS, April 1987

ATTACHMENT 1

NPS Cultural Resources Reconnaissance, Dated 3 February 1986

ATTACHMENT 2

NPS Letter to SHPO, Dated 24 August 1987

ATTACHMENT 3

SHPO Letter to NPS, April 1987

SEMINOLE TRIBE OF FLORIDA
TRIBAL HISTORIC PRESERVATION OFFICE
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September 30, 2015

Mr. Robert B. Hughes
Director, 6th Civil Engineering Squadron
7621 Hillsborough Loop Dr.
MacDill AFB, FL 33621

Subject: Consultation Requests: 11 Letters Regarding Upcoming Projects at MacDill Air Force Base
THPO#: 0028679 – 0028690

Thank you for your thorough response to our July 29th, 2015 letter regarding eleven upcoming projects at MacDill Air Force Base (AFB). We agree that consultation has been completed on six of the eleven projects listed in our original letter. We are also aware of MacDill AFB's previous efforts to identify cultural resources on the installation. It appears that many decisions regarding the possibility of current additional identification efforts rely on the 1986 evaluation which assessed 85 percent of the installation as disturbed and subjected the remaining 15 percent to a reconnaissance-level survey. However, it is unclear which areas of the installation fall within each category, as no clear map has been provided. Furthermore, it is not indicated whether the five projects we requested continued consultation on fall within the disturbed or undisturbed areas of the base.

Because the methods employed in the 1986 survey correspond to a basic reconnaissance-level survey, we believe that the possibility of encountering previously unidentified archaeological/cultural resources within the undisturbed areas of MacDill AFB remains. This is demonstrated by the subsequent discovery of the NRHP-eligible Runway Site (8HI3382) during the 1988 Phase I Cultural Resource Assessment Survey. Your letter dated September 2nd, 2015 acknowledges that this possibility exists, although it is "very low". As such, we believe that future undertakings in undisturbed areas that propose ground-disturbing activities should be evaluated according to Florida Division of Historical Resources Module 3 standards, which may involve conducting a Cultural Resource Assessment Survey.

Again, thank you for contacting us regarding these projects and we look forward to working with you throughout the consultation process.

Respectfully,

Andrew J. Weidman, MA, RPA

STOF-THPO, Compliance Review Section
30290 Josie Billie Hwy, PMB 1004
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DEPARTMENT OF THE AIR FORCE
6TH AIR MOBILITY WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

29 December 2015

Mr. Robert B. Hughes
6th Civil Engineer Squadron
7621 Hillsborough Loop Drive
MacDill Air Force Base FL 33621

Mr. Andrew J. Weidman
Seminole Tribe of Florida
30290 Josie Billie Highway PMB 1004
Clewiston FL 33440

Dear Mr. Weidman

Thank you for your continued consultation regarding 11 upcoming construction projects which would result in ground disturbance at multiple locations around MacDill Air Force Base. As noted in your 30 September 2015 letter, we have concluded consultation on six of the future construction projects. Your letter requested that we evaluate the remaining five proposed construction sites according to Florida Division of Historical Resources Module 3 standards.

We have completed a Cultural Resources Assessment Survey of the three smallest proposed construction sites. A copy of the final survey report is attached for your review. Based upon the results of background research and a systematic archaeological field survey, the report concludes that no archaeological sites or historic resources would be affected by construction activities at these three sites.

We are working toward implementing Cultural Resources Assessment Surveys for the two remaining proposed construction sites. These construction sites are both significantly larger (~60 acres each) and the surveys will be accomplished individually as funding becomes available. We do not have an anticipated completion date for either survey at this time.

As you may be aware, facility construction/demolition and infrastructure improvement projects are routine on MacDill AFB. These routine construction activities all result in land disturbing activities. Given the volume of construction work on MacDill and the Air Force's requirement to complete tribal consultation for any land disturbing activity (Air Force Instruction 90-2002), there is a potential for the completion of numerous Cultural Resources Assessment Surveys in the future. This could be a costly endeavor. A base-wide Phase I archaeological survey has been proposed but may not be funded due to costs. As an alternative, we would like to propose the use of construction site monitoring as an alternative to pre-construction evaluation of individual project sites. The base Cultural Resources Manager would be responsible for conducting the construction site monitoring.

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We believe that construction site monitoring will be equally effective at insuring the protection of cultural resources within the developed areas of the base. If this approach is agreeable to you, we would like to develop a Memorandum of Agreement to formalize this procedure.

We hope that the attached Cultural Resource Assessment Survey meets your expectations. We will keep you updated on progress with completion of the two remaining surveys for the larger construction sites. If you agree that construction site monitoring could serve as an alternative to individual site surveys, we would like to pursue formalizing this practice as a long range solution for insuring the protection of historic resources at MacDill Air Force Base.

Sincerely

ROBERT B. HUGHES, GS-14, DAF
Director, 6th Civil Engineer Squadron

Attachment:
Phase I Cultural Resources Assessment Survey, December 2015

cc:
AFCEC/CZOE

ATTACHMENT 1

Phase I Cultural Resources Assessment Survey, December 2015

SEMINOLE TRIBE OF FLORIDA
TRIBAL HISTORIC PRESERVATION OFFICE
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February 3, 2016

Jason W. Kirkpatrick
Contractor, IAP Worldwide Services Inc.
6th Civil Engineer Squadron
7621 Hillsborough Loop Dr.
MacDill AFB, FL 33621
813-695-3206

Subject: Phase I Archaeological Survey of Three Construction Sites at MacDill Air Force Base, Hillsborough County, Florida
THPO#: 0028679

Dear Mr. Kirkpatrick:

Thank you for contacting the Seminole Tribe of Florida's Tribal Historic Preservation Office (STOF-THPO) regarding the proposed construction at three sites on MacDill Air Force Base, Hillsborough County, Florida. This letter is to acknowledge that the STOF-THPO has reviewed the report technical report *Phase I Archaeological Survey of Three Construction Sites at MacDill Air Force Base in Hillsborough County, Florida* and has no objection to your finding of "no historic properties affected" at this time. However, the STOF-THPO would like to be informed in the event that any archaeological, historical, or burial resources are inadvertently discovered during execution of the undertaking. Thank you and we look forward to working with you in the future.

Respectfully,

Andrew J. Weidman, MA, RPA
STOF-THPO, Compliance Review Section
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FLORIDA DEPARTMENT *of* STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Mr. Jason W. Kirkpatrick
MacDill Air Force Base Environmental
6 CES/CEV
7621 Hillsborough Loop Dr.
MacDill AFB, Florida 33621

February 5, 2016

Re: DHR Project File No.: 2016-0491/ Received by DHR: January 6, 2016
Phase I Archaeological Survey of Three Construction Sites at MacDill Air Force Base in Hillsborough County, Florida

Dear Mr. Kirkpatrick:

Our office received and reviewed the above referenced report for possible effects on historic properties listed, or eligible for listing, on the *National Register of Historic Places.* The review was conducted in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended, and its implementing regulations in *36 CFR Part 800: Protection of Historic Properties.*

In December 2015, Archaeological Consultants, Inc. (ACI) conducted an archaeological Phase I survey of three proposed construction areas on behalf of Akima Facilities Management and MacDill Air Force Base. ACI identified no cultural resources within the project areas during the investigation.

ACI determined that the proposed project will have no effect on cultural resources listed, or eligible for listing in the NRHP, or otherwise of archaeological, historical, or architectural significance within the survey area. ACI recommends no further investigation of this project area.

Based on the information provided, our office concurs with these determinations and finds the submitted report complete and sufficient in accordance with Chapter 1A-46, *Florida Administrative Code.* We note that two additional proposed construction areas will be surveyed in the future, and we will review those findings at that time.

If I can be of any further help, or if you have any questions about this letter, please feel free to contact me at Sarah.Liko@DOS.MyFlorida.com, or by phone at 850.245.6333.

Sincerely,

Timothy A. Parsons, Ph.D.
Interim Director, Division of Historical Resources
and State Historic Preservation Officer

Division of Historical Resources
R.A. Gray Building • 500 South Bronough Street• Tallahassee, Florida 32399
850.245.6300 • 850.245.6436 (Fax) FLHeritage.com

Historical Resources

Federal and state agency coordination letters, as listed in Section 6, will be included in the Final EA.

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APPENDIX B. COASTAL ZONE MANAGEMENT ACT CONSISTENCY STATEMENT

This consistency statement will examine the potential environmental consequences of the Proposed Action and ascertain the extent to which the consequences of the Proposed Action are consistent with the objectives of Florida Coastal Management Program (CMP).

Of the Florida Statutory Authorities included in the CMP, effects in the following areas are addressed in the EA: beach and shore preservation (Chapter 161), historical resources (Chapter 267), commercial development and capital improvements (Chapter 288), water resources (Chapter 373), pollutant discharge prevention and removal (Chapter 376), environmental control (Chapter 403), and soil and water conservation (Chapter 582) (FDEP 2014). This consistency statement discusses how the proposed options might meet the CMP objectives.

CONSISTENCY DETERMINATION

Chapter 161: Beach and Shore Preservation

No disturbances to the base's canals or other surface waters are foreseen under the Proposed Action.

Chapter 267: Historical Resources

The Air Force has determined that the Proposed Action would have no adverse effect on historic properties associated with the base.

Chapter 288: Economic Development and Tourism

The EA determines that the Proposed Action would not have significant adverse effects on any key Florida industries or economic diversification efforts.

Chapter 373: Water Resources

Effects on groundwater and surface water resources are discussed in the EA. No significant effects on surface water or groundwater quality are identified under the Proposed Action.

Chapter 376: Pollutant Discharge Prevention and Removal

The EA addresses the use and storage of hazardous materials and wastes under the Proposed Action. The Air Force has plans and procedures in place to direct the handling and storage of hazardous materials and the containment and removal of any potential pollutant spills. No significant effects are expected to pollutant discharge under the Proposed Action.

Chapter 403: Environmental Control

The EA addresses the issues of conservation and protection of environmentally sensitive living resources; protection of groundwater and surface water quality and quantity; protection of air quality; minimization of adverse hydrogeologic effects; protection of endangered or threatened species; solid, sanitary, and hazardous waste disposal; and protection of floodplains and wetlands. Where effects on these resources can be identified, possible measures to prevent or minimize effects are suggested.

Chapter 582: Soil and Water Conservation

The EA addresses the potential of the Proposed Action to disturb soil and presents possible measures to prevent or minimize soil erosion. Effects on groundwater and surface water resources also are discussed in the EA. No significant effects on soil and water are expected under the Proposed Action.

CONCLUSION

The Air Force finds that the conceptual Proposed Action and alternative plans presented in the EA are consistent with Florida's CMP.

APPENDIX C. AIR EMISSIONS ESTIMATES

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PROPOSED ACTION EMISSIONS ESTIMATES

Warehouse Complex Construction
Project Summary

Includes:

1 100% of Warehouse Complex Construction 20,700 ft²

Assumptions:
All land disturbance/grading area includes building construction, utility installation, landscaping, and paving operations.

Total Building Construction Area:	19,200	ft²
Total Demolished Area:	0	ft²
Total Paved Area:	4,800	ft²
Total Disturbed Area:	196,020	ft²
Construction Duration:	1.00	year(s)
Paving Duration:	3.0	months
Annual Construction Activity:	230	days/yr

If project includes any demolition, include here

Alternative #1 Projects could disturb more than the project area. If so, cell "C14" should be change
If construction duration is less than a year, change the value.
estimated

Project Proposed for CY 2016

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$
Combustion Emissions (tpy)	4.65	0.48	2.05	0.36	0.33	0.32
Fugitive Dust Emissions (tpy)	0.00	0.00	0.00	0.00	5.07	0.51
Total Project Emissions (tpy)	**4.65**	**0.48**	**2.05**	**0.36**	**5.41**	**0.84**
Hillsborough County Emissions (tpy)	8,345	20,926	24,555	14,829	14,337	182,503
Project Percentage (%)	0.056%	0.002%	0.008%	0.002%	0.038%	0.000%
Regionally Significant? (more than 10%)	**no**	**no**	**no**	**no**	**no**	**no**

MacDill AFB, Florida 1 *Warehouse Complex PA-Alt # 1*

Combustion Emissions

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0
Emission factors are taken from the NONROAD model and were provided to e³M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.
Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47

Paving

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93
Total per 10 acres of activity	4	45.37	2.61	18.58	0.91	2.78	2.69

Demolition

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Total per 10 acres of activity	2	31.81	1.89	12.58	0.64	1.92	1.87

Building Construction

Equipment[d]	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Stationary							
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22
Mobile (non-road)							
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30
Total per 10 acres of activity	1	3.57	0.37	1.57	0.07	0.31	0.30

a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.
c) The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO2 emissions by more than a factor of two.
d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)					
		NO_x	VOC	CO	SO_2**	PM_{10}	$PM_{2.5}$
Grading Equipment	1	41.641	2.577	15.710	0.833	2.546	2.469
Paving Equipment	1	45.367	2.606	18.578	0.907	2.776	2.693
Demolition Equipment	1	31.808	1.886	12.584	0.636	1.923	1.865
Building Construction	1	39.396	3.130	17.382	3.116	2.829	2.744
Air Compressor for Architectural Coating	1	3.574	0.373	1.565	0.071	0.309	0.300
Architectural Coating**			11.293				

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.
**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994
Example: SMAQMD Emission Factor for Grading Equipment NOx = (Total Grading NOx per 10 acre)*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft^2)	Total Area (acres)	Total Days	
Grading:	196,020	4.50	3	(from "GRADING" below)
Paving:	4,800	0.11	1	
Demolition:	0	0.00	0	
Building Construction:	19,200	0.44	230	
Architectural Coating	19,200	0.44	20	(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative.
The 'Total Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition
The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known

Total Project Emissions by Activity (lbs)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$
Grading Equipment	124.92	7.73	47.13	2.50	7.64	7.41
Paving	45.37	2.61	18.58	0.91	2.78	2.69
Demolition	-	-	-	-	-	-
Building Construction	9,061.15	719.86	3,997.93	716.76	650.68	631.16
Architectural Coatings	71.48	233.32	31.31	1.43	6.19	6.00
Total Emissions (lbs):	9,302.93	963.52	4,094.95	721.60	667.28	647.26

Results: Total Project Annual Emission Rates

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$
Total Project Combustion Emissions (lbs)	9,302.93	963.52	4,094.95	721.60	667.28	647.26
Total Project Combustion Emissions (tons)	4.6515	0.4818	2.0475	0.3608	0.3336	0.3236

MacDill AFB, Florida 4 *Warehouse Complex PA-Alt.# 1*

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006
$PM_{2.5}$ Emissions			
$PM_{2.5}$ Multiplier (10% of PM10 emissions assumed to be PM2.5)	0.10		EPA 2001; EPA 2006
Control Efficiency (assume 50% control efficiency for PM10 and PM2.5 emissions)	0.50		EPA 2001; EPA 2006

Project Assumptions

New Roadway Construction (0.42 ton PM_{10}/acre-month)		
Duration of Construction Project	3	months
Area	0.1	acres
General Construction Activities (0.19 ton PM_{10}/acre-month)		
Duration of Construction Project	12	months
Area	4.4	acres

	Project Emissions (tons/year)				
	PM_{10} uncontrolled	PM_{10} controlled	$PM_{2.5}$ uncontrolled	$PM_{2.5}$ controlled
New Roadway Construction	0.14	0.07	0.01	0.01
General Construction Activities	10.01	5.00	0.50	0.25
Total	**10.15**	**5.07**	**0.51**	**0.26**

MacDill AFB, Florida 5 *Warehouse Complex PA-Alt.# 1*

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.19 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM_{10}/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM_{10}/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM_{10}/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM_{10}/acre-month) and 75% of the average emission factor (0.11 ton PM_{10}/acre-month). The 0.19 ton PM_{10}/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM_{10}/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particulate (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District as well as the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM_{10}/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM10/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

$PM_{2.5}$ Multiplier **0.10**

$PM_{2.5}$ emissions are estimated by applying a particle size multiplier of 0.10 to PM_{10} emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM_{10} and $PM_{2.5}$ **0.50**

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas (EPA 2006). Wetting controls will be applied during project construction.

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Construction (Grading) Schedule

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 4.50 acres/yr (from "COMBUSTION" above)

Qty Equipment: **3.00** (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.

Terrain is mostly flat.

An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.

200 hp bulldozers are used for site clearing.

300 hp bulldozers are used for stripping, excavation, and backfill.

Vibratory drum rollers are used for compacting

Stripping, Excavation, Backfill and Compaction require an average of two passes each.

Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
			8	acre/day	8	0.13	4.50	0.56
2230 200 0550	Site Clearing	Dozer & rake, medium brush	1,650	cu. yd/day	2.05	0.49	4.50	2.20
2230 500 0300	Stripping	Topsoil & stockpiling, adverse s	800	cu. yd/day	0.99	1.01	2.25	2.27
2315 432 5220	Excavation	Bulk, open site, common earth	1,950	cu. yd/day	2.42	0.41	2.25	0.93
2315 120 5220	Backfill	Structural, common earth, 150'	2,300	cu. yd/day	2.85	0.35	4.50	1.58
2315 310 5020	Compaction	Vibrating roller, 6" lifts, 3 passe						7.54
	TOTAL							

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 7.54

Qty Equipment: 3.00

Grading days/yr: 2.51

CUMULATIVE EMISSIONS ESTIMATES

Warehouse Construction
Project Summary

Includes:

1 100% of Warehouse Complex Construction 24,000 ft²

Assumptions:
All land disturbance/grading area includes building construction, utility installation, landscaping, and paving operations.

Total Building Construction Area:	19,200	ft²
Total Demolished Area:	0	ft²
Total Paved Area:	4,800	ft²
Total Disturbed Area:	196,020	ft²
Construction Duration:	1.00	year(s)
Paving Duration:	3.0	months
Annual Construction Activity:	230	days/yr

If project includes any demolition, include here

4.5 acres * 43560 ft2/acre
estimated
estimated

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$
Combustion Emissions (tpy)	4.65	0.48	2.05	0.36	0.33	0.32
Fugitive Dust Emissions (tpy)	0.00	0.00	0.00	0.00	5.07	0.51
Total Project Emissions (tpy)	4.651	0.482	2.047	0.361	5.407	0.838
Hillsborough County Emissions (tpy)	8,345	20,926	24,555	14,829	14,337	182,503
Project Percentage (%)	0.056%	0.002%	0.008%	0.002%	0.038%	0.000%
Regionally Significant? (more than 10%)	no	no	no	no	no	no

Combustion Emissions

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0
Emission factors are taken from the NONROAD model and were provided to e*M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.
Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Reqd.* per 10 acres	NO_x (lb/day)	VOC[c] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47

Paving

Equipment	No. Reqd.* per 10 acres	NO_x (lb/day)	VOC[c] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93
Total per 10 acres of activity	4	45.37	2.61	18.58	0.91	2.78	2.69

Demolition

MacDill AFB, Florida 1 Whse

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Total per 10 acres of activity	2	31.81	1.89	12.58	0.64	1.92	1.87

Building Construction

Equipment[d]	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Stationary							
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22
Mobile (non-road)							
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30
Total per 10 acres of activity	1	3.57	0.37	1.57	0.07	0.31	0.30

a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.
c) The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO2 emissions by more than a factor of two.
d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)					
		NO_x	VOC	CO	SO_2**	PM_{10}	$PM_{2.5}$
Grading Equipment	1	41.641	2.577	15.710	0.833	2.546	2.469
Paving Equipment	1	45.367	2.606	18.578	0.907	2.776	2.693
Demolition Equipment	1	31.808	1.886	12.584	0.636	1.923	1.865
Building Construction	1	39.396	3.130	17.382	3.116	2.829	2.744
Air Compressor for Architectural Coating	1	3.574	0.373	1.565	0.071	0.309	0.300
Architectural Coating**			11.293				

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.
**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994
Example: SMAQMD Emission Factor for Grading Equipment NOx = (Total Grading NOx per 10 acre)*(Equipment Multiplier)

Summary of Input Parameters

		Total Area	Total Days

	Total Area (ft^2)	(acres)		
Grading:	196,020	4.50	3	(from "GRADING" below)
Paving:	4,800	0.11	1	
Demolition:	0	0.00	0	
Building Construction:	19,200	0.44	230	
Architectural Coating	19,200	0.44	20	(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total 'Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$
Grading Equipment	124.92	7.73	47.13	2.50	7.64	7.41
Paving	45.37	2.61	18.58	0.91	2.78	2.69
Demolition	-	-	-	-	-	-
Building Construction	9,061.15	719.86	3,997.93	716.76	650.68	631.16
Architectural Coatings	71.48	233.32	31.31	1.43	6.19	6.00
Total Emissions (lbs):	9,302.93	963.52	4,094.95	721.60	667.28	647.26

Results: Total Project Annual Emission Rates

	NO_x	**VOC**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Total Project Combustion Emissions (lbs)	**9,302.93**	**963.52**	**4,094.95**	**721.60**	**667.28**	**647.26**
Total Project Combustion Emissions (tons)	**4.6515**	**0.4818**	**2.0475**	**0.3608**	**0.3336**	**0.3236**

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	**Units**	**Source**
General Construction Activities	0.19	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006
$PM_{2.5}$ Emissions			
$PM_{2.5}$ Multiplier (10% of PM10 emissions assumed to be PM2.5)	0.10		EPA 2001; EPA 2006
Control Efficiency (assume 50% control efficiency for PM10 and PM2.5 emissions)	0.50		EPA 2001; EPA 2006

Project Assumptions

New Roadway Construction (0.42 ton PM_{10}/acre-month)		
Duration of Construction Project	3	months
Area	0.1	acres

General Construction Activities (0.19 ton PM_{10}/acre-month)

Duration of Construction Project 12 months
Area 4.4 acres

	Project Emissions (tons/year)			
	PM_{10} uncontrolled	PM_{10} controlled	$PM_{2.5}$ uncontrolled	$PM_{2.5}$ controlled
New Roadway Construction	0.14	0.07	0.01	0.01
General Construction Activities	10.01	5.00	0.50	0.25
Total	**10.15**	**5.07**	**0.51**	**0.26**

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.19 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM_{10}/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM_{10}/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM_{10}/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM_{10}/acre-month) and 75% of the average emission factor (0.11 ton PM_{10}/acre-month). The 0.19 ton PM_{10}/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM_{10}/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particulate (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District as well as the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM_{10}/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM10/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

$PM_{2.5}$ Multiplier **0.10**

$PM_{2.5}$ emissions are estimated by applying a particle size multiplier of 0.10 to PM_{10} emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM_{10} and $PM_{2.5}$ **0.50**

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas (EPA 2006). Wetting controls will be applied during project construction.

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1).* Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Construction (Grading) Schedule

Estimate of time required to grade a specified area.

Input Parameters
Construction area: 4.50 acres/yr (from "COMBUSTION" above)

Qty Equipment: **3.00** (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.
Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	4.50	0.56
2230 500 0300	Stripping	Topsoil & stockpiling, adverse s	1,650	cu. yd/day	2.05	0.49	4.50	2.20
2315 432 5220	Excavation	Bulk, open site, common earth,	800	cu. yd/day	0.99	1.01	2.25	2.27
2315 120 5220	Backfill	Structural, common earth, 150'	1,950	cu. yd/day	2.42	0.41	2.25	0.93
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passe	2,300	cu. yd/day	2.85	0.35	4.50	1.58
TOTAL								7.54

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 7.54
Qty Equipment: 3.00
Grading days/yr: **2.51**