

DRAFT ENVIRONMENTAL ASSESSMENT

Construction of a Military Housing Development for U.S. Army Garrison-Miami, Doral, Florida

Prepared for

U.S. Army Garrison-Miami

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Acronyms and Abbreviations

$\mu\text{g}/\text{m}^3$	microgram per cubic meter
amsl	above mean sea level
AR	Army Regulation
Army	U.S. Army
BMP	Best Management Practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
CO	carbon monoxide
CO ₂	carbon dioxide
CO _{2e}	carbon dioxide equivalent
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibel
dba	A-weighted decibel
dbc	C-weighted decibel
DNL	Day-Night Average Sound Level
DoD	Department of Defense
EA	Environmental Assessment
ECP	Environmental Condition of Property
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
EUL	Enhanced Use Lease
FAA	Federal Aviation Administration
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act of 1981
FY	fiscal year

ACRONYMS AND ABBREVIATIONS

GHG	greenhouse gas
K&E	key and essential
MBTA	Migratory Bird Treaty Act
MILCON	military construction
NA	not applicable
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSR	New Source Review
O ₃	ozone
OSHA	Occupational Safety and Health Administration
PM ₁₀	particulate matter less than or equal to 10 micrometers in diameter
PM _{2.5}	particulate matter less than or equal to 2.5 micrometers in diameter
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
RF	radiofrequency
RCI	Residential Communities Initiative
SFWMD	South Florida Water Management District
SO ₂	sulfur dioxide
SOUTHCOM	U.S. Southern Command
SWPPP	Stormwater Pollution Prevention Plan
U.S.	United States
USDOT	U.S. Department of Transportation
UFC	Unified Facilities Criteria
USAG-Miami	U.S. Army Garrison-Miami
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
WASD	Water and Sewer Department

Executive Summary

ES.1 Introduction

This Environmental Assessment (EA) analyzes the potential environmental consequences resulting from implementation of the Proposed Action to provide quality military housing at U.S. Army Garrison-Miami (USAG-Miami).

USAG-Miami is in Doral, Florida in Miami-Dade County, approximately 3 miles west of Miami International Airport (Figure 1-1). A major tenant of USAG-Miami in Doral is U.S. Southern Command (SOUTHCOM). USAG-Miami also supports SOUTHCOM's subordinate commands, U.S. Marine Forces South and Special Operations Command South, in Homestead, Florida as well as various other organizations.

There is no military housing on the USAG-Miami cantonment. This creates significant financial, security, and quality of life issues for service members and adversely affects mission readiness (USAG-Miami, 2018). USAG-Miami proposes to secure military housing on purchased or leased land near SOUTHCOM headquarters to address this housing shortfall.

ES.2 Purpose and Need

The purpose of the Proposed Action is to provide military housing for USAG Miami's housing requirement. This includes housing for 50 Key and Essential Family Units and 120 Unaccompanied Enlisted Units within 5 miles/15 minutes peak traffic commute from SOUTHCOM headquarters in Doral, Florida. This ensures essential personnel can walk to the installation and enables mission readiness. The remainder of the housing requirement (120 Family Units) should be within 20 miles/60 minutes peak traffic commute from SOUTHCOM headquarters. The need for the Proposed Action is to minimize mission interruption during emergency conditions and to improve security and readiness, increase affordability, and provide cohesion for families and staff. There is no military housing on the USAG-Miami cantonment and no space within the cantonment to construct military housing; therefore, service members are forced to seek affordable housing within the local economy. The absence of housing on the installation presents a mission sustainment problem because essential personnel may be unable to reach the SOUTHCOM facility during an emergency to maintain operations because of road closures and traffic, and it makes it difficult to provide required security and protection for the combatant commander and key and essential (K&E) and mission essential personnel. Moreover, there is a documented shortfall of affordable housing around USAG-Miami (USAG-Miami, 2018).

ES.3 Proposed Action and Alternatives

ES.3.1 Proposed Action

The Proposed Action is for USAG-Miami to acquire land owned by the Federal Aviation Administration (FAA) south of NW 33rd Street across from the SOUTHCOM headquarters in Doral, Florida and construct a military housing development on the property. The property houses a large FAA radar tower and associated support buildings near its center. No housing development would be constructed within the FAA established antenna standoff area to avoid interference with operation of the radar system; however, non-vertical assets such as stormwater retention infrastructure, roads, or parking may be located within this radius. The Proposed Action would meet most of the USAG-Miami 2020 military housing shortfalls described in the Purpose and Need (Section 1.2).

ES.3.2 Alternatives

Alternative 1 – MILCON Alternative

In the Military Construction (MILCON) Alternative, USAG-Miami would use congressionally approved funds to acquire some or all of the approximately 160-acre FAA parcel and pay for the construction, operation, management, and maintenance of service member housing on up to 75 acres of the property (Figure 2-1). The MILCON Alternative would consist of constructing and operating a housing development as described in the Proposed Action (Section 2.1). Under this alternative, no building structures would be built on the central portion (52.4 acres) of the parcel as not to interfere with radar tower operations; however, non-vertical assets such as stormwater retention infrastructure, roads, or parking may be located within this radius.

Alternative 2 – EUL Alternative

In the Enhanced Use Lease (EUL) Alternative, USAG-Miami would obtain an EUL agreement with a private developer to construct and operate a housing development on the approximately 160-acre FAA parcel (Figure 2-2). This alternative would consist of constructing and operating a housing development as described in the Proposed Action (Section 2.1) on up to 75 acres of the northern portion of the FAA parcel. In addition, up to 32.5 acres of the southern portion of the FAA parcel would be offered to a developer for a mixed-use development in exchange for funding the construction of the military housing. The southern development would include up to 302,000 square feet of retail space below two levels of 167 apartments and would include up to 806 parking spaces. The total footprint, including residential, retail, and parking spaces would be up to 107.5 acres. Under this alternative, no building structures would be built on the central portion (52.4 acres) of the parcel as not to interfere with radar tower operations; however, non-vertical assets such as stormwater retention infrastructure, roads, or parking may be located within this radius.

Alternative 3 – No Action Alternative

Under the No Action Alternative, USAG-Miami would not acquire the FAA parcel directly adjacent to the SOUTHCOM headquarters in Doral, Florida and would not construct a military housing development. Service members would continue to search for affordable housing within the local economy and be scattered across the city and county. This would continue to create an undue financial burden on many service members as they seek suitable quarters and would continue to adversely impact mission readiness for USAG-Miami and SOUTHCOM. Essential personnel would continue to be unable to quickly reach the SOUTHCOM headquarters facility to maintain operations during emergencies as a result of possible road closures and traffic. Higher-level personnel living offsite would not be provided with required additional security for personal protection.

Under the No Action Alternative, revisiting the option of acquiring the FAA parcel a few years from now may not be a possibility. FAA is systematically updating traffic control systems, and the large satellite dish at the FAA parcel may become obsolete. If FAA opts to dispose of this property and the Army is not in the position to acquire it, an opportunity to enhance the SOUTHCOM mission and improve service members' quality of life would be lost.

The No Action Alternative would not address the purpose and need for the Proposed Action. The No Action Alternative is included for analysis as required by National Environmental Policy Act (NEPA) and serves as reference for comparison of potential effects of the Proposed Action.

ES.3.3 Alternatives Not Considered in Detail

USAG-Miami developed the Proposed Action and alternatives based on consideration of mission requirements, security requirements, environmental constraints, and mission efficiency. Five alternatives for meeting housing shortfalls at USAG-Miami were evaluated in a cost-benefit analysis (USAG-Miami, 2018). Alternatives dismissed from further consideration are described below.

Alternative 4 – Privatized Housing on FAA Parcel

Under Alternative 4, privatized housing would be constructed on the 160-acre FAA parcel. The Residential Communities Initiative (RCI), the most common form of housing privatization, has been widely used on military

bases. The authority to use this model has recently expired. If the authority could be restarted, this model leverages the Basic Allowance for Housing to access the private capital market to fund construction and maintenance without congressionally approved funds.

Alternative 4 requires a new privatization authority and needs an Army-level feasibility review. Because of limited scope and financial uncertainties, this alternative might be unattractive to an RCI partner. For economic viability, civilian occupancy of the housing development may eventually be required. Allowing civilians in the secure perimeter could jeopardize service members' safety. Security also would be compromised if other government personnel are permitted to lease units. As a result of the aforementioned factors, Alternative 4 was dismissed from further consideration.

Alternative 5 – MILCON Family Housing Project near Homestead Air Reserve Base

Under Alternative 5, MILCON funds would be used to construct a housing development on other Real Property near Homestead Air Reserve Base, approximately 26 miles south of USAG-Miami. The land of the former Homestead Air Force Base was transferred to the Air Force Reserve and to Miami-Dade County following closure of the Air Force Base. USAG-Miami currently manages the operational facilities of Special Operations Command South on an 84.2-acre leased site owned by Miami-Dade County. USAG-Miami was directed by the Army to evaluate building on adjacent land owned by Miami-Dade County. The cost to acquire land, if available, would be an estimated \$10,147,966.

Constructing housing in Homestead would exacerbate rather than solve most of the issues SOUTHCOM is trying to resolve. Availability of suitable land for this project is assumed; however, no suitable contiguous tracts of land are available that meet the requirement. Furthermore, the drive time between the two locations averages between 40 and 45 minutes without traffic issues, and all major routes require tolls of approximately \$5 per day for the drive. K&E personnel could not be assigned in Doral and housed in Homestead. Homestead suffers from a lack of acceptable childcare, schools, and healthcare (USAG-Miami, 2018). As a result of the aforementioned factors, Alternative 5 was dismissed from further consideration.

Alternative 6 – Expanded Leasing (in Doral Only)

Alternative 6 is similar to the No Action Alternative but would require the housing office to lease, rent, or buy real estate in the corporate limits of Doral and assign it to personnel. This variation on the No Action Alternative limits many of the negative aspects of the No Action Alternative. An increase in housing office personnel would be required to validate that homes meet Army requirements and maintain the pool of residences.

This alternative has the highest cost and does not improve service member security. A large increase in the Directorate of Public Works Housing Office staff would be required, and service members would face high upfront costs in the Doral rental market. Additionally, personnel could encounter traffic and road closures that could delay their ability to quickly reach the installation in an emergency. This alternative was dismissed from further consideration because it does not meet the purpose and need of the Proposed Action.

ES.4 Summary of Environmental Consequences

This EA presents a comprehensive evaluation of the existing conditions and environmental consequences of implementing the MILCON Alternative, EUL Alternative, and No Action Alternative, as required by NEPA. Three categories of potential impacts were evaluated: direct, indirect, and cumulative. A direct impact is the result of direct action and occurs at the same time and place. An indirect impact is caused by an action and occurs later in time or removed in distance, but still reasonably foreseeable. A cumulative impact results from the incremental impact of the action when combined with other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other action.

Based on the findings of this EA, implementation of the Proposed Action would not have significant adverse direct, indirect, or cumulative effects on the quality of the environment.

Under the No Action Alternative, no changes to baseline conditions would occur. While this would likely not result in significant direct or indirect impacts to resource areas, it would fail to accomplish the Proposed Action's purpose and need.

Table ES-2 summarizes the consequences of the MILCON Alternative, EUL Alternative, and the No Action Alternative.

ES.5 Summary of Project Design Measures

Measures would be implemented to ensure that adverse environmental impacts of construction and operation of the implemented alternative would be avoided or minimized. These measures would be incorporated into the final design, implemented by the contractor, and included in the contract documents. A summary of project design measures is presented in Table ES-1.

Table ES-1. Summary of Project Design Measures

Construction of a Military Housing Development for USAG-Miami, Doral, Florida

Resource Area	Proposed Project Design Measures
Air Quality	Sprinkling/irrigation, vegetative cover, and mulching would be used as dust abatement measures during construction.
Noise	Construction and demolition activities would be limited to typical, daytime working hours estimated to be between 7:30 a.m. and 6:30 p.m. Workers would be required to wear appropriate hearing protection.
Soils	Sediment barriers (silt fence or straw wattles), temporary detention basins, grade stabilization with seed and mulch, and geotextile slope stabilization would be used to minimize impacts on soils.
Surface Water	Sediment barriers (silt fence or straw wattles), temporary detention basins, grade stabilization with seed and mulch, and geotextile slope stabilization would be used to minimize erosion and transport of sediments to surface waters.
Stormwater	Silt fencing, guttering, and other flow control measures, detention and infiltration areas, and oil/water separators would be used to minimize onsite and downstream impacts from stormwater during and after construction.
Transportation	Clearly indicated detours and traffic control signalers would be used to keep traffic moving during periods of heavy construction-related traffic or temporary road closures.
Hazardous Materials	Implement a project-specific site safety plan to avoid significant risks and health hazards associated with the use of hazardous materials and hazardous waste generation and disposal.

Table ES-2. Summary of Potential Environmental and Socioeconomic Consequences

Construction of a Military Housing Development for USAG-Miami, Doral, Florida

Environmental and Socioeconomic Consequences			
Resource	No Action	MILCON Alternative	EUL Alternative
Land Use			
	No impact	Negligible long-term adverse direct impact as change (pasture converted to housing) would be consistent with land use designation. No adverse indirect impacts to land use.	Negligible long-term adverse direct impact as change (pasture converted to housing and mixed-use development) would be consistent with land use designation. No adverse indirect impacts to land use.
Geology and Soils			
Soils	No impact	Moderate long-term adverse direct impacts from site preparation and construction. Appropriate BMPs would be implemented to minimize erosion and impact from stormwater runoff. Negligible short-term adverse indirect impacts to soils from construction stormwater runoff. Minor long-term indirect adverse impacts to soils from an increase in impervious surface.	Moderate long-term adverse impacts from site preparation and construction. This alternative would have a greater impact on soils (43 percent greater area of disturbance) compared to the MILCON Alternative; however, with implementation of erosion and sedimentation controls and appropriate BMPs, the direct impacts are still expected to be moderate. Negligible short-term adverse indirect impacts to soils from construction stormwater runoff. Negligible long-term indirect adverse impacts to soils from an increase in impervious surface.
Water Resources			
Groundwater	No impact	Negligible long-term indirect adverse impacts from construction and operation due to the size of the development (75 acres) compared with the size of the aquifer (4,000 square miles). Appropriate BMPs would be used to minimize impacts from stormwater runoff to groundwater recharge zones.	Negligible long-term indirect adverse impacts from construction and operation due to the size of the development (107.5 acres) compared with the size of the aquifer (4,000 square miles). Appropriate BMPs would be used to minimize impacts from stormwater runoff to groundwater recharge zones.
Surface Water	No impact	No more than negligible short-term direct impacts to surface water resources from construction activities. No more than negligible direct and indirect adverse long-term impact to surface water resources during operation due to post-construction stormwater controls implemented for the increase in impervious area (~50 acres). Potential adverse impacts to surface water quality from spills would be minimized by properly storing materials and fueling and maintaining construction equipment offsite or in designated areas with appropriate control and containment.	Minor short-term direct impacts to surface water resources from construction activities. Minor to moderate adverse direct effects to surface water resources during operations. This alternative would have a greater impact on surface waters due to the larger area of impervious surface (approximately 82 acres) but due to implementation of post-construction stormwater controls the impacts to surface waters would still be less than significant. Potential adverse impacts to surface water quality from spills would be minimized by properly storing materials and fueling and maintaining construction equipment offsite or in designated areas with appropriate control and containment.
Wetlands	No impact	No impact	No impact
Water Quality	No impact	No more than negligible long-term adverse direct impacts to water quality due to implementation of appropriate BMPs to minimize potential for impacts from stormwater runoff and sedimentation caused by an increase in impervious area, approximately 50 acres.	No more than negligible long-term adverse direct impacts to water quality. This alternative would have a greater impact on water quality due to the larger area of impervious surface (approximately 82 acres) but with implementation of the appropriate BMPs which would minimize potential for impacts from stormwater runoff and sedimentation caused by the increase in impervious area the impacts would still be negligible.

Table ES-2. Summary of Potential Environmental and Socioeconomic Consequences
Construction of a Military Housing Development for USAG-Miami, Doral, Florida

Environmental and Socioeconomic Consequences			
Resource	No Action	MILCON Alternative	EUL Alternative
Flood Hazards	No impact	Minor long-term adverse direct impact to flood hazard area from raising the ground surface using fill to above Base Flood Elevation. There would be less than significant long-term adverse indirect impacts from an increase impervious surface because the stormwater controls would minimize runoff increase and because project area would be less than 0.1 percent of the surrounding area, which would result in less than 0.01 inch in rise of floodwater in the region.	Minor long-term adverse direct impact to flood hazard area from raising the ground surface using fill to above Base Flood Elevation. There would be less than significant long-term adverse indirect impacts from an increase in impervious surface because the stormwater controls would minimize runoff increase and because project area would be less than 0.1 percent of the surrounding area, which would result in less than 0.01 inch in rise of floodwater in the region.
Air Quality	No impact	Minor short-term adverse direct impacts on overall air quality from construction activities. Use of sprinkling/irrigation, vegetative cover, and mulching as dust abatement measures during construction. Minor long-term adverse direct impacts on overall air quality from operational activities.	While emissions would be greater than the MILCON Alternative due to the larger area and longer construction duration, the project emissions would still be under air quality thresholds and effects would be comparable to the MILCON Alternative. Minor short-term adverse direct impacts on overall air quality from construction activities. Use of sprinkling/irrigation, vegetative cover, and mulching as dust abatement measures during construction. Minor long-term adverse direct impacts on overall air quality from operational activities.
Noise	No impact	Moderate short-term adverse direct noise impacts during construction from heavy equipment. Construction and demolition activities would be limited to typical working hours. Workers would be required to wear appropriate hearing protection. Negligible long-term adverse indoor direct impacts from noise would be expected at any of the proposed residences within the 65-70 DNL noise contour for the Miami International Airport. No long-term adverse direct impacts to noise-sensitive receptors from operational activities.	Moderate short-term adverse noise impacts during construction from heavy equipment. Construction and demolition activities would be limited to typical working hours. Workers would be required to wear appropriate hearing protection. Negligible long-term adverse indoor direct impacts from noise would be expected at any of the proposed residences within the 65-70 DNL noise contour for the Miami International Airport. Negligible long-term adverse direct impacts to noise-sensitive receptors from operational activities.
Biological Resources			
Vegetation	No impact	Less than significant long-term adverse direct impact from removal of vegetation during construction.	While the area disturbed would be greater than for the MILCON Alternative, there would be less than significant long-term adverse direct impact from removal of vegetation during construction.
Wildlife	No impact	Minor short-term adverse direct impact from noise, construction activities and heavy equipment use. Minor long-term adverse direct impacts from habitat removal.	Minor short-term adverse direct impact from noise, construction activities, and heavy equipment use. Less than significant long-term impacts from habitat removal.

Table ES-2. Summary of Potential Environmental and Socioeconomic Consequences

Construction of a Military Housing Development for USAG-Miami, Doral, Florida

Environmental and Socioeconomic Consequences			
Resource	No Action	MILCON Alternative	EUL Alternative
Special-status Species	No impact	Potential negligible short-term adverse direct impacts to the State listed Southeastern American kestrel and Florida burrowing owl may occur(although unlikely) and would be limited to displacement of foraging animals. No impact to special-status plant species. If any protected species are observed within the construction areas, construction would stop until the protected species voluntarily leaves the construction area.	Potential negligible short-term adverse direct impacts to the State listed Southeastern American kestrel and Florida burrowing owl may occur(although unlikely) and would be limited to displacement of foraging animals. No impact to special-status plant species. If any protected species are observed within the construction areas, construction would stop until the protected species voluntarily leaves the construction area.
Cultural Resources	No impact	No impact	No impact
Socioeconomic Resources			
Economic Development	No impact	Minor to moderate short-term beneficial impact on local economy associated with construction employment and wages. Negligible long-term adverse direct impact to local economy from loss of cattle grazing on the FAA parcel.	Minor to moderate short-term beneficial impacts on local economy associated with construction employment and wages. Negligible long-term adverse direct impact to local economy from loss of cattle grazing on the FAA parcel. Minor to moderate long-term beneficial direct impact on the local economy from new business opportunities and jobs associated with commercial-use property.
Public Services	No impact	Negligible to minor long-term adverse direct impact to fire, police, emergency, and medical services, and schools from increase in permanent residents.	Adverse impacts to public services under the EUL Alternative would be greater than the MILCON due to additional patrons and residents with the larger development, but with the capacity of the area services, the level of impacts of the project would be negligible to minor long-term adverse direct impact to fire, police, emergency, and medical services, and schools.
Housing	No impact	Moderate long-term beneficial impacts to housing availability in the local region.	The EUL Alternative would have a greater beneficial impact on housing compared with the MILCON Alternative due to the creation of publicly available housing but would still result in moderate long-term beneficial impacts to housing availability in the local region.
Coastal Zone Management	No impact	Long-term adverse effects are due to constructing permanent structures within the coastal zone. The impacts are considered negligible because the proposed action remains consistent with the enforceable provisions of the Florida Coastal Zone Management Plan.	. Long-term adverse effects are due to constructing permanent structures within the coastal zone. The impacts are considered negligible because the proposed action remains consistent with the enforceable provisions of the Florida Coastal Zone Management Plan.

Table ES-2. Summary of Potential Environmental and Socioeconomic Consequences

Construction of a Military Housing Development for USAG-Miami, Doral, Florida

Environmental and Socioeconomic Consequences			
Resource	No Action	MILCON Alternative	EUL Alternative
<i>Safety and Occupational Health</i>	No impact	<p>Minor short-term adverse direct impacts from construction hazards. Appropriate safety plans and OSHA regulations would be followed to limit the risk of accidents.</p> <p>No construction would occur within the radio frequency (RF) radiation setback area and no housing or activity areas would be placed where exposure to dangerous radiation could occur. There would be no adverse impacts resulting from exposure of construction workers or residents of the housing development to RF radiation associated with the FAA antenna.</p>	<p>Minor short-term adverse direct impacts from construction hazards. While the construction area would be greater than for the MILCON Alternative, the level of impacts would be similar because appropriate safety plans and OSHA regulations would be followed to limit the risk of accidents.</p> <p>No construction would occur within the radio frequency (RF) radiation setback area and no housing or activity areas would be placed where exposure to dangerous radiation could occur. There would be no adverse impacts resulting from exposure of construction workers or residents of the housing development to RF radiation associated with the FAA antenna would occur.</p>
<i>Hazardous Materials</i>	No impact	<p>Negligible short-term adverse direct and indirect impacts from use of small quantities of potentially hazardous materials (e.g., gasoline, oils, coolant, lubricants, paints, solvents, etc.) during construction. Waste would be handled and disposed of in accordance with federal and state regulations. BMPs documented in a stormwater pollution prevention plan and/or a project-specific construction safety plan would be followed to avoid significant risks or health hazards.</p>	<p>Negligible short-term adverse direct and indirect impacts from use of small quantities of potentially hazardous materials (e.g., gasoline, oils, coolant, lubricants, paints, solvents, etc.) during construction. Waste would be handled and disposed of in accordance with federal and state regulations. While the construction area would be greater than for the MILCON Alternative, the level of impacts would be similar because of implementation of BMPs documented in a project-specific construction plan.</p>
<i>Traffic and Transportation</i>	No impact	<p>Minor short-term adverse direct impact on emergency vehicle response times from an increase in construction-related traffic.</p> <p>Moderate short-term adverse direct impacts during construction of the connector road between the housing development and SOUTHCOM. Minor short-term adverse direct impacts from an increase in construction and personal vehicles along local roads during construction.</p> <p>Long-term minor adverse direct impacts on local traffic from an increase in personal vehicle use by residents of the new housing development.</p> <p>There would be a negligible long-term beneficial impact to regional traffic because SOUTHCOM personnel would not need to commute through local roads to work.</p>	<p>The EUL Alternative would have a greater impact on traffic and transportation compared to the MILCON Alternative; however, impacts would be similar as outlined below.</p> <p>Minor short-term adverse direct impact on emergency vehicle response times from an increase in construction-related traffic.</p> <p>Moderate short-term adverse direct impacts during construction of the connector road between the housing development and SOUTHCOM. Minor short-term adverse direct impacts from an increase in construction and personal vehicles along local roads during construction.</p> <p>Long-term minor adverse direct impacts from an increase in personal vehicle use by residents of the proposed housing development and from use of the new mixed development.</p> <p>Potential long-term beneficial impact on regional roads as services are provided closer to where people live, which would reduce overall traffic.</p> <p>There would be a negligible long-term beneficial impact to regional traffic because SOUTHCOM personnel would not need to commute through local roads to work.</p>

Table ES-2. Summary of Potential Environmental and Socioeconomic Consequences

Construction of a Military Housing Development for USAG-Miami, Doral, Florida

Environmental and Socioeconomic Consequences			
Resource	No Action	MILCON Alternative	EUL Alternative
Recreation			
	No impact	Negligible long-term indirect adverse impacts from the increased use of Doral Central Park by new residents of housing development.	Minor long-term indirect adverse impacts from the increased use of Doral Central Park by new residents of housing development, mixed-use development, and potentially persons outside the area patronizing the commercial development.
Utilities			
Potable Water	No impact	Minor short-term adverse direct impacts to potable water could occur when proposed buildings are connected to utilities. Negligible to minor adverse long-term direct impacts to potable water from increase in demand associated with the proposed military housing development.	The EUL Alternative would have additional demand on utilities compared to the MILCON Alternative; however, impacts would be similar as outlined below due to the regional capacity of supply systems and facilities. Minor short-term direct impacts to potable water could occur when proposed buildings are connected to utilities. Minor adverse long-term direct impacts to potable water from increase in demand associated with the proposed military housing and EUL developments.
Wastewater	No impact	Negligible short-term adverse direct impacts to wastewater could occur when proposed buildings are connected to utilities. Negligible to minor adverse long-term impacts to wastewater from increase in demand associated with the proposed military housing development.	Negligible short-term adverse direct impacts to wastewater could occur when proposed buildings are connected to utilities. Minor long-term adverse direct impacts to wastewater from increase in demand associated with the proposed military housing and EUL developments.
Stormwater	No impact	Negligible long-term adverse direct impact to stormwater system. Use of appropriate BMPs and stormwater controls would minimize impacts from construction activities. Stormwater controls would be designed to minimize post-construction runoff from exceeding pre-construction runoff.	Negligible long-term adverse direct impact to stormwater system. Use of appropriate BMPs and stormwater controls would minimize impacts from construction activities. Stormwater controls would be designed to minimize post-construction runoff from exceeding pre-construction runoff.
Energy Sources	No impact	Negligible short-term adverse direct impacts could occur when proposed buildings are connected to utilities. Negligible long-term adverse direct impacts from increase in demand associated with the proposed military housing development.	Negligible short-term adverse direct impacts could occur when proposed buildings are connected to utilities. Minor long-term adverse direct impact from increase in demand associated with the proposed military housing and EUL developments.
Solid Waste	No impact	Minor short-term adverse direct impact from an increase in construction debris. No long-term adverse direct impacts from permanently using landfill capacity through the disposal of nonrecyclable construction debris and the increase in solid waste generated by occupants of the military housing development because residents of the housing development would be relocating from the county.	Minor short-term adverse direct impact from an increase in construction debris. Minor long-term adverse direct impacts from permanently using landfill capacity through the disposal of nonrecyclable construction debris and the increase in solid waste generated by occupants of the EUL development.

Table ES-2. Summary of Potential Environmental and Socioeconomic Consequences

Construction of a Military Housing Development for USAG-Miami, Doral, Florida

Environmental and Socioeconomic Consequences			
Resource	No Action	MILCON Alternative	EUL Alternative
Visual Resources	No impact	Moderate short-term adverse direct impacts during construction from stockpiles of materials, construction vehicles, and partially constructed buildings. Moderate long-term adverse direct impacts from development on a previously undeveloped site. Views would be consistent with surrounding area.	Moderate short-term adverse direct impacts during construction from stockpiles of materials, construction vehicles, and partially constructed buildings. Moderate long-term adverse direct impacts from development on a previously undeveloped site. Views would be consistent with surrounding area.

BMP = Best Management Practice

OSHA = Occupational Safety and Health Administration

Purpose, Need, and Scope

1.1 Introduction

U.S. Army Garrison-Miami (USAG-Miami) is in Doral, Florida in Miami-Dade County, approximately 3 miles west of Miami International Airport (Figure 1-1). A major tenant of USAG-Miami in Doral is U.S. Southern Command (SOUTHCOM). USAG-Miami also supports SOUTHCOM's subordinate commands, U.S. Marine Forces South and Special Operations Command South, in Homestead, Florida as well as various other organizations.

SOUTHCOM is the unified command responsible for force protection of U.S. military resources in Central America, South America, and the Caribbean (except U.S. commonwealths, territories, and possessions). SOUTHCOM's area of responsibility encompasses 31 countries and 16 dependencies and areas of special sovereignty. The SOUTHCOM mission includes countering transnational crime, counterterrorism, building partner capacity, contingency response, and detainee operations (SOUTHCOM, 2019). U.S. Marine Forces, South is the Marine Corps component command for SOUTHCOM. Special Operations Command South provides contingency response force and plans, prepares for, and conducts special operations in support of SOUTHCOM.

The number of permanent party military personnel at USAG-Miami is 1,250 and is estimated to be 1,242 in 2025. Approximately 75 percent of the USAG-Miami military population works in Doral, Florida (USAG-Miami, 2018). There is no military housing on the USAG-Miami cantonment. This creates significant financial, security, and quality of life issues for service members and adversely affects mission readiness (USAG-Miami, 2018).

1.2 Purpose and Need

The purpose of the Proposed Action is to provide military housing for USAG-Miami's housing requirement. This includes housing for 50 Key and Essential Family Units and 120 Unaccompanied Enlisted Units within 5 miles/15 minutes peak traffic commute from SOUTHCOM headquarters in Doral, Florida. This ensures essential personnel can walk to the installation and enables mission readiness. The remainder of the housing requirement (120 Family Units) should be within 20 miles/60 minutes peak traffic commute from SOUTHCOM headquarters. The need for the Proposed Action is to minimize mission interruption during emergency conditions and to improve security, increase affordability, and provide cohesion for families and staff.

There is no military housing on the USAG-Miami cantonment and no space within the cantonment to construct military housing. The absence of housing on the installation presents a mission sustainment problem because it results in personnel being scattered across the city and county. In the event of an emergency, essential personnel may be unable to reach the SOUTHCOM facility to maintain operations because of road closures and traffic.

The SOUTHCOM housing problem is compounded by the critical shortage of available housing in the local market (USAG-Miami, 2018). This makes it challenging for service members to find affordable housing near their place of work and requires them to commute from greater distances than they would have to otherwise. Based on a 2018 Housing Market Analysis, by 2023, USAG-Miami will be short 318 homes (172 Family Housing Units and 146 Unaccompanied Housing Units) (USAG-Miami, 2018). In accordance with current Army guidance this action would construct enough units to address 90 percent of the Family Housing shortfall of 155 units and approximately 95 percent of the Unaccompanied Housing shortfall of 140 units.

The absence of military housing on the USAG-Miami cantonment also makes it difficult to provide the high-level of required security for the combatant commander and protection for key and essential (K&E) and mission essential personnel. The Proposed Action of constructing a military housing development adjacent to SOUTHCOM facilities would improve mission resiliency by providing safe and connected residences within walking distance of the installation.

1.3 Scope

This Environmental Assessment (EA) has been developed in accordance with the National Environmental Policy Act of 1969 (NEPA) and implementing regulations found at 40 *Code of Federal Regulations* (CFR) Parts 1500 through 1508, and 32 CFR 651. Its purpose is to inform decision makers and the public of the likely environmental consequences of the Proposed Action and alternatives, while presenting the rationale used for evaluating and determining impacts. Mitigation measures are identified and described where warranted.

This EA identifies, documents, and evaluates the environmental and socioeconomic direct and indirect impacts, both temporary and permanent, of construction and routine operation and maintenance of a new housing development for USAG-Miami, including the potential for interaction with past, present, and reasonably foreseeable future actions that could produce cumulative impacts on resources. An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and military technicians has analyzed the Proposed Action and alternatives considering existing conditions and has identified relevant beneficial and adverse effects associated with the action and alternatives.

This EA also considers the potential impacts of the No Action Alternative, as required by NEPA, to provide a benchmark for comparison of the potential impacts of the Proposed Action and the alternatives.

1.3.1 Resources Eliminated from Analysis

The following resource areas have been eliminated from analysis in the EA because there is no potential for significant impacts from the Proposed Action. These resource areas will not be discussed further in the EA.

Geology

The City of Doral, located in the southeastern Florida peninsula, is characterized by carbonate sediments of mostly soft, oolitic limestone and dolostone. The City of Doral is situated on the geological formation called the Miami Limestone, a marine-derived limestone of Pleistocene age. Miami Limestone is porous, and outcrops generally display an irregular karst topography. The Miami Limestone is considered part of the Biscayne (shallow) aquifer, and is generally less than 40 feet thick (CH2M, 2017). There would be no change to geology or geologic formations as a result of the Proposed Action.

Prime Farmland

The Farmland Protection Policy Act of 1981 (FPPA) requires federal agencies to identify and take into account the adverse effects of their actions on the preservation of farmland. The FPPA defines prime farmland as "...land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion, as determined by the Secretary. Prime farmland also includes land that possesses the above characteristics but is being used currently to produce livestock and timber. It does not include land already in or committed to urban development or water storage..." Acquisition or use of farmland by a federal agency for national defense purposes is exempted by Section 1547(b) of the Act, 7 United States Code (U.S.C.) § 4208(b). Prime farmland does not occur within the proposed project area; therefore, no impacts to prime farmland would occur as a result of the Proposed Action.

Environmental Justice and Protection of Children

Populations of low-income residents, minorities, or children near the project area are associated with the nearby Doral Terrace Apartment Complex, local schools, and several nearby neighborhoods. Executive Order (EO) 13045 seeks to protect children from disproportionate environmental health or safety risks that might arise as a result of federal policies, programs, activities, and standards. The proposed military housing development would be surrounded by a security fence, and access would include a manned access control point. No impacts to environmental justice populations or children would occur as a result of the Proposed Action because all proposed activities would be within the secure housing development. The Proposed Action would not disproportionately impact the surrounding communities.

1.3.2 Resource Areas Analyzed

This EA includes an analysis of resource areas that could be impacted by the Proposed Action. These include the following, which are discussed in Section 3:

- Land Use
- Soils
- Groundwater
- Surface Water
- Water Quality
- Flood Hazards
- Air Quality
- Noise
- Biological Resources
- Cultural Resources
- Socioeconomic Resources
- Coastal Zone Management
- Safety and Occupational Health
- Hazardous Materials
- Traffic and Transportation
- Recreation
- Utilities
- Visual Resources

1.4 Public Involvement

The U.S. Army (Army) invites public participation in the proposed federal action through the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision making. All agencies, organizations, and members of the public having a potential interest in the Proposed Action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the decision-making process. Consultation letters will be submitted to the Florida Historic Preservation Office, the Miccosukee Tribe of Indians of Florida, and Seminole Tribe of Florida (Appendix A) and the Coastal Zone Consistency Determination will be submitted to the Florida State Clearinghouse (Appendix B). Responses to the consultation letters, comments from the Florida State Clearinghouse, and documentation of follow-on coordination will be included in Appendix A once they have been received.

Public participation opportunities with respect to this EA and decision making on the Proposed Action were guided by 32 CFR Part 651. A Notice of Availability of the Draft EA and Finding of No Significant Impact (FONSI) (Appendix C) will be published in the *Miami Herald*. The EA and FONSI will be made available to the public for comment for 30 days.

1.5 Relevant Statutes and Executive Orders

A decision on whether to proceed with the Proposed Action depends on numerous factors such as mission requirements, schedule, availability of funding, and environmental considerations. In addressing environmental considerations, the Army is guided by relevant statutes (and their implementing regulations) and EOs that establish standards and provide guidance on environmental and natural resources management and planning, which are listed in the following subsections.

1.5.1 Federal Regulations

- NEPA (42 United States Code [U.S.C.] 4321-4370)
- Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531-1543)
- Fish and Wildlife Coordination Act (16 U.S.C. 661, et seq.)
- Migratory Bird Treaty Act (MBTA) (16 U.S.C. 701, et seq.)
- Clean Water Act of 1977 and the Water Quality Act of 1987 (33 U.S.C. 1251 et seq., as amended)
- Energy Policy Act of 2005 (42 U.S.C. § 15801)
- National Energy Conservation Policy Act (42 U.S.C. § 8251)
- Farmland Protection Act of 1981 (7 U.S.C. 4201 et seq., as amended)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (as amended by the Superfund Amendments and Reauthorization Act of 1986)
- Resource Conservation and Recovery Act (RCRA) of 1976 (42 U.S.C. 6901)
- Toxic Substances Control Act (15 U.S.C. 2601 et seq., as amended)
- National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq., as amended)
- Archaeological Resources Protection Act of 1979 (16 U.S.C. 470)
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. §§ 3001 et seq., as amended)
- American Indian Religious Freedom Act of 1978 (42 U.S.C. § 1996, as amended)
- Clean Air Act (CAA) (42 U.S.C. 7401 et seq., as amended)
- Noise Control Act of 1972 (42 U.S.C. 4901 - 4918)
- Coastal Zone Management Act (CZMA) (Section 307 and 15 CFR Part 930 subpart C)

1.5.2 Army Regulations

- Army Regulation (AR) 190-13, The Army Physical Security Program
- AR 200-1, Environmental Protection and Enhancement
- AR 210-20, Installation Master Planning
- AR 385-10, The Army Safety Program
- AR 420-10, Facilities Management
- AR 525-13, Antiterrorism
- Unified Facilities Criteria (UFC) 1-200-02, High Performance and Sustainable Building Requirements, with Change 3
- UFC 2-100-01, Master Planning
- UFC 4-010-01, Department of Defense (DoD) Minimum Antiterrorism Standards for Buildings
- UFC 4-020-01, DoD Security Engineering Facilities Planning Manual
- UFC 4-711-01, Family Housing

- Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (40 CFR Parts 1500-1508)
- Environmental Analysis of Army Actions (32 CFR 651)
- Protection of Historic Properties (36 CFR Part 800)

1.5.3 Executive Orders

- EO 11514, Protection and Enhancement of Environmental Quality, as amended
- EO 11988, Floodplain Management, as amended
- EO 12088, Federal Compliance with Pollution Control Standards
- EO 12372, Intergovernmental Review of Federal Programs
- EO 12580, Superfund Implementation, as amended
- EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- EO 13045, Protection of Children from Environmental Health Risks and Safety Risks
- EO 13175, Consultation and Coordination with Indian Tribal Governments
- EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds
- EO 13327, Federal Real Property Asset Management
- EO 13834, Efficient Federal Operations

These authorities are addressed in various sections throughout this EA when relevant to particular environmental resources and conditions. The full text of the laws, regulations, and EOs is available on the DoD Environment, Safety and Occupational Health Network and Information Exchange website at <https://www.denix.osd.mil/>.

1.6 Organization of the Document

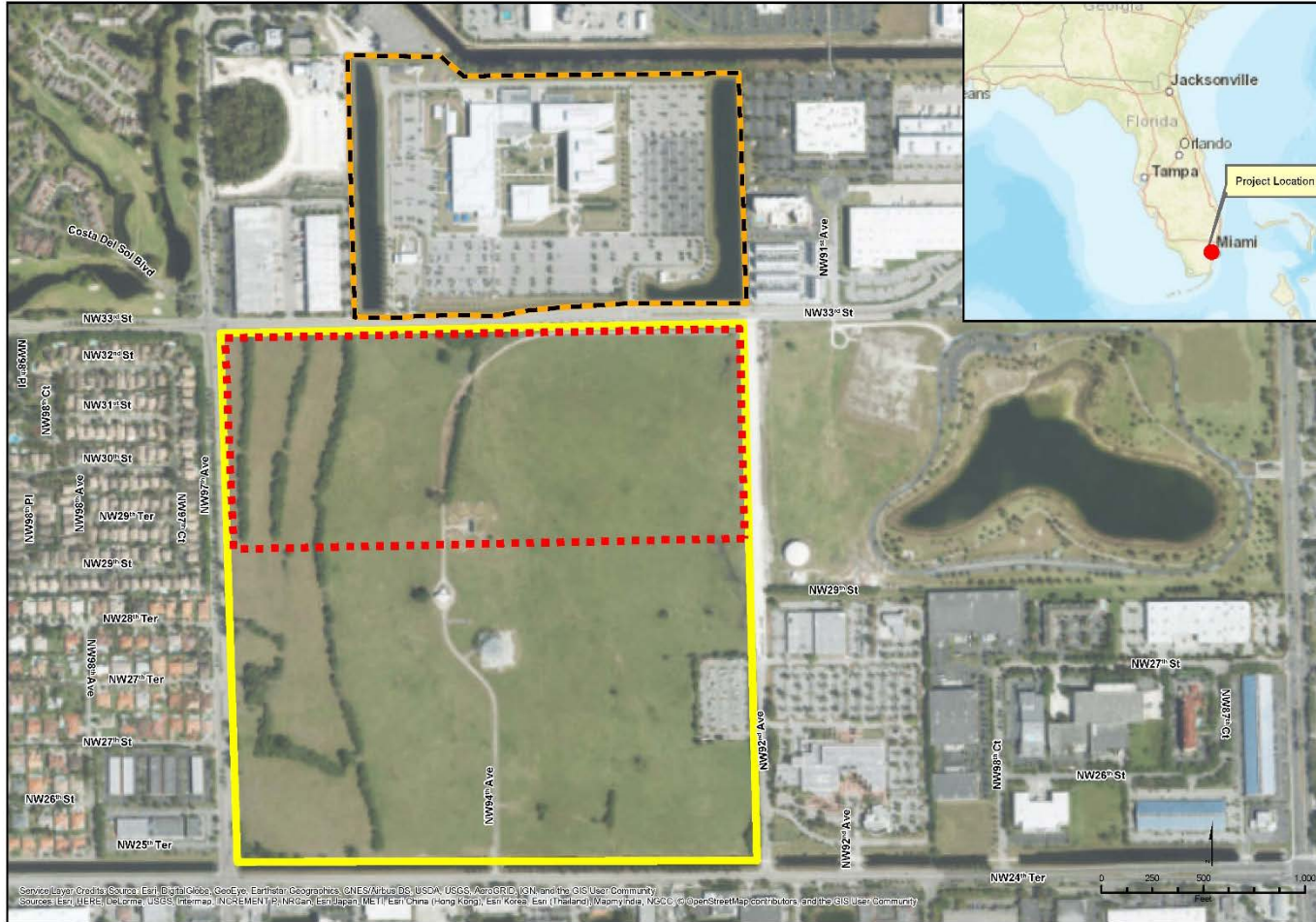
This EA is divided into the following sections and appendices:

- Section 1 provides background information on USAG-Miami, identifies the purpose of and need for the Proposed Action, explains the regulatory agency review and public involvement process, and describes the analysis framework.
- Section 2 defines the Proposed Action, Federal Aviation Administration (FAA) Military Construction (MILCON) Alternative, Enhanced Use Lease (EUL) Alternative, and the No Action Alternative and provides the rationale for dismissing other alternatives from detailed consideration.
- Section 3 describes existing environmental conditions in the area where the Proposed Action would occur and identifies the potential impacts of implementing the Proposed Action.
- Section 4 summarizes the cumulative impacts of the Proposed Action.
- Section 5 provides the references cited in development of the EA.
- Section 6 identifies the preparers of the EA.
- Section 7 identifies the agencies that received the EA for review.
- Section 8 identifies persons consulted during preparation of the EA.
- Appendix A provides a record of correspondence with state and federal agencies and Native American organizations.

SECTION 1 – PURPOSE, NEED, AND SCOPE

- Appendix B contains the Coastal Zone Consistency Determination.
- Appendix C contains the Draft FONSI and comments received from the public.
- Appendix D contains Air Quality Emission Estimates and Record of Non-Applicability.
- Appendix E contains special-status species descriptions.

1-1. Proposed Project Location



- Legend**
- Proposed Housing Development Site
 - FAA Parcel
 - Secure Fence Perimeters
 - U.S. Army Garrison-Miami

Figure 1-1
Location Map
 Environmental Assessment
 USAG-Miami Housing Development
 Doral, Florida



GES0917191342ATL - Figure 1-1_Location Map

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Description of the Proposed Action and Alternatives

This section describes the Proposed Action and alternatives that meet the project purpose and need as described in Section 1.2. The MILCON Alternative, EUL Alternative, and the No Action Alternative were selected for detailed analysis and are described in Section 2.2. In addition, alternatives considered but not carried forward are described in Section 2.3.

2.1 Proposed Action

The Proposed Action is for USAG-Miami to acquire FAA land south of NW 33rd Street across from the SOUTHCOM headquarters in Doral, Florida and construct a military housing development on the property. The property houses a large FAA radar tower and associated support buildings near its center. No housing or other vertical structures would be constructed within the 853-foot radius FAA established antenna standoff area to avoid interference with operation of the radar system; however, non-vertical assets such as stormwater retention infrastructure, roads, or parking may be located within this radius. Proposed structures between the 853-foot radius and the 1,019-foot radius would be compliant with FAA requirements for those designated areas and would not interfere with operation of the radar. The Proposed Action would meet most of the USAG-Miami 2020 military housing shortfalls described in the Purpose and Need (Section 1.2).

2.1.1 Construction Components

Proposed construction of the housing development would include construction of buildings with masonry block and stucco exterior wall and concrete tile roof. Family housing would have living areas, kitchens, bathrooms, bedrooms, storage, double-car garages, and private entrances. Unaccompanied housing units would have living and sleeping areas, baths, and storage. All housing would meet requirements for soundproofing, and all General Officers' quarters would meet Sensitive Compartmented Information Facility requirements. Construction of supporting facilities would include the following site work: earthwork consisting of 3 feet of fill, utilities and connections, lighting, paving, parking, walks, curbs and gutters, storm drainage, information systems connectivity, pedestrian walkway beneath NW 33rd Street, and landscaping and signage. Heating and air conditioning would be provided by self-contained systems, and residential smoke detectors would be provided.

Measures in accordance with the *DoD Minimum Antiterrorism for Buildings* standards and protection for high-risk personnel would be provided. Accessibility for individuals with disabilities would be provided. Comprehensive building-related and furnishings-related interior design services would be required. The project would comply with the Army Standard for Family Housing and UFC 4-711-01. Design and construction would include requirements of current Sustainable Design and Development Policy Update (Environmental and Energy Performance). Facilities will be designed to a minimum life of 50 years in accordance with DoD's UFC 1-200-02, including energy efficiencies, building envelope, and integrated building systems performance. Antiterrorism measures shall be provided in accordance with UFC 4-020-01.

The Proposed Action includes the following construction components:

- **Child Development Center and Associated Parking:** The child development center would be a 15,000-square-foot, single-level building with associated paved parking containing 47 spaces.
- **Community Center and Associated Parking:** The community center would be a 15,000-square-foot building with optional housing located on the second floor and associated paved parking containing 36 spaces.
- **Multi Grade Family Housing:** Family housing would include 155 total homes.
- **Unaccompanied Housing:** Unaccompanied housing would include 140 total units.

- **Multipurpose Amenities:** Multipurpose amenities would include playgrounds (four tot lots and four play lots), two open fields, two tennis courts, two basketball courts, two dog parks, three picnic areas, a bicycle/walking path, a community garden plot, 18 bicycle racks, 36 benches, and a personal vehicle wash rack.
- **Access Control Point:** An access control point for the housing development would include an 880-square-foot gatehouse and a 1,600-square-foot search area canopy for trucks.
- **Guardhouse and Pedestrian Walkway:** A connector road between the housing development and the SOUTHCOM headquarters access control point at Gate 1 would be constructed. This would include a 110-square-foot guardhouse and a 26,500-square-foot, below grade pedestrian walkway with stairwell and landing. Construction of the connector road would require elevating a portion of NW 33rd Street to allow the underpass.
- **Security Perimeter:** New security fencing would be installed around the perimeter of the housing development.
- **Stormwater Drainage:** Stormwater drainage would include two water retaining basins—one would be up to 14,500 cubic feet and the other up to 21,600 cubic feet in size—and 24,800 linear feet of stormwater piping.
- **Site Improvements:** Site clearing and grading for site improvements (such as curbs, gutters, sidewalks, and landscaping) would occur over 37.5 acres. Three feet of fill would be added to the site totaling 181,500 cubic yards. Landscaping and planting would require approximately 5,000 cubic yards of topsoil.
- **Utilities:** Utility construction would include 42,000 linear feet of water distribution lines, 36,000 linear feet of sewer lines, and 14,700 linear feet of underground electrical lines.
- **Paving, Walks, Curbs, and Gutters:** There would be up to 80,600 square yards of asphalt road paving, 4,800 square yards of concrete pavement, 100,000 square yards of sidewalks and walkways, 40,000 linear feet of precast concrete curbs, and gutters.

2.1.2 Operations Components

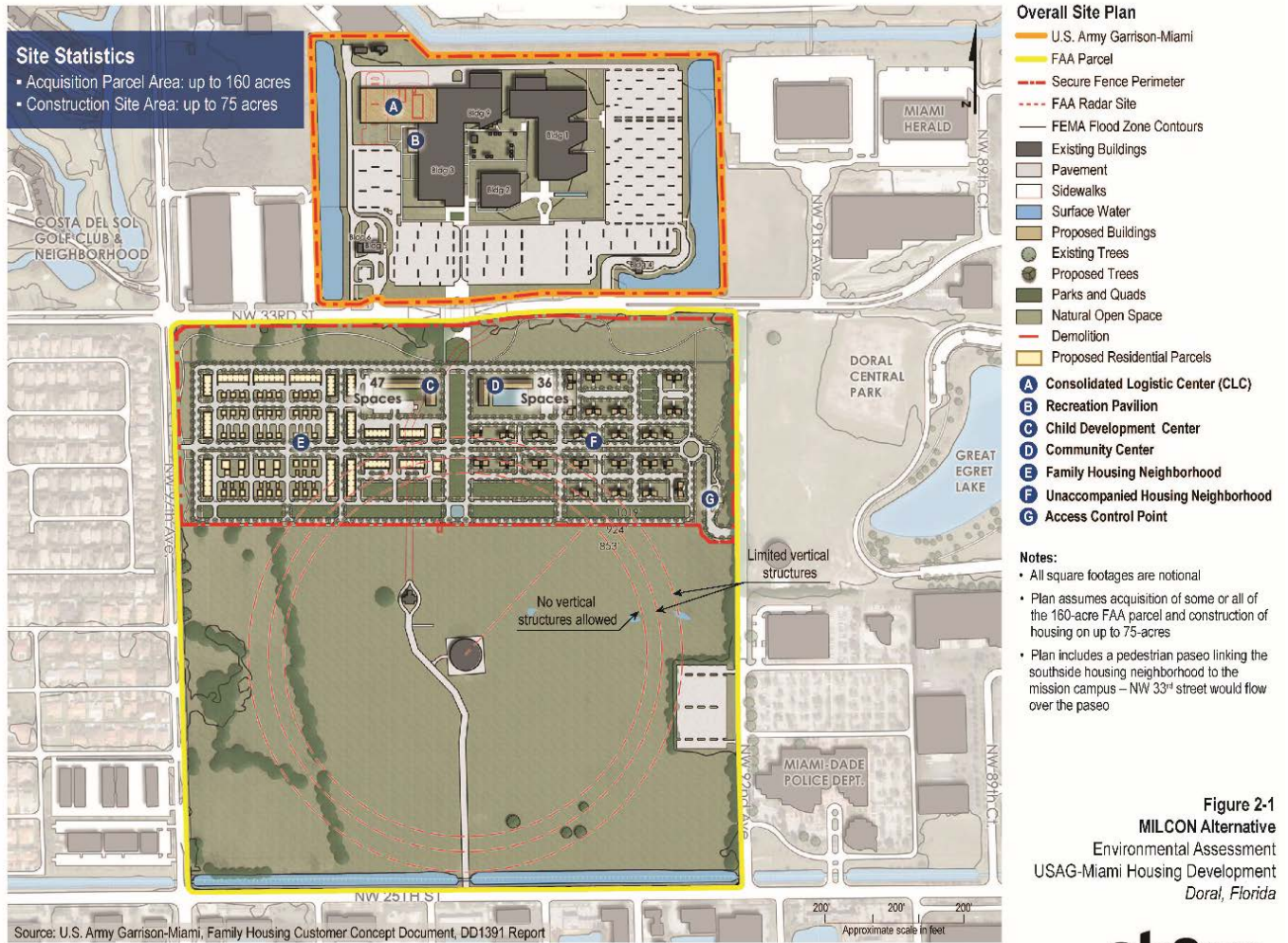
Operations would include routine maintenance of buildings and grounds.

- **Security:** The housing area would be secured from unauthorized entry and the gatehouse would be manned.
- **Building Maintenance:** Structures in the housing development would receive regular interior and exterior maintenance to prevent deterioration.
- **Landscape Maintenance:** Landscape maintenance would include mowing, pruning, and weed removal around buildings to maintain lawns and ornamental plantings and to keep walkways in good condition.
- **Utilities Maintenance:** Water, sewer, power, and telecommunications utilities would be maintained to prevent interruptions of service. This maintenance may include excavation to expose buried utility lines to make repairs.

2.2 Alternatives

2.2.1 Alternative 1 – MILCON Alternative

In the MILCON Alternative, USAG-Miami would use congressionally approved funds to acquire some or all of the approximately 160-acre FAA parcel and pay for the construction, operation, management, and maintenance of service member housing, including site improvements, on up to 75 acres of the property (Figure 2-1). The MILCON Alternative would consist of constructing and operating a housing development as described in the Proposed Action (Section 2.1). Under this alternative, no building structures would be built on the central portion (52.4 acres) of the parcel as not to interfere with radar tower operations; however, non-vertical assets such as stormwater retention infrastructure, roads, or parking may be located within this radius.



2.2.2 Alternative 2 – EUL Alternative

In the EUL Alternative, USAG-Miami would obtain an EUL agreement with a private developer to construct and operate a housing development on the approximately 160-acre FAA parcel (Figure 2-2). This alternative would include constructing and operating a housing development as described in the Proposed Action (Section 2.1) on up to 75 acres of the northern portion of FAA parcel. In addition, up to 32.5 acres of the southern portion of the FAA parcel would be offered to a developer for a mixed-use development in exchange for funding the construction of the military housing, for a total area of development up to 107.5 acres, including site improvements. The southern development would include up to 302,000 square feet of retail space below two levels of 167 market rate apartments and would include up to 806 parking spaces. Under this alternative, no building structures would be built on the central portion (52.4 acres) of the parcel as not to interfere with radar tower operations; however, non-vertical assets such as stormwater retention infrastructure, roads, or parking may be located within this radius.

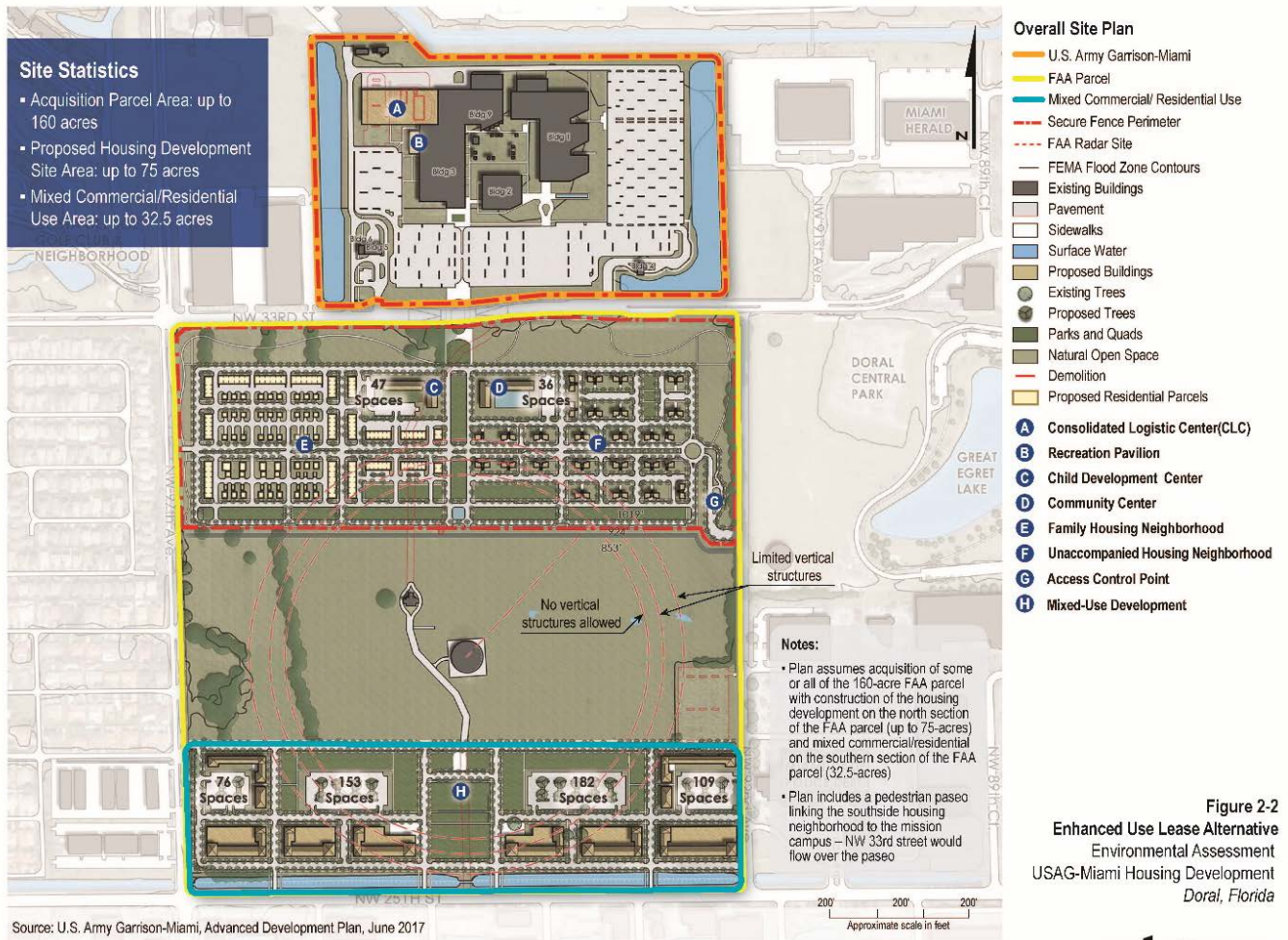


Figure 2-2
Enhanced Use Lease Alternative
Environmental Assessment
USAG-Miami Housing Development
Doral, Florida



2.2.3 Alternative 3 – No Action Alternative

Under the No Action Alternative, USAG-Miami would not acquire the FAA parcel directly adjacent to the SOUTHCOM headquarters in Doral, Florida and would not construct a military housing development. Service members would continue to search for affordable housing in the local economy and be scattered across the city and county. This would continue to create an undue financial burden on many service members as they seek suitable quarters and would continue to adversely impact mission readiness for USAG-Miami and SOUTHCOM. Essential personnel would continue to be unable to quickly reach the SOUTHCOM headquarters facility to maintain operations during emergencies as a result of possible road closures and traffic. Higher-level personnel living offsite would not be provided with required additional security for personal protection.

Under the No Action Alternative, revisiting the option of acquiring the FAA parcel a few years from now may not be a possibility. FAA is systematically updating traffic control systems, and the large satellite dish at the FAA parcel may become obsolete. If FAA opts to dispose of this property and the Army is not in the position to acquire it, an opportunity to enhance the SOUTHCOM mission and improve service members' quality of life would be lost.

The No Action Alternative would not address the purpose and need for the Proposed Action. The No Action Alternative is included for analysis as required by NEPA and serves as reference for comparison of potential effects of the Proposed Action.

2.3 Alternatives Dismissed from Consideration

USAG-Miami developed the Proposed Action and alternatives based on consideration of mission requirements, security requirements, environmental constraints, and mission efficiency. Five alternatives for meeting housing shortfalls at USAG-Miami were evaluated in a cost-benefit analysis; three of them were dismissed (USAG-Miami, 2018). Alternatives dismissed from further consideration are described below.

2.3.1 Alternative 4 – Privatized Housing on FAA Parcel

Under Alternative 4, privatized housing would be constructed on the 160-acre FAA parcel. The Residential Communities Initiative (RCI), the most common form of housing privatization, has been widely used on military bases; however, the authority to use this model has recently expired. If the authority could be restarted, this model leverages the Basic Allowance for Housing to access the private capital market to fund construction and maintenance without congressionally appropriated funds.

Alternative 4 requires a new privatization authority and needs an Army-level feasibility review. Because of limited scope and financial uncertainties, this alternative might be unattractive to an RCI partner. For economic viability, civilian occupancy of the housing development may eventually be required. Allowing civilians in the secure perimeter could jeopardize service members' safety. Security also would be compromised if other government personnel were permitted to lease units. As a result of the aforementioned factors, Alternative 4 was dismissed from further consideration.

2.3.2 Alternative 5 – MILCON Family Housing Project near Homestead Air Reserve Base

Under Alternative 5, MILCON funds would be used to construct a housing development on other Real Property near Homestead Air Reserve Base, approximately 26 miles south of USAG-Miami. The land of the former Homestead Air Force Base was transferred to the Air Force Reserve and to Miami-Dade County following closure of the Air Force Base. USAG-Miami currently manages the operational facilities of Special Operations Command South on an 84.2-acre leased site owned by Miami-Dade County. USAG-Miami was directed by the Army to evaluate building on land owned by Miami-Dade County. The cost to acquire land, if available, would be an estimated \$10,147,966.

Constructing housing in Homestead would exacerbate rather than solve most of the issues SOUTHCOM is trying to resolve. Availability of suitable land for this project is assumed; however, no suitable contiguous tracts of land are available that meet the requirement. Furthermore, the drive time between the two locations averages between 40 and 45 minutes without traffic issues, and all major routes require tolls of approximately \$5 per day for the drive. K&E personnel could not be assigned in Doral and housed in Homestead. Homestead suffers from a lack of acceptable childcare, schools, and healthcare (USAG-Miami, 2018). As a result of the aforementioned factors, Alternative 5 was dismissed from further consideration.

2.3.3 Alternative 6 – Expanded Leasing (in Doral Only)

Alternative 6 is similar to the No Action Alternative but would require the housing office to lease, rent, or buy real estate in the corporate limits of Doral only and assign it to personnel. This variation on the No Action Alternative limits many of the negative aspects of the No Action Alternative. Additional housing office personnel would be required to verify that homes meet Army requirements and to maintain the pool of residences.

This alternative has the highest cost and does not improve service member security. A large increase in the Directorate of Public Works Housing Office staff would be required and service members would face high upfront costs in the Doral rental market. Additionally, personnel could encounter traffic and road closures that could delay their ability to quickly reach the installation in an emergency. This alternative was dismissed from further consideration because it does not meet the purpose and need of the Proposed Action.

Affected Environment and Consequences

3.1 Introduction

This section describes the existing environmental and socioeconomic conditions that could be affected by implementing the Proposed Action, as well as the potential environmental and socioeconomic impacts of implementing the Proposed Action Alternatives and the No Action Alternative.

This section provides information to serve as a baseline from which to identify and evaluate environmental and socioeconomic changes likely to result from implementation of the Proposed Action. Baseline conditions are current conditions.

In compliance with NEPA, CEQ guidelines, and 32 CFR Part 651, et seq., the description of the affected environment focuses on those resources and conditions potentially subject to impacts. These include land use, soils, groundwater, surface water, water quality, flood hazards, air quality, noise, biological resources, cultural resources, socioeconomics, coastal zone management, safety and occupational health, hazardous materials transportation, recreation, utilities, and visual resources.

Following the description of the components of the affected environment, this section presents the analysis of the direct and indirect environmental and socioeconomic effects that would likely occur with the Proposed Action and identifies any adverse environmental effects that could not be avoided through project design. Potential cumulative impacts are discussed in Section 4.

3.1.1 Direct versus Indirect Effects

The terms “effect” and “impact” are synonymous as used in this EA. Effects may be beneficial or adverse and may apply to the full range of natural, aesthetic, historic, cultural, and economic resources within the proposed project area and also within the surrounding area. Definitions and examples of direct and indirect impacts as used in this document are as follows:

- **Direct Impact.** A direct impact is one that would be caused by implementing an alternative and that would occur at the same time and place.
- **Indirect Impact.** An indirect impact is one that would be caused by implementing an alternative that would occur later in time or would be farther removed in distance but would still be a reasonably foreseeable outcome of the action. Indirect impacts may include induced changes in the pattern of land use, population density, or growth rate, and indirect effects to air, water, and other natural resources and social systems.
- **Relationship between Direct versus Indirect Impacts.** For direct impacts to occur, a resource must be present. For example, if highly erodible soils were disturbed as a direct result of the use of heavy equipment during construction of a home, there could be a direct effect on soils resulting from erosion. This could indirectly affect water quality if stormwater runoff containing sediment from the construction site were to enter a stream.

3.1.2 Short-term versus Long-term Effects

Effects are also expressed in terms of duration. The duration of short-term impacts is 1 year or less from completion of construction. For example, the construction of a building would likely expose soil in the immediate area of construction. However, this effect would be considered short term because it would be expected that vegetation would re-establish on the disturbed area within a year of the disturbance. Long-term impacts are described as lasting beyond 1 year. Long-term impacts can continue in perpetuity, in which case they would also be described as permanent.

3.1.3 Intensity of Effects

The magnitude of effects of an action must be considered regardless of whether the effects are adverse or beneficial. The following terms are used to describe the magnitude of impacts:

- No Impact: The action does not cause a change.
- Negligible: The impact is at the lowest level of detection and is discountable or hardly noticeable.
- Minor: The impact is slight but detectable.
- Moderate: The impact is readily apparent.
- Major: The impact is severely adverse or exceptionally beneficial.

Impacts ranging from negligible to moderate would be less than significant, while major impacts would be significant.

3.1.4 Significance

In accordance with CEQ regulations and implementing guidance, impacts are also evaluated in terms of whether they are significant. Both short-term and long-term effects are relevant to the consideration of significance. “Significance,” as defined in the CEQ regulations for implementing NEPA at 40 CFR 1508.27, requires consideration of context and intensity. “Intensity” refers to the severity of the impact and describes the degree to which an impact occurs on a resource element (40 CFR 1508.27(b)).

“Context” requires that significance be considered with regard to society, the affected region, affected interests, and the locality (40 CFR 1508.27(a)). The scale of consideration for context varies with the setting and magnitude of the action. For instance, a small, site-specific action is best evaluated relative to the location rather than to the entire world.

3.1.5 Mitigation

The alternatives considered in this EA could have environmental and socioeconomic impacts resulting from their implementation that would require mitigation. Where potentially significant adverse impacts are identified, measures that would be implemented to mitigate for the magnitude of impacts are discussed. Potential mitigation actions, as defined by 40 CFR § 1508.20, could include:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing the impact by limiting the degree or magnitude of the action and its implementation.
- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating an impact over time by preservation and maintenance operations during the life of the action.
- Compensating for an impact by replacing or providing substitute resources or environments.

Where no significant adverse impacts are identified, rectifying or compensatory mitigation measures are not proposed. Absent significant adverse impacts, the Army would implement Best Management Practices (BMPs) and project design features to avoid impacts or minimize unavoidable impacts that are less than significant.

3.2 Land Use

3.2.1 Affected Environment

The FAA parcel where the proposed housing development would be constructed is federal government land and has been operated by the FAA for more than 70 years. The approximately 160-acre FAA-owned parcel is located

south of NW 33rd Street across from the current SOUTHCOM headquarters, within the municipal limits of the City of Doral. The FAA parcel is bound to the north by NW 33rd Street, east by NW 92nd Avenue, south by NW 25th Street, and to the west by NW 97th Avenue (Figure 1-1). The property contains an FAA Remote Center Air to Ground facility that includes a communications (VORTAC) dish and several small ancillary outbuildings near the center of the site. Additionally, there is a 2.7-acre parking lot used by the Miami-Dade Police Department in the southeastern segment of the parcel fronting NW 92nd Avenue. There is an 853-foot radius around the VORTAC dish that cannot be developed with any vertical improvements while the dish is in use. The City of Doral has designated the northern half of the property as a General Use District and the southern half of the property as an Industrial Commercial District (City of Doral, 2019a).

The FAA parcel is currently used as a pasture for cattle grazing and in the recent past, portions of the parcel also were used for floriculture (CH2M, 2017). Pasture in the local area is limited to one other plot approximately 1 mile to the west that is of similar size to the FAA parcel. The next closest pasture is south of Miami, between Homestead and the Everglades.

To the east of the FAA parcel is the Miami-Dade County police station (Station 3) and Doral Central Park (J.C. Bermudez Park), an 82-acre recreation park. Residential housing is located to the west of the FAA parcel. Various industrial buildings and shops are located to the south of the FAA parcel.

3.2.2 Environmental Consequences

3.2.2.1 MILCON Alternative

Under the MILCON Alternative, USAG-Miami would acquire some or all of the FAA parcel and the FAA would continue to use the VORTAC dish and the 52.4-acre clear zone around it. The land would remain federal government land. The land use designation would not change as the general use category includes residential usage (City of Doral, 2019a). Up to 75 acres of pasture would be converted to residential land for construction of a housing development. Because the change in use would be consistent with the land use designation, any long-term direct effects on land use would be negligible. The economic effects of the loss of pasture/grazing are discussed in Section 3.12.

No long-term or short-term indirect adverse impacts to land use would be expected because no population change would occur, as the residents would be relocating from within the area.

3.2.2.2 EUL Alternative

Under the EUL Alternative, USAG-Miami would acquire some or all of the FAA parcel. Under the EUL Alternative, the 52.4-acre clear zone around the VORTAC dish would remain under FAA control. Up to 107.5 acres of pasture would be converted to housing and mixed-use development: A housing development would be constructed on up to 75 acres of the northern portion of the parcel and a mixed-use residential and commercial development would be constructed on 32.5 acres in the southern portion of the property. The land use designation would not change as the general use category includes residential usage and the industrial commercial-use category includes residential usage, such as multi-family condominium/apartments or work-live residential units as well as restaurants, retail and services (City of Doral, 2019a). Because the change in use would be consistent with the land use designation, any long-term direct effects on land use would be negligible. The economic effects of the loss of pasture/grazing are discussed in Section 3.12.

No adverse indirect impacts to land use would be expected because the surrounding area is already developed. The commercial component of the EUL area would serve the local area and would not result in additional changes to land use.

3.2.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.2.1 would continue. There would be no impacts to land use from the Proposed Action.

3.3 Soils

3.3.1 Affected Environment

Soil in the proposed project area consists of Hallandale fine sand 0 to 2 percent slope. This soil type is derived from sandy marine sediments over a limestone and typically occurs on low broad flats, flatwoods, sloughs, and in depressions on marine terraces. This soil is poorly drained with rapid permeability (NRCS, 2019). The depth to water table is 6 to 18 inches below surface. The typical profile of Hallandale is very dark gray fine sand between 0 and 4 inches, light brownish gray fine sand between 4 and 16 inches, and soft porous weathered bedrock between 16 and 20 inches (CH2M, 2017).

The Hallandale fine sand is considered hydric soil, one of three requirements to be a wetland. This soil is not used for cultivation due to its poorly drained soils and very high ability to transmit water. Hallandale fine sand soils have a low susceptibility to erosion from precipitation and are highly susceptible to wind erosion. Urban development is a common use for Hallandale fine sands (CH2M, 2017). Within the area of the FAA parcel grazed by cattle, soils tend to be more compacted directly around where feed troughs are placed.

3.3.2 Environmental Consequences

3.3.2.1 MILCON Alternative

Under the MILCON Alternative, adverse direct impacts to soils from site preparation and construction on up to 75 acres would be long term and moderate. Adverse direct impacts to soils could include compaction from heavy equipment during earth-moving activities. Disturbed areas would be kept to the minimum required to complete the work and would be confined within site boundaries. Effective sedimentation and erosion control procedures and BMPs would be used during construction to minimize erosion of surrounding soils due to soil/ground disturbance. Appropriate BMPs would be selected based on site-specific conditions and could include, but would not be limited to:

- Sediment barriers (silt fence or straw wattles)
- Temporary detention basins
- Mulching of exposed soils
- Geotextile slope stabilization
- Prompt revegetation of disturbed areas

The potential for temporary impacts to water quality are discussed in Section 3.6.2.

Grading plans for facilities and roadways would be prepared to identify how sites would be graded, how drainage patterns would be directed, and how runoff velocities would affect receiving waters. The grading plans also would provide information regarding when earthwork would start and stop, establish the degree and length of finished slopes, and specify where and how excess material would be disposed of or where borrow materials would be obtained if needed. Berms, diversions, and other stormwater practices that require excavation and filling also would be incorporated into grading plans. Erosion and sediment control and stormwater management goals would be considered in the grading plans. Grading crews would be supervised to ensure that the plans are implemented as intended.

Under the MILCON Alternative, short-term indirect adverse impacts to soils could result from increased erosion outside the immediate construction area due to site runoff. The construction BMPs discussed above would minimize the potential for indirect impacts to soils. Runoff to the north, east, and west would be to roadways and the stormwater system and would not encounter soils. Runoff to the south would cross the antenna area and potentially the more southern part of the FAA parcel before entering the canal. Any short-term indirect adverse impacts to soils from construction runoff would be limited to the southern portion of the FAA parcel and would likely be negligible.

Approximately 3 feet of compacted fill would be added to the ground surface to bring it up to an acceptable developable level. Fills constructed above the natural ground surface increase the load on underlying soil and may result in settlement. However, due to the shallow depth of bedrock, and proper compaction of fill prior to construction, any settling would be negligible.

Stormwater runoff resulting from increased impervious surface area also could contribute to limited soil erosion. Site-specific measures would minimize transport of soils. Contractors would be required to implement measures consistent with the *Best Management Practices for South Florida Urban Stormwater Management Systems* (SFWMD, 2002). Implementation of the BMPs described for direct impacts would minimize the potential for indirect impacts to offsite soils from stormwater runoff. Only minor long-term indirect adverse impacts to soils would be expected due to increased impervious area.

3.3.2.2 EUL Alternative

Under the EUL Alternative, the types of impacts to soils described for the MILCON Alternative (Section 3.3.2.1) would occur over a larger area, 107.5 acres. The EUL Alternative would have a greater impact on soils compared to the MILCON Alternative, not only from a larger development but also a longer construction duration. However, with implementation of erosion and sedimentation controls and BMPs, the long-term direct adverse impacts are expected to be moderate. Indirect impacts would be less than that for the MILCON Alternative, because there would be less potential to affect offsite soils because only soils in the antenna area would be subject to potential stormwater runoff. Any long-term indirect adverse impacts are expected to be negligible.

3.3.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.3.1 would continue. There would be no impacts to soils from the Proposed Action.

3.4 Groundwater

3.4.1 Affected Environment

The groundwater in southern Florida is contained in two distinct aquifer systems: the Biscayne aquifer and the Floridan aquifer. The Biscayne aquifer is relatively shallow (within 1 to 5 feet of land surface) and unconfined with a thickness ranging from approximately 80 to 120 feet. The average transmissivity has been estimated to be 5 million gallons per day per foot. Recharge to the Biscayne aquifer is derived from rainfall, irrigation runoff, surface water imported by canals, urban runoff, and groundwater inflow. Average recharge is approximately 38 inches per year. The typical well in this aquifer system yields 537 million gallons per day in Miami-Dade County. The Biscayne aquifer covers more than 4,000 square miles in southeastern Florida, supplies water to more than 5 million residents in Miami-Dade, Broward, and southern Palm Beach counties, and is the most intensely used water source in Florida (SFWMD, 2019). The Floridan aquifer is deep and confined and has an approximate thickness of 2,800 feet. The Floridan aquifer underlies approximately 100,000 square miles in southern Alabama, southeastern Georgia, southern South Carolina, and all of Florida and provides drinking water to 10 million people (Stewart, 1980). The typical well in this aquifer system yields 3.68 million gallons per day in Miami-Dade County (CH2M, 2017).

The proposed project area is located in the east-central portion of the Biscayne aquifer and the southeastern end of the Floridan aquifer. Groundwater flow direction was determined to be to the southeast for the FAA parcel and surrounding areas based on regional groundwater elevation contour maps. The North Line Canal is south of and adjacent to the subject property, and it is likely groundwater flows into the canal (CH2M, 2017).

A Phase I Environmental Site Assessment of land east of the subject property and an EA developed for the land north of the subject property found no recognized environmental conditions that may contaminate groundwater (CH2M, 2017).

3.4.2 Environmental Consequences

3.4.2.1 MILCON Alternative

The MILCON Alternative would have no direct impacts on groundwater. Construction activities would not require excavation to the depth of groundwater and no groundwater use would occur onsite.

Stormwater runoff during construction could interact with groundwater recharge zones of the surficial Biscayne aquifer. A stormwater permit from the South Florida Water Management District (SFWMD) would be obtained prior to construction activities. During construction, appropriate BMPs would be implemented to reduce pollutants in stormwater discharges from construction sites (SFWMD, 2002). BMPs that would be implemented may include, but would not be limited to:

- Minimize soil exposure through organized scheduling of grading and construction activities.
- Build construction entrances to minimize mud on roadways. Install sediment trapping structures such as silt traps, sediment basins, filter fabric, perimeter dikes, and inlet protection.
- Construct retention and detention systems. Stabilize all denuded areas within 3 days after final grading; disturbed areas that are inactive and will be exposed to rain for 30 days or more should be temporarily stabilized. Stabilization techniques include mulches, vegetation and sod, and chemical applications.
- Implement turf and landscape management.
- Retain existing vegetation whenever feasible.
- Control runoff by diverting stormwater away from stripped areas or newly seeded slopes; minimize the length and steepness of slopes; and install check dams, level spreaders, and outlet protection to minimize erosion.

The Biscayne aquifer supplies water for approximately 5 million people in south Florida and using appropriate BMPs, negligible long-term indirect adverse impacts to groundwater would be expected as a result of construction and operation activities due to the size of the aquifer. Use of groundwater for drinking water by permanent residents in military housing would result in negligible long-term indirect adverse impacts on the Biscayne aquifer from an increase in demand because the demand would be relocated from within the region. The increase in impervious surfaces associated with the new development would have no more than a negligible long-term indirect adverse impact on recharge rates of the aquifer, given the relatively small size of the development (75 acres) compared with the size of the aquifer (4,000 square miles).

3.4.2.2 EUL Alternative

Under the EUL Alternative, the impacts to groundwater described for the MILCON Alternative (Section 3.4.2.1) would occur over a larger area, up to 107.5 acres. In addition, the construction associated with the mixed-use development could increase the duration and area of construction; however, long-term indirect adverse impacts from construction would still be negligible with the implementation of BMPs. There would be a minor increase in use of groundwater for drinking water by tenants of the mixed-use development, assuming that not all tenants would come from within the region. The EUL Alternative would have a greater impact on groundwater compared to the MILCON Alternative, due to the larger development, including higher usage tenants such as restaurants, and the potential relocation of people from outside the region due to the development. However, the long-term indirect adverse impacts to the Biscayne aquifer from this increase in groundwater usage would still be negligible considering the small size of the development (107.5 acres) and increase in demand relative to the size of the aquifer, 4,000 square miles, and the number of people served by the aquifer at present, approximately 5 million people.

3.4.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.4.1 would continue. There would be no impacts to groundwater from the Proposed Action.

3.5 Surface Water

3.5.1 Affected Environment

The proposed project area does not contain any permanent pits, ponds, lagoons, or other water bodies. The National Wetland Inventory map revealed no wetlands are present within the proposed project area. The North Line Canal, a riverine used to remove stormwater runoff from the subject property and adjacent properties, is located south of and adjacent to the FAA parcel (CH2M, 2017).

3.5.2 Environmental Consequences

3.5.2.1 MILCON Alternative

The MILCON Alternative proposed construction would not occur within a surface water resource. However, during construction activities, potential adverse short-term direct impacts to surface water quality and hydrogeological resources could occur as a result of spills. This risk would be minimized by practicing good housekeeping, such as properly storing materials and fueling and maintaining construction equipment offsite or in designated areas with appropriate control and containment. A stormwater permit from SFWMD would be obtained prior to construction activities. During construction, appropriate BMPs would be implemented to reduce pollutants in stormwater discharges from construction sites (SFWMD, 2002). BMPs that would be implemented may include, but would not be limited to, those mentioned in Section 3.4.2.1.

Therefore, no more than negligible short-term adverse direct impacts to surface water resources would be expected.

Implementation of the BMPs described for direct impacts would minimize the potential for indirect impacts to water quality from stormwater runoff and sedimentation. Post-construction stormwater controls would be implemented to minimize an increase in the volume of offsite stormwater runoff from an increase in impervious area (approximately 50 acres). These stormwater controls would include water retaining basins and stormwater piping. No long-term adverse indirect impacts to offsite surface waters would be expected unless storms exceed the design storm for the stormwater controls. Storms that exceed the design storm for the stormwater system would result in runoff greater than current conditions. Such storm events would be infrequent and associated runoff would be diluted due to the larger volume of rainwater; no more than negligible long-term adverse direct effects to surface waters would be expected.

3.5.2.2 EUL Alternative

Under the EUL Alternative, the types of impacts to surface water described for the MILCON Alternative (Section 3.5.2.1) would occur over a larger area, 107.5 acres. In addition, the construction associated with the mixed-use development could increase the duration and area of construction-related impacts. The EUL development would comply with regulations for construction and post-construction stormwater management. The EUL Alternative would have a greater potential to impact surface waters compared to the MILCON Alternative, not only from a larger development (approximately 82 acres of impervious surface, approximately 64 percent greater impervious area) but also the longer construction duration resulting in minor short-term direct impacts to surface water resources from construction activities. However, with implementation of BMPs, the long-term adverse indirect impacts to surface water are expected to be negligible unless storms exceed the design storm for the stormwater controls. Storms that exceed the design storm for the stormwater system would result in runoff greater than current conditions. Such storm events would be infrequent and associated runoff would be diluted due to the larger volume of rainwater; minor to moderate long-term adverse direct effects to surface waters would be expected.

3.5.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.5.1 would continue. There would be no impacts to surface water from the Proposed Action.

3.6 Water Quality

3.6.1 Affected Environment

The Biscayne aquifer is the primary drinking water source for Miami-Dade County. Miami-Dade Water and Sewer Department (WASD) supplies potable drinking water to the area through county supply lines (CH2M, 2017). Based on 2018 water quality data, 21 parameters, including microbiological contaminants, stage 2 disinfection byproducts, disinfectants, inorganic contaminants, and radioactive contaminants, were detected in Miami-Dade County's water during the reporting period. All parameters were below the maximum contaminant levels allowed (Miami-Dade County, 2018).

Grazing cattle on the FAA parcel may have a negative effect on water quality in the local area. Animal wastes may be transported to the canal system during and following precipitation events, increasing organic loading of nearby surface waters.

3.6.2 Environmental Consequences

3.6.2.1 MILCON Alternative

Under the MILCON Alternative, no more than negligible long-term adverse direct impacts to water quality would be expected from construction and operation of the housing project. During construction, stormwater management regulations and appropriate BMPs would be implemented to reduce pollutants in stormwater discharges from construction sites (SFWMD, 2002). BMPs that would be implemented may include, but would not be limited to:

- Site grading to minimize runoff
- Construction entrances to minimize mud on roadways
- Check dams and silt fences to decrease water flow and allow sediment to settle onsite
- Sediment basins and filter berms to remove sediment
- Mulching to stabilize disturbed soils
- Permanent reseeding of disturbed soils

Implementation of BMPs would minimize the potential for adverse impacts from stormwater runoff and sedimentation. Post-construction stormwater controls would be implemented to minimize adverse impacts to water quality offsite caused by an increase in impervious area, approximately 50 acres. Due to the implementation of BMPs and the post-construction stormwater controls negligible long-term adverse direct impacts to water quality would be expected.

There would be long-term beneficial direct impacts to the organic loading of nearby surface waters as a result of removal of grazing animals from the FAA parcel.

3.6.2.2 EUL Alternative

Under the EUL Alternative, the types of impacts to water quality described for the MILCON Alternative (Section 3.6.2.1) would occur over a larger area, 107.5 acres. In addition, the construction associated with the mixed-use development could increase the duration and area of construction-related impacts. The EUL Alternative would have a greater impact on water quality compared to the MILCON Alternative, not only from the larger development, which includes approximately 82 acres of impervious surface, but also the longer construction duration. However, the EUL development would also comply with regulations for construction and post-construction stormwater management, and with implementation of BMPs and post-construction stormwater controls, the long-term adverse impacts to water quality are expected to be negligible.

There would be long-term beneficial direct impacts to the organic loading of nearby surface waters with the removal of grazing animals from the FAA parcel.

3.6.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.6.1 would continue, including the potential for animal waste from grazing cattle to contribute to organic loading of nearby surface waters.

3.7 Flood Hazards

3.7.1 Affected Environment

The City of Doral is flat, has virtually no topographical relief and is proximate to the coast. Variations in relief usually result from construction activities. Elevations for the City of Doral average 3.3 feet above mean sea level (amsl) and the proposed project area has a ground elevation of 5 feet amsl (CH2M, 2017). The Base Flood Elevation for the proposed project area is 6 feet amsl (FEMA, 2009) which means the parcel, at the existing elevation of 5 feet amsl, is prone to flooding to a depth of 1 foot. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM), the proposed project area is located within a Special Flood Hazard Area (Zone AH [flood depths of 1 to 3 feet typically from ponding and not within a floodplain]) (FEMA, 2009). A Special Flood Hazard Area is the area subject to inundation by a flood that has a 1 percent or greater chance of being equaled or exceeded during any given year.

3.7.2 Environmental Consequences

3.7.2.1 MILCON Alternative

Under the MILCON Alternative, the structures would be placed on fill material above the Base Flood Elevation. Approximately 3 feet of fill would be added to the proposed project area to raise the ground approximately 2 feet above the Base Flood Elevation. This would reduce the risk of flooding at the site and bring the site up to an acceptable development level. USAG-Miami would submit a request to FEMA to reassess and revise the FIRM to indicate that the filled land is outside of the Special Flood Hazard Area. Because the flood hazard derives from ponding and the threat of surge associated with storm events and is not associated with conveyance or volume of streamflow, and because post-construction stormwater controls would maintain pre-development run-off rates and volumes, there would be no increased risk of flooding for other properties. Any long-term adverse direct impacts to the flood hazard area are expected to be minor.

Post-construction stormwater controls would be implemented to minimize an increase in the volume of offsite stormwater runoff from an increase in impervious area. There would be less than significant long-term adverse indirect impacts from an increase in impervious surfaces to the flood hazard area under the MILCON Alternative because the stormwater controls would minimize runoff increase and because the project area would be less than 0.1 percent of the surrounding area, which would result in less than 0.01 inch in rise of floodwater in the region.

3.7.2.2 EUL Alternative

Under the EUL Alternative, the impacts to flood hazards described for the MILCON Alternative (Section 3.7.2.1) would occur over a larger area, 107.5 acres. The area to add the 3 feet of fill would be greater due to the increased area for the EUL component, but there would be no increased risk of flooding to areas outside the property. All developed areas within the Special Flood Hazard Area would be filled prior to construction to bring the ground surface approximately 2 feet above Base Flood Elevation.

The military housing component would have the same requirements for post-construction stormwater controls as described for the MILCON Alternative. Any private development done as part of the EUL would be required to meet post-construction stormwater control requirements of Doral and Miami-Dade County to minimize an

increase in the volume of offsite stormwater runoff from an increase in impervious area, approximately 82 acres. Similar to the MILCON Alternative, flood hazards in this area would be from ponding and storm surge events. Flood risks in this area would not be associated with conveyance or volume of streamflow. In addition, post-construction stormwater controls would maintain pre-development run-off rates and volumes. Therefore, no increased risk of flooding for other properties would be expected. The EUL Alternative would have a greater adverse impact on flood hazards compared to the MILCON Alternative, due to the larger area of impervious surface. However, because post-construction stormwater controls would maintain pre-development run-off rates and volumes, the long-term adverse direct impacts are expected to be minor. The increase in impervious surface under this alternative would have a less than significant indirect adverse effect on flood hazard area because the stormwater controls would minimize runoff increase. Further, while the project area is greater than the MILCON Alternative, it would be less than 0.1 percent of the surrounding area, which would result in less than 0.01 inch in rise of floodwater in the region.

3.7.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.7.1 would continue. There would be no change in impacts to flood hazards from current conditions.

3.8 Air Quality

3.8.1 Regulatory Setting

3.8.1.1 Federal

Under the authority of the CAA, U.S. Environmental Protection Agency (EPA) has established nationwide air quality standards to protect public health and welfare. These federal standards, known as National Ambient Air Quality Standards (NAAQS) and shown in Table 3-1, represent the maximum allowable atmospheric concentrations for six criteria pollutants: ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), lead, and particulate matter (which includes respirable particulate matter less than or equal to 10 micrometers in diameter [PM₁₀] and respirable particulate matter less than or equal to 2.5 micrometers in diameter [PM_{2.5}]).

Table 3-1. National Ambient Air Quality Standards

Construction of a Military Housing Development for USAG-Miami, Doral, Florida

Criteria Pollutant	Federal Standard (Averaging Period) ^a
CO	35 ppm (1 hour)
	9 ppm (8 hours)
NO ₂	0.100 ppm (1 hour)
	0.053 ppm (annual arithmetic mean)
O ₃	0.070 ppm (8 hours)
PM _{2.5}	12 µg/m ³ (annual arithmetic mean)
	35 µg /m ³ (24 hours) ^b
PM ₁₀	150 µg/m ³ (24 hours)
SO ₂	0.5 ppm (3 hours, secondary standard)
	0.075 ppm (1 hour) ^b

Table 3-1. National Ambient Air Quality Standards*Construction of a Military Housing Development for USAG-Miami, Doral, Florida*

Criteria Pollutant	Federal Standard (Averaging Period) ^a
Lead	0.15 µg/m ³ (rolling 3-month average)

Source: EPA, 2019a

^a National standards other than O₃, particulate matter (PM), and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The O₃ standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than 1. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, is equal to or less than the standard.

^b To attain this standard, the three-year average of the 99th percentile of the daily maximum one-hour average at each monitor within an area must not exceed 75 parts per billion.

µg/m³ = micrograms per cubic meter

ppm = parts per million, by volume

NA = not applicable

Under the CAA, the country is classified into attainment, nonattainment, and maintenance areas. Any area not meeting the NAAQS is designated as nonattainment for the specific pollutant or pollutants, whereas areas that meet the NAAQS are designated as attainment areas. Maintenance areas are those areas that were previously designated as nonattainment and subsequently redesignated as attainment, subject to development of a maintenance plan.

Under the EPA New Source Review (NSR) program, stationary sources of air pollution are required to have permits before construction of the source begins. NSR Prevention of Significant Deterioration permit approval would be required if the proposed project was either: (1) a new source, with the potential to emit 250 tons per year or more of an attainment pollutant; or (2) an existing major source of emissions, making a major modification in an attainment area, and resulting in a net emission increase above specified levels. Nonattainment NSR approval would be required if the proposed project were a new stationary source or major source of emissions that made a major modification in a nonattainment area with potential to emit nonattainment pollutants in excess of the NSR thresholds.

The CAA General Conformity Rule (40 CFR, Parts 6, 51, and 93) requires federal agencies to make written conformity determinations for federal actions in or affecting nonattainment or maintenance areas. If the emissions of a criteria pollutant (or its precursors) do not exceed the *de minimis* level, then the federal action has minimal air quality impact and the action is determined to conform for the pollutant under study; therefore, no further analysis is necessary. Greenhouse gases (GHGs) are compounds that may contribute to accelerated climate change by altering the thermodynamic properties of the earth's atmosphere. GHGs consist of carbon dioxide (CO₂), methane, nitrous oxide, and fluorinated gases (EPA, 2016). Under the EPA Mandatory Reporting Rule, facilities that emit 25,000 metric tons or more per year of carbon dioxide equivalent (CO₂e) emissions must submit annual reports to the EPA.

3.8.1.2 State

The Florida Department of Environmental Protection (FDEP) oversees the permitting of air pollution sources in Florida. Under Florida Administrative Code (FAC), Chapter 62-296.320, "General Pollutant Emission Limiting Standards," Section (4)(c), no person shall allow the emissions of unconfined particulate matter (PM) from any activity, including but not limited to construction, without taking measures to prevent PM emissions. Preventive measures may include application of water to control emissions from demolition of buildings, grading, construction and land clearing and landscaping or planting of vegetation.

3.8.2 Affected Environment

Miami-Dade County, where the proposed project area is located, is in attainment for all criteria air pollutants (EPA, 2019b). The air quality in Miami-Dade County typically falls in the “Good” range on EPA’s Air Quality Index throughout the year, which means that air quality is considered satisfactory and air pollution poses little or no risk (Miami-Dade County, 2016; AirNow, 2019). In 2018, PM_{2.5} and O₃ were the primary air pollutants in Miami-Dade County (EPA, 2018).

3.8.3 Environmental Consequences

3.8.3.1 MILCON Alternative

Air quality impacts associated with the MILCON Alternative were evaluated based on whether emissions would be localized, and whether a reasonable potential exists for a violation of an ambient air quality standard or regulatory threshold. A conformity analysis is not mandatory for attainment areas; however, an estimate is provided to show that emissions from the MILCON Alternative would be less than the *de minimis* levels established in the conformity regulation. Implementation of the MILCON Alternative at USAG-Miami would result in minor short-term adverse direct impacts on overall air quality from construction activities. The operation of various construction equipment during construction activities would create exhaust emissions, and generate dust and other particles in the air during the execution of the MILCON Alternative. Mobile source emissions also would be generated from vehicular traffic. Implementation of the MILCON Alternative at USAG-Miami would result in minor long-term adverse direct impacts on overall air quality from operational activities. Operational emissions would result from the use of comfort heating systems installed in new facilities, recurring landscaping services, and commuting by residents.

Measures that would be implemented to reduce or eliminate fugitive dust emissions include the following:

- *Sprinkling/Irrigation.* Sprinkling the ground surface with water until it is moist is an effective dust control method for haul roads and other traffic routes (Alabama Soil and Water Conservation Committee, 2014). This practice can be used at virtually any site. When suppression methods involving water are used, care would be exercised to minimize over-watering that could cause the transport of mud onto adjoining roadways, which ultimately could increase the dust problem. Mechanical removal of mud from tires would be implemented if necessary.
- *Vegetative Cover.* In areas not expected to accommodate vehicle traffic, vegetative stabilization of disturbed soil is often desirable. Vegetation provides coverage to surface soils and decreases wind velocity at the ground surface, thus reducing the potential for dust to become airborne.
- *Mulch.* Mulching can be a quick and effective means of dust control for recently disturbed areas.

Construction Emissions. Construction emissions were estimated using the U.S. Air Force’s Air Conformity Applicability Model (version 5.0.7). Construction activities would include construction, excavation, and paving associated with new facilities and amenities. Construction was assumed to begin in October 2023 and end in October 2026.

No new air emission sources would result from the MILCON Alternative once it is constructed. Table 3-2 summarizes the projected total air emissions from construction of the MILCON Alternative. A copy of the calculations used to develop these estimates is in Appendix D.

Table 3-2. MILCON Alternative Emissions

Construction of a Military Housing Development for USAG-Miami, Doral, Florida

Emission Source	Emissions for 2023 (tons per year)						
	VOC	CO	NO _x	SO ₂	PM ₁₀	PM _{2.5}	Pb
2023 Construction Emissions (tons per year)	0.065	0.519	0.349	0.001	0.012	0.012	0
<i>de minimis</i> levels (tons per year)	100	100	100	100	100	100	100
Threshold Exceeded for Any Activity?	--	--	--	--	--	--	--
Emission Source	Emissions for 2024 (tons per year)						
	VOC	CO	NO _x	SO ₂	PM ₁₀	PM _{2.5}	Pb
2024 Construction Emissions (tons per year)	1.54	3.74	2.60	0.008	0.098	0.098	0
<i>de minimis</i> levels (tons per year)	100	100	100	100	100	100	100
Threshold Exceeded for Any Activity?	--	--	--	--	--	--	--
Emission Source	Emissions for 2025 (tons per year)						
	VOC	CO	NO _x	SO ₂	PM ₁₀	PM _{2.5}	Pb
2025 Construction Emissions (tons per year)	3.97	9.70	15.2	0.051	93.5	0.584	0
<i>de minimis</i> levels (tons per year)	100	100	100	100	100	100	100
Threshold Exceeded for Any Activity?	--	--	--	--	--	--	--
Emission Source	Emissions for 2026 (tons per year)						
	VOC	CO	NO _x	SO ₂	PM ₁₀	PM _{2.5}	Pb
2026 Construction Emissions (tons per year)	1.61	7.25	13.6	0.045	49.9	0.537	0
<i>de minimis</i> levels (tons per year)	100	100	100	100	100	100	100
Threshold Exceeded for Any Activity?	--	--	--	--	--	--	--

Source: Appendix D, Air Quality Emission Estimates and Record of Non-Applicability

NO_x = nitrogen oxides

VOC = volatile organic compound

Based on the estimated emissions listed in Table 3-2, the emissions from construction activities associated with the MILCON Alternative would be below regulatory thresholds. Therefore, the MILCON Alternative would not be subject to Prevention of Significant Deterioration permit or NSR requirements. Analysis indicates that emissions would be below the *de minimis* thresholds. Although not required, a Record of Non-applicability is provided in Appendix D to document that the MILCON Alternative is exempt from general conformity requirements. Appendix D also contains detailed emission calculations.

Climate Change and Greenhouse Gases. The MILCON Alternative would generate GHG emissions from construction-related activities. Construction of the military housing project would result in a short-term, insignificant increase in GHG emissions. Estimated peak GHG emissions would be 5,535 tons CO₂e for construction in 2025. The EPA Mandatory Reporting Rule reporting value of 25,000 metric tons per year of CO₂e emissions is used as the significance threshold for this analysis. Therefore, short-term, minor, adverse indirect impacts to climate change as a result of GHG emissions at USAG-Miami would be expected from implementation of the MILCON Alternative.

Under the MILCON Alternative, military personnel would be housed within walking distance to SOUTHCOM headquarters. This would eliminate daily commutes of up to 40 miles round trip for approximately 150 personnel. Long-term minor beneficial direct impacts to air quality and GHG emissions would result from military personnel walking rather than driving to their workplace.

3.8.3.2 EUL Alternative

Under the EUL Alternative, impacts to air quality would be comparable to those discussed for the MILCON Alternative (Section 3.8.3.1), but would be greater because of the additional construction and operational emissions from the mixed-use development. The EUL would have a greater adverse impact on air quality compared to the MILCON Alternative, not only from a larger development but also the longer construction duration. While the impacts would be greater, they would be in an attainment area and would be under air quality thresholds and would result in minor short-term adverse direct impacts from construction activities. Operational emissions would result from the use of comfort heating systems installed in new facilities, recurring landscaping services, and commuting by residents and retail patrons. Similar to the MILCON Alternative, implementation of the EUL Alternative would result in minor long-term adverse direct impacts on overall air quality from operational activities.

Construction Emissions. Construction emissions were estimated using the U.S. Air Force’s Air Conformity Applicability Model (version 5.0.7). Construction activities would include construction excavation and paving associated with new facilities. Construction was assumed to begin in January 2024 and end in December 2024.

Table 3-3 summarizes the projected total air emissions from construction of the EUL Alternative. A copy of the calculations used to develop these estimates is in Appendix D.

Table 3-3. EUL Alternative Emissions

Construction of a Military Housing Development for USAG-Miami, Doral, Florida

Emission Source	Emissions for 2024 (tons per year)					
	VOC	CO	NO _x	SO ₂	PM ₁₀	PM _{2.5}
2024 Construction Emissions for Housing Development	1.54	3.74	2.60	0.008	0.098	0.098
2024 Construction Emissions for Mixed-Use Development	3.61	3.52	2.70	0.008	0.114	0.113
2024 Total Construction Emissions	5.15	7.26	5.30	0.016	0.212	0.211
<i>de minimis</i> levels (tons per year)	100	100	100	100	100	100
Threshold Exceeded for Any Activity?	--	--	--	--	--	--

Based on the estimated emissions listed in Table 3-3, the emissions from construction activities associated with the EUL Alternative would be below regulatory thresholds. Therefore, the EUL Alternative would not be subject to Prevention of Significant Deterioration permit or NSR requirements. Analysis indicates that emissions would be below the *de minimis* thresholds. Although not required, a Record of Non-applicability is provided in Appendix D to document that the EUL Alternative is exempt from general conformity requirements. Appendix D also contains detailed emission calculations.

Climate Change and Greenhouse Gases. The EUL Alternative would generate GHG emissions from construction-related activities. Construction of the EUL Alternative would result in a short-term, insignificant increase in GHG emissions. In addition to GHG emissions associated with construction of the housing development described for the MILCON Alternative, there would be an additional estimated 1,311 metric tons CO₂e of GHG emissions for construction of the mixed-use development in 2024, for a total of 6,846 metric tons of CO₂e emissions well below the significance threshold of 25,000 metric tons per year of CO₂e emissions. Therefore, short-term, minor, adverse

indirect impacts to climate change as a result of GHG emissions at USAG-Miami would be expected from implementation of the EUL Alternative.

Under the EUL Alternative, military personnel would be housed within walking distance to SOUTHCOM headquarters. This would eliminate daily commutes of up to 40 miles round trip for approximately 150 personnel. Long-term minor beneficial direct impacts to air quality and greenhouse gas emissions would result from military personnel walking rather than driving to their workplace. There could be long-term minor adverse direct impacts on air quality from an increase in vehicles on local roads from the use of the new mixed-use development. However, depending on actual use, there could be a long-term minor beneficial direct impact on air quality, as services would be provided closer to where people live, which would reduce overall miles driven and associated vehicle emissions.

3.8.3.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.8.2 would continue. There would be no impacts to air quality from the Proposed Action.

3.9 Noise

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities such as sleep, conversation, or student learning. A number of noise measurements are normally considered when determining noise impacts and include the following:

- Decibel (dB): A measurement of the sound pressure level.
- dBA (A-weighted sound pressure level): Sound pressure level adjusted by an A-weighting filter. The A-weighting filter places greater emphasis on those frequencies within the sensitive range of the human ear by de-emphasizing the very low and very high frequency components. Typically, human hearing is best approximated by using a dBA scale (EPA, 1974).
- dBC (C-weighted sound pressure level): Sound pressure level adjusted by a C-weighting filter, which emphasizes the very low frequency components of sound.

The decibel scale is logarithmic rather than arithmetic. When sound pressure doubles, the sound pressure level, as expressed by dBA, increases by 3. Psychologically, most humans do not perceive a doubling of sound until there is an increase of 10 dBA (EPA, 1974). Sound pressure decreases with distance from the source. Typically, the amount of noise from a continuous source is halved (reduced by 3 dBA) as the distance from the source doubles (EPA, 1974). However, other factors including ground type, atmospheric conditions, and shielding by vegetation and structures further affect the amount of decrease in sound over distance (USDOT, 2011).

FAA and U.S. Department of Housing and Urban Development criteria specify that noise levels in noise-sensitive land use areas normally are considered unacceptable where they exceed a day-night average sound level (DNL) of 65 dBA.

3.9.1 Affected Environment

There are no permanent sources of noise on the 160-acre parcel. Noise from the surrounding area comes from local traffic and from the Miami International Airport, approximately 3 miles to the east. Noise contours were developed for the Miami International Airport using FAA's Aviation Environmental Design Tool for the calendar year 2017 (Environmental Science Associates, 2018). Most of the parcel is outside of the 65 DNL contour and therefore has no land use restrictions. A small portion of the eastern part of the parcel is within the 65 to 70 DNL contour. In accordance with FAA Order 1050.1F – *Policies and Procedures for Considering Environmental Impacts* (FAA, 2015), residential land use and related structures within the 65 to 70 DNL noise contour are not compatible and should be prohibited unless noise reduction measures are incorporated into building codes.

The City of Doral Noise Ordinance specifies that construction equipment must be operated in accordance with manufacturer's specifications, be in good working condition, and use noise baffling methods (City of Doral, 2006).

The noise ordinance also states that construction should only occur between the hours of 8 a.m. and 6 p.m. on weekdays and between the hours of 10 a.m. and 4 p.m. on Saturdays in areas zoned as residential or in areas zoned as business, industrial, or non-residential where the property on which the construction occurs directly abuts or is adjacent to a residentially zoned property (City of Doral, 2006). Residences are west of the parcel across NW 97th Avenue and a city park is east of the parcel across NW 97th Avenue.

3.9.2 Environmental Consequences

3.9.2.1 MILCON Alternative

Under the MILCON Alternative, there would be a short-term moderate direct adverse impact from noise associated with construction. Construction noise would be greatest early in the construction project, during clearing, grading, foundation work, and paving.

Construction activity in the northwestern part of the parcel would be within 200 feet of houses west of NW 97th Avenue. These residences would be subjected to temporary noise levels above 80 dBA during use of heavy equipment, which would make outdoor activities unpleasant; however, this would not cause the DNL to exceed 65 dBA. Residential structures typically provide an attenuation of 15 to 25 dBA, relative to outdoor noise levels (EPA, 1974), and indoor activities also would be adversely affected by heavy equipment operation. While annoying and disruptive, these noise levels would not pose a risk to the hearing ability of residents. Persons using Doral Central Park during times of construction also may experience annoyance and likely would avoid areas in the park closest to the active construction. To minimize potential adverse noise impacts, the construction activities would be limited to the hours listed in the City of Doral Noise Ordinance. Also, the contractor would be required to maintain construction equipment in accordance with manufacturer's specifications to keep unnecessary noise impacts to a minimum. Construction noise impacts would be adverse, direct, and temporary, and would range from negligible to moderate in intensity depending on proximity of houses to the construction area. Temporary, construction-related adverse noise impacts would end once construction is complete.

In the event that buildings are constructed within the 65 to 70 DNL noise contour for the Miami International Airport, which overlaps a small portion of the eastern part of the parcel, measures to achieve outdoor to indoor noise level reduction of at least 25 dBA would be incorporated into the design in accordance with FAA Order 1050.1F. Negligible long-term adverse indoor direct impacts from noise would be expected at any of the proposed residences.

After construction, noise emanating from the parcel would be typical of a residential neighborhood. Therefore, there would be no long-term impacts to noise-sensitive receptors from MILCON Alternative.

3.9.2.2 EUL Alternative

Under the EUL Alternative, the impacts to noise described for the MILCON Alternative (Section 3.9.2.1) would occur, but would be greater because it would extend to a larger area due to construction of the mixed-use development. This would increase the number of residences exposed to construction noise. Construction of the mixed-use development would follow the same guidelines as those described under the MILCON Alternative. Construction noise impacts would be adverse, direct, and temporary, and would range from minor to moderate in intensity depending on proximity of houses to the construction area. Temporary, construction-related, adverse noise impacts would end once construction is complete.

In the event that buildings are constructed within the 65 to 70 DNL noise contour for the Miami International Airport, which overlaps a small portion of the eastern part of the parcel, measures to achieve outdoor to indoor noise level reduction of at least 25 dBA would be incorporated into the design in accordance with FAA Order 1050.1F. Negligible long-term adverse indoor direct impacts from noise would be expected at any of the proposed residences.

After construction, noise emanating from the northern portion of the parcel would be typical of a residential neighborhood and typical of a shopping or retail area from the south. Therefore, there would be negligible long-term adverse direct impacts to noise-sensitive receptors from EUL Alternative.

3.9.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.9.1 would continue. There would be no impacts to noise from the Proposed Action.

3.10 Biological Resources

Biological resources include plants (flora) and animals (fauna) and the habitats in which they occur. Major vegetation communities are described in terms of the representative species present, with special attention placed on special-status species afforded some level of federal, state, or local protection. General wildlife species expected to occur are described, with emphasis placed on special-status species.

3.10.1 Regulatory Considerations

3.10.1.1 Endangered Species Act of 1973

ESA 16 U.S.C. Sections 1531 et seq. was established to protect and allow for recovery of species threatened or endangered from becoming extinct. Under the ESA, species may be listed as endangered or threatened. Endangered species include those in danger of extinction throughout all or a part of its range. Threatened species are those likely to become endangered within the foreseeable future. The ESA also protects habitat considered critical to the existence and recovery of listed species. Section 7(a)(2) of the ESA requires that each federal agency, in consultation with the Secretary [U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (now designated as NOAA Fisheries)], ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

3.10.1.2 Migratory Bird Treaty Act

The purpose of MBTA 16 U.S.C. Section 703 et seq. is to allow for protection of bird species that migrate between the United States and other countries. The MBTA states that it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg or any such bird, unless authorized under a permit issued by the Secretary of the Interior. Take is defined in regulations as: “pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.” The list of bird species protected by the MBTA is included in 50 CFR Section 10.13.

3.10.2 Affected Environment

3.10.2.1 Flora

Vegetation on the FAA parcel consists of mostly grasslands with some rowed trees. The site was historically and is currently being used for agricultural and cow pasture purposes. Native plant species observed in the project area during a site visit on July 11, 2019 included annual ragweed (*Ambrosia artemisiifolia*), beggarticks (*Bidens alba*), blue mistflower (*Conoclinium coelestinum*), frogfruit (*Phyla nodiflora*), common wireweed (*Sida acuta*), coffeeweed (*Senna obtusifolia*), and Carolina horsenettle (*Solanum carolinense*). Non-native plants included tropical milkweed (*Asclepias curassavica*), crowfoot grass (*Dactyloctenium aegyptium*), soda apple (*Solanum capsicoides*), and tropical soda apple (*Solanum viarum*). Pasture grasses dominate the FAA parcel and consist of multiple Bahia grasses (*Paspalum* spp.).

Special-status Flora

Special-status flora species of interest include the following:

- Species listed as threatened, endangered, proposed for listing, or candidate for listing under the ESA
- Species listed as state endangered, threatened, or commercially exploited

- Species designated by USFWS as Species of Concern, representing those species formerly designated as candidates for listing as endangered or threatened, but for which information is insufficient to make a determination

Nineteen plant species that are federal or state-listed were identified as having potential to occur in the project area (Table 3-4). Table 3-4 also identifies whether habitat for these species occurs within the project area.

Table 3-4. Protected Plant Species with Potential to Occur in the Proposed Project Area

Construction of a Military Housing Development for USAG-Miami, Doral, Florida

Scientific Name	Common Name	Status	Habitat Present for Species
<i>Argythamnia blodgettii</i>	Blodgett's silverbush	FT, SE	None
<i>Amorpha crenulata</i>	Crenulate lead-plant	FE, SE	None
<i>Brickellia mosieri</i>	Florida brickell-bush	FE, SE	None
<i>Chamaesyce deltoidea</i> ssp. <i>deltoidea</i>	Deltoid spurge	FE, SE	None
<i>Chamaesyce garberi</i>	Garber's spurge	FT, SE	None
<i>Chamaesyce deltoidea pinetorum</i>	Pineland sandmat	FT, SE	None
<i>Chromolaena frustrata</i>	Cape Sable thoroughwort	FE, SE	None
<i>Consolea corallicola</i>	Florida semaphore cactus	FE, SE	None
<i>Cucurbita okeechobeensis</i> ssp. <i>okeechobeensis</i>	Okeechobee gourd	FE, SE	None
<i>Dalea carthagenensis floridana</i>	Florida prairie-clover	FE, SE	None
<i>Digitaria pauciflora</i>	Florida pineland crabgrass	FT, SE	None
<i>Galactia smallii</i>	Small's milkpea	FE, SE	None
<i>Jacquemontia reclinata</i>	Beach jacquemontia	FE, SE	None
<i>Linum arenicola</i>	Sand flax	FE, SE	None
<i>Linum carteri</i>	Carter's small-flowered flax	FE, SE	None
<i>Polygala smallii</i>	Tiny polygala	FE, SE	None
<i>Sideroxylon reclinatum</i> ssp. <i>austrofloridense</i>	Everglades bully	FT	None
<i>Trichomanes punctatum</i> ssp. <i>floridanum</i>	Florida bristle fern	FE, SE	None
<i>Warea carteri</i>	Carter's mustard	FE, SE	None

Notes:

FT = federally threatened, FE = federally endangered, SE = state endangered, ST = state threatened

Sources: USFWS, 2019a; FDACS, 2018

Descriptions of special-status species are included in Appendix E.

Field Survey Results

No federally protected or state-protected plant species were identified within or adjacent to the proposed project area. The regular mowing near the FAA antenna, the continual cattle grazing, and the abundance of exotic invasive species result in the project area being generally unsuitable to support listed plant species.

3.10.2.2 General Wildlife

Wildlife

The proposed project area is currently used for grazing cows and is surrounded by residential, commercial, and industrial development, with the exception of Doral Central Park which is east of NW 92nd Avenue by the northeastern portion of the FAA parcel. The FAA parcel and Doral Central Park are surrounded by urban development and lack connectivity with any natural habitat or undisturbed lands.

Common wildlife in urbanized areas of Miami-Dade County include common raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), feral cat (*Felis catus*), northern mockingbird (*Mimus polyglottos*), common grackle (*Quiscalus quiscula*), blue jay (*Cyanocitta cristata*), house sparrow (*Passer domesticus*), northern cardinal (*Cardinalis cardinalis*), rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), tree frogs (*Hyla* spp.), and American alligator (*Alligator mississippiensis*). Animals observed within the project area during a site visit conducted on July 11, 2019 included cows (*Bos taurus*), great egret (*Ardea alba*), and red-winged blackbird (*Agelaius phoeniceus*).

3.10.2.3 Special-status Fauna

Special-status fauna species of interest include the following:

- Species listed as threatened, endangered, proposed for listing, or candidate for listing under the ESA
- Species listed as state endangered, threatened, or Species of Special Concern

Twenty-six wildlife species that are federal or state-listed were identified as having potential to occur in the project area (Table 3-5).

Table 3-5. Protected Wildlife Species with Potential to Occur in the Proposed Project Area
Construction of a Military Housing Development for USAG-Miami, Doral, Florida

	Common Name	Scientific Name	Status	Potential for Occurrence
Birds	Bachman's warbler	<i>Vermivora bachmanii</i>	FE	Highly Unlikely
	Cape Sable seaside sparrow	<i>Ammodramus maritimus mirabilis</i>	FE	Highly Unlikely
	Everglade snail kite	<i>Rostrhamus sociabilis plumbeus</i>	FE	Highly Unlikely
	Florida burrowing owl	<i>Athene cunicularia floridana</i>	ST	Moderate
	Florida grasshopper sparrow	<i>Ammodramus savannarum</i>	FE	Highly Unlikely
	Florida scrub-jay	<i>Aphelocoma coerulescens</i>	FT	Highly Unlikely
	Ivory-billed woodpecker	<i>Campephilus principalis</i>	FE	Highly Unlikely
	Kirtland's warbler	<i>Setophaga kirtlandii</i>	FE	Unlikely
	Least tern	<i>Sternula antillarum</i>	ST	Unlikely
	Piping plover	<i>Charadrius melodus</i>	FT	Highly Unlikely
	Red knot	<i>Calidris canutus rufa</i>	FT	Highly Unlikely
	Red-cockaded woodpecker	<i>Dryobates</i> (formerly <i>Picoides</i>) <i>borealis</i>	FE	Highly Unlikely
	Southeastern American kestrel	<i>Falco sparverius Paulus</i>	ST	Moderate
	White-crowned pigeon	<i>Patagioenas leucocephala</i>	ST	Highly Unlikely
	Wood stork	<i>Mycteria Americana</i>	FT	Unlikely
Invertebrates	Bartram's scrub-hairstreak	<i>Strymon acis bartrami</i>	FE	Highly Unlikely
	Florida leafwing butterfly	<i>Anaea troglodyta floridalis</i>	FE	Highly Unlikely
	Miami blue butterfly	<i>Cyclargus thomasi bethunebakeri</i>	FE	Highly Unlikely
	Schaus swallowtail butterfly	<i>Papilioaristodemus ponceanus</i>	FE	Highly Unlikely
	Stock Island tree snail	<i>Orthalicus reses</i>	FT	Unlikely

Table 3-5. Protected Wildlife Species with Potential to Occur in the Proposed Project Area
Construction of a Military Housing Development for USAG-Miami, Doral, Florida

	Common Name	Scientific Name	Status	Potential for Occurrence
Mammals	Florida bonneted bat	<i>Eumops floridanus</i>	FE	Unlikely
	Florida panther	<i>Puma concolor coryi</i>	FE	Highly Unlikely
	Mountain lion	<i>Puma concolor</i>	FT(S/A)	Highly Unlikely
Reptiles	American alligator	<i>Alligator mississippiensis</i>	FT(S/A)	Unlikely
	American crocodile	<i>Crocodylus acutus</i>	FT	Unlikely
	Eastern indigo snake	<i>Drymarchon corais couperi</i>	FT	Unlikely

FE = Federally endangered

FT = Federally threatened

FT(S/A) = Federally threatened species due to similarity of appearance

Source: USFWS, 2019a; FFWCC, 2018

Descriptions of special-status species are included in Appendix E. No federally protected animal species are known to occur within the proposed project area and occurrence is unlikely due to the extent of encroachment by invasive exotic plant species and the high level of disturbance and surrounding development. According to the USFWS Threatened and Endangered Species Active Critical Habitat Report, no critical habitats are located within the subject property. Critical habitat for West Indian manatee (*Trichechus manatus*) is located 1.5 miles east of the subject property (USFWS, 2019b). No suitable habitat for West Indian manatee occurs within the proposed project area.

3.10.3 Environmental Consequences

3.10.3.1 MILCON Alternative

Vegetation

Existing vegetation within the proposed project area is dominated by exotic species. The MILCON Alternative would result in grading up to 75 acres. However, removal of the predominately non-native vegetation, including multiple invasive species, would result in long-term less than significant adverse direct impacts. Adverse impacts on vegetation would be expected from temporary disturbances during construction activities (e.g., trampling and removal) and from the permanent removal of the predominately non-native vegetation from the construction of new facilities. There would also be a loss of vegetation within the area around the FAA antenna if stormwater retention infrastructure, roads, or parking were placed in this 52.4-acre central area.

Wildlife

The MILCON Alternative would result in minor short-term direct adverse impacts on wildlife due to disturbances from noise, construction activities, and heavy equipment use.

The MILCON Alternative would result in long-term minor direct adverse impacts to wildlife from the conversion of undeveloped areas to developed impervious areas. Impacts would be minor because of the low-quality of wildlife habitat within the proposed project area and because wildlife in the vicinity of the proposed project area are species that are tolerant of noise and human activity common in urban environments.

During land clearing and grading, limited incidental injury or mortality of wildlife could occur. However, it is expected that wildlife would avoid the active construction sites and adjacent areas during construction. If common wildlife species are observed in the construction areas, efforts would be made to allow them to leave the area. No habitat would be lost outside the boundaries of the FAA parcel. Incidental losses of animals during construction would not seriously affect regional animal population levels.

Special-status Species

There is no suitable habitat for special-status plant species within the project area; therefore, no impacts to special-status plants are expected under the MILCON Alternative.

The state-threatened Florida burrowing owl is known to occur within the City of Doral. However, the habitat quality onsite is poor and no burrows were observed during the site visit. This species is unlikely to nest within the proposed project area. If the Florida burrowing owl is observed during visual scans of the work areas, work would be suspended or would not start, and the owl would be allowed to voluntarily fly off without being prompted to fly. Any adverse impacts would be direct, short-term, and negligible and limited to displacement of foraging animals.

The state-threatened Southeastern American kestrel is known to occur in Miami-Dade County. This species could forage on the FAA parcel, but there is no nesting habitat for the species on the parcel. Foraging birds would leave the area when construction activity begins and there would be no mortality of this species. If the Southeastern American kestrel is observed during visual scans of the work areas, work would be suspended or would not start, and the kestrel would be allowed to voluntarily fly off without being prompted to fly. Any adverse impacts would be direct, short-term, and negligible and limited to displacement of foraging animals.

The American alligator and crocodile may occur in the canals near the proposed construction site, but there is no onsite use because the canals are fenced off. Construction activities would not result in disturbances to the species and no mortality would be expected.

No federally protected animal species are known to occur within the proposed project area and occurrence is unlikely due to the extent of encroachment by invasive exotic plant species and the high level of disturbance and surrounding development. USAG-Miami has determined there would be no effect to federally threatened, endangered, or candidate species or their habitats and no consultation with USFWS is necessary.

If any protected species are observed within the construction areas, construction would stop until the protected species voluntarily leaves the construction area.

Because project impacts would be confined to the project property and no habitat fragmentation or disruption to wildlife corridors would occur due to the subject property and adjacent Doral Park being surrounded by urban development and already lack connectivity with any natural habitat or undisturbed lands. Although project impacts would be confined to the project property, adverse indirect impacts to biological resources could include displacement or avoidance due to noise and vibration from the operation of heavy equipment. Mortality of ground-dwelling animals with limited dispersal capability likely would result, but this mortality would not be expected to affect regional populations of common wildlife. Therefore, negligible long-term adverse indirect impacts to biological resources would be expected under the Proposed Action.

3.10.3.2 EUL Alternative

Under the EUL Alternative, the types of impacts to biological resources as described for the MILCON Alternative (Section 3.10.3.1) would occur over an additional 32.5 acres. The larger area of construction associated with the mixed-use development could increase the duration and area of construction-related impacts; however, long-term adverse direct and indirect impacts would still be less than significant due to the low quality of the habitat on the site and relatively low number of native species inhabiting the area.

3.10.3.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.10.2 would continue. There would be no impacts to biological resources from the Proposed Action.

3.11 Cultural Resources

3.11.1 Affected Environment

According to a search conducted with the Florida Master Site File at the Florida Division of Historic Resources on December 07, 2020 and the Miami-Dade County Office of Historic Preservation, there are no identified historic properties within the project area. A substantial portion of the FAA parcel was previously disturbed from construction of the antenna and support buildings and for other infrastructure that has since been removed from the site. There have also been ground disturbance from cattle grazing in the area. Therefore, no additional archaeological surveys are considered necessary within the proposed project area.

3.11.2 Environmental Consequences

3.11.2.1 MILCON Alternative

Under the MILCON Alternative, there would be no direct impacts to known cultural resources since none have been identified within the project area. In the event of an inadvertent discovery of archaeological resources or human remains during site preparation, work would be halted and USAG-Miami would notify the Florida Division of Historical Resources. Work would resume when deemed appropriate. Implementation of procedures for inadvertent discovery of resources would mitigate potential impacts to less than significant.

There would be no indirect impacts to identified cultural resources under the MILCON Alternative, because no resources are known to be present in or near the project area.

3.11.2.2 EUL Alternative

Under the EUL Alternative, impacts to cultural resources would be identical to the MILCON Alternative (Section 3.11.2.1).

3.11.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.11.1 would continue. There would be no impacts to cultural resources under the No Action Alternative.

3.12 Socioeconomic Resources

3.12.1 Affected Environment

3.12.1.1 Economic Development

The largest employment sectors for workers in Miami-Dade County include health care and social assistance, retail trade, and accommodation and food service (Miami-Dade County, 2019a). In 2017, there were 1,775,721 jobs in Miami-Dade County and the average annual wages and salaries were \$54,946 (Bureau of Economic Analysis, 2019). The City of Doral has a labor force of 26,314 people and a 4.5 percent unemployment rate. Doral is one of the fastest growing cities in Florida, with more than 2 million square feet in approved commercial developments, over 9,000 residential units approved, and various mixed-use developments approved (City of Doral, 2019b). More than 150,000 people travel to jobs at businesses in Doral on a daily basis (City of Doral, 2019c).

On the FAA parcel, one person gains economic benefits from grazing cattle on the property.

3.12.1.2 Public Services

The Miami-Dade County Police Department (Station 3) is located adjacent to the southeastern border of the FAA parcel and the Miami-Dade Fire Department is located immediately north of SOUTHCOM, approximately 0.4 mile north of the FAA parcel.

A new 100-bed hospital, José Milton Memorial Hospital, will open at the Jackson West Medical Center in Doral in 2020. The hospital is located approximately 1.3 miles east of the proposed project area and will provide two emergency rooms (one for adults, one for children), diagnostic services, operating rooms, and outpatient facilities (San Juan, 2019).

Doral, Florida is within the Miami-Dade school district. There are a multitude of highly-rated public, private, and charter schools in Doral. In total, there are 23 preschools, 9 elementary schools, 10 middle schools, and 5 high schools. This includes 6 public district schools, 9 public charter schools, and 20 private schools (GreatSchools, 2019).

3.12.1.3 Housing

The City of Doral has a population of over 64,000 residents and has grown 77 percent in the last eight years (City of Doral, 2019c). There are 16,626 households in Doral with an average of 3.38 persons per household. The median gross rent between 2013 and 2017 was \$1,834 and the median value of owner-occupied housing units was \$349,800 (U.S. Census Bureau, 2018a).

No military housing exists on the USAG-Miami cantonment.

3.12.2 Environmental Consequences

3.12.2.1 MILCON Alternative

The MILCON Alternative would have temporary minor to moderate beneficial impacts on economic development. There would be temporary construction employment and associated wages. In addition, local suppliers could experience a short-term increase in demand for construction-related materials. The MILCON Alternative would have minor long-term beneficial impacts on employment in the surrounding area. Housing and maintenance hires would be from the local community and the community center would likely be staffed by one part-time person.

There would be negligible long-term adverse direct economic impacts from the reduction in cattle production on the FAA parcel. The adverse economic impact of this small cattle operation is negligible within the context of the economy of the greater Miami area.

Approximately 600 people would relocate from within the region into the proposed military housing. The residents and their families that would move are already in the region and working at USAG-Miami. There would not be an increase in personnel working at USAG-Miami as a result of the MILCON Alternative.

The MILCON Alternative would have negligible, long-term adverse impacts on public services in Doral, Florida. Miami-Dade County would provide police, fire, and emergency services to the proposed housing development. Fire, police, and emergency services would be provided in the normal service area and would not unduly burden existing police, fire, or emergency services.

The MILCON Alternative would have minor long-term adverse direct impacts on schools in Doral, Florida. Children of military personnel residing within the proposed housing development would likely attend local schools. Some military families already live in Doral and have children who attend Doral schools; therefore, the relocation of these families to the proposed housing development would not impact school attendance in Doral. Any increase in students at schools in Doral because of the MILCON Alternative would be minor and able to be accommodated by the large number of school options in the area.

The MILCON Alternative would have moderate long-term direct beneficial impacts on housing in the local area. As a result of the MILCON Alternative, military personnel would no longer have a need to rent or buy properties in Doral or its surrounding communities. Given the rapid population growth and the projected housing shortage (USAG-Miami, 2018) in the local area, having additional property vacancies would be beneficial to local community seeking housing in the vicinity of Doral. No long-term adverse indirect impacts to the housing market are anticipated from removing military personnel from the pool of property renters and buyers in the area.

Because no immigration of people from outside the region would occur and only one new part-time job would be created, no induced growth from the MILCON Alternative would result.

3.12.2.2 EUL Alternative

The EUL Alternative would have temporary minor to moderate beneficial impacts on economic development as a result of construction activities. There would be temporary construction employment and associated wages. In addition, local suppliers could experience a short-term increase in the demand for construction-related materials. These temporary beneficial impacts on economic development would be greater than the MILCON Alternative due to the additional construction of the mixed-use development.

There would be long-term beneficial impacts on economic development due to the establishment of retail businesses and restaurant in the mixed-use development which would likely attract patrons in from the Miami-Dade County area. While there may be some use by persons from outside the area, it is expected that this use would be incidental by visitors already in the area for other purposes and would not represent a change in the regional economy as nonresidents are unlikely to come to the EUL site specifically for the new development.

Because the metro Miami economy is very large, the EUL Alternative would have long-term minor to moderate beneficial impacts on economic development, which would more than offset the loss of the cattle operation. Housing and maintenance hires would be from the local community, and the community center in the military housing development would likely be staffed by one part-time person from the region. The proposed mixed residential and commercial development in the southern portion of the acquired property would provide space for businesses to rent/buy and would create additional jobs in the local area, but no substantial movement of people from outside the area to staff these businesses would be expected.

There would be negligible long-term adverse economic impacts from the reduction in cattle production on the FAA parcel. The adverse economic impact of this small cattle operation is negligible within the context of the economy of the greater Miami area.

Adverse impacts to public services under the EUL Alternative would be greater than the MILCON due to additional patrons and residents with the larger development, but with the capacity of the area services, the level of impacts of the project would be similar to the MILCON Alternative (Section 3.12.2.1).

Under the EUL Alternative, impacts to housing described under the MILCON Alternative (Section 3.12.2.1) would occur. In addition, the proposed mixed-use development in the southern portion of the acquired property would create additional available residences in Doral, where vacant housing is limited due to population growth. The EUL Alternative would have a greater long-term direct beneficial impact on housing compared with the MILCON Alternative due to the creation of publicly available housing, but the impact would remain moderate.

Because no substantial immigration of people from outside the region would be expected, any induced growth from the EUL Alternative would be negligible.

3.12.2.3 No Action Alternative

Under the No Action Alternative, there would be no change to the existing conditions described in Section 3.12.1. There would be no short-term or long-term beneficial impacts to economic development from the proposed construction or new commercial spaces. Military personnel would continue to live off-installation in community-provided housing and potentially be unable to reach USAG-Miami in the required time during emergencies, which could impact mission readiness. Based on projected available housing units within a 20-mile commute radius and forecasted vacancy rates, there would be a shortfall of 318 homes (172 Family Housing Units and 146 Unaccompanied Housing Units) by 2023 (USAG-Miami, 2018).

3.13 Coastal Zone Management

3.13.1 Affected Environment

The proposed project area is within the designated coastal zone in south Florida. However, the proposed project area is inland from the coastline and separated from the coastline by metropolitan Miami.

3.13.2 Environmental Consequences

3.13.2.1 MILCON Alternative

USAG-Miami has evaluated the MILCON Alternative and found it to be consistent to the extent practicable with the enforceable policies of coastal zone management in Florida. USAG-Miami will submit a Coastal Zone Act Consistency Determination to the FDEP Coastal Management Program through the Florida State Clearinghouse at the same time the public notice is published (Appendix B). The Consistency Determination concludes that the Proposed Action is consistent to the extent practicable with the enforceable provisions of the Florida Coastal Zone Management Program. Statutes addressed as part of the Florida Coastal Zone Management Program consistency review and considered in the analysis of the Proposed Action are discussed in Appendix B. Potential impacts would be long-term and adverse because the proposed action consists of building permanent structures within the coast zone. Any impacts to coastal resources would be negligible because the proposed action remains consistent with the enforceable policies of Florida’s Coastal Zone Management Program (Appendix B).

Under the Proposed Action, there would be no indirect impacts to coastal zone resources addressed through Florida coastal zone management.

3.13.2.2 EUL Alternative

The EUL Alternative would be consistent to the extent practicable with the enforceable policies of coastal zone management in Florida. USAG-Miami will submit a Coastal Zone Act Consistency Determination to the FDEP Coastal Management Program through the Florida State Clearinghouse at the same time the public notice is published (Appendix B). The Consistency Determination concludes that the Proposed Action is consistent to the extent practicable with the enforceable provisions of the Florida Coastal Zone Management Program. Statutes addressed as part of the Florida Coastal Zone Management Program consistency review and considered in the analysis of the Proposed Action are discussed in Appendix B. Any impacts to coastal resources would be comparable to those discussed for the MILCON Alternative (Section 3.13.2.1).

3.13.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.13.1 would continue. There would be no impacts to coastal resources from the Proposed Action.

3.14 Safety and Occupational Health

3.14.1 Affected Environment

The Proposed Action would be implemented in compliance with all applicable federal laws, codes, and regulations and with all applicable laws, ordinances, codes, and regulations of the state of Florida and Miami-Dade County with regard to construction, health, safety, food service, water supply, sanitation, licenses and permits to do business, and all other matters.

The radar antenna on the FAA property will remain in use for the foreseeable future. This type of communications equipment produces radiofrequency (RF) radiation, which is in the electromagnetic frequency ranges of 3 kilohertz to 300 megahertz. FAA assessed the risk from the operation of the radar and established a setback to protect human health. The area immediately around the antenna site, approximately 0.7 acre, is fenced to establish this safety setback and to deter unauthorized entry and accidental exposure to potentially harmful RF

radiation (Figure 3-1). No portion of the MILCON Alternative would be within the RF setback area or within 500 feet of the RF setback area.

FAA personnel who provide maintenance on the antenna, and work within the fenced in area, follow appropriate occupational safety procedures and employ appropriate personal protective equipment when conducting maintenance.

The FAA established additional setbacks at 853 feet, 929 feet, and 1,019 feet, which are to prevent interference with the radar antenna.

3.14.2 Environmental Consequences

3.14.2.1 MILCON Alternative

Under the MILCON Alternative, proposed construction would have the potential for minor, short-term adverse direct impacts to health and safety. This includes the temporary presence of construction vehicles onsite. Appropriate safety plans and Occupational Safety and Health Administration (OSHA) regulations would be followed to limit the risk of accidents.

The human body is most susceptible to absorption of electromagnetic frequencies between 30 and 300 megahertz. Exposure can result in heating of the body and cataract formation in the lens of the eye. (FAA, 2016). To produce adverse health effects, RF exposure above the threshold level must occur. The threshold level is the exposure needed to increase tissue temperature by at least 1 degree Celsius. There is no evidence that exposures to RF fields below threshold levels causes adverse health effects, including cancer (World Health Organization, 2019). On the FAA parcel, the antenna has several standoff setbacks that restrict development by varying degrees. No housing would be constructed within the 853-foot-radius FAA established antenna standoff area to avoid interference with operation of the radar system; however, non-vertical assets such as stormwater retention infrastructure, roads, or parking may be located within this radius. Proposed structures between the 853-foot radius and the 1,019-foot radius would be compliant with FAA requirements for those designated areas and would not interfere with operation of the radar. The FAA maintains posted signs and labels that identify the location of radiation hazards (FAA, 2016) and the antenna site would remain fenced to deter unauthorized entry and subsequent exposure to RF from the antenna (Figure 3-1). No construction would occur within the RF radiation setback area and no housing or activity areas would be placed where exposure to dangerous radiation could occur. Areas around the antenna where dangerous radiation may be encountered are clearly marked and inaccessible to unauthorized personnel. Due to the distance of the proposed housing from the antenna and to the exclusion fencing around the antenna site, no adverse impacts resulting from exposure of construction workers or residents of the housing development to RF radiation associated with the FAA antenna would occur. FAA maintenance workers would continue to follow safety requirements of their job.

The housing development would be surrounded by a fence and construction of the proposed housing development would be confined to the project area; therefore, there would be no indirect impacts to safety and occupational health.

3.14.2.2 EUL Alternative

Under the EUL Alternative, the impacts to safety and occupational health described for the MILCON Alternative (Section 3.14.2.1) would occur. In addition, the construction associated with the mixed-use development would increase the duration and amount of construction. The EUL Alternative would have a greater short-term adverse direct impact on safety and occupational health compared to the MILCON Alternative, not only from a larger development but also the longer construction duration. Impacts to health and safety would still be expected to be minor with implementation of safety plans and OSHA regulations. As with the MILCON Alternative, buildings and infrastructure associated with the mixed-use development would not be placed within the RF radiation setback area and no exposure to dangerous radiation would occur. Due to the distance of the proposed housing and mixed-use development from the antenna and to the exclusion fencing around the antenna site, no adverse

impacts resulting from the exposure of construction workers or tenants/patrons of the mixed-use development to RF radiation associated with the FAA antenna would occur.

3.14.2.3 No Action Alternative

Under the No Action Alternative, no construction would occur. Existing conditions described in Section 3.14.1 would continue. There would be no impacts to safety and occupational health from the Proposed Action.

3.15 Hazardous Materials

3.15.1 Affected Environment

The FAA parcel was assessed for hazardous materials and potential contamination and an Environmental Condition of Property (ECP) report was prepared (CH2M, 2017). Hazardous materials identified on the FAA property included a 1,000-gallon diesel tank, self-contained emergency generator, batteries, and buildings constructed before 1978 that may contain asbestos containing material and lead-based paint. No other hazardous materials or environmental conditions were identified on the FAA property (CH2M, 2017).

3.15.2 Environmental Consequences

3.15.2.1 MILCON Alternative

The MILCON Alternative would result in short-term negligible adverse direct impacts on hazardous materials and petroleum products from construction activities. Construction would require the use of hazardous materials such as gasoline, oils, coolant, and lubricants commonly used by construction equipment, paints, welding gases, solvents, preservatives, and sealants.

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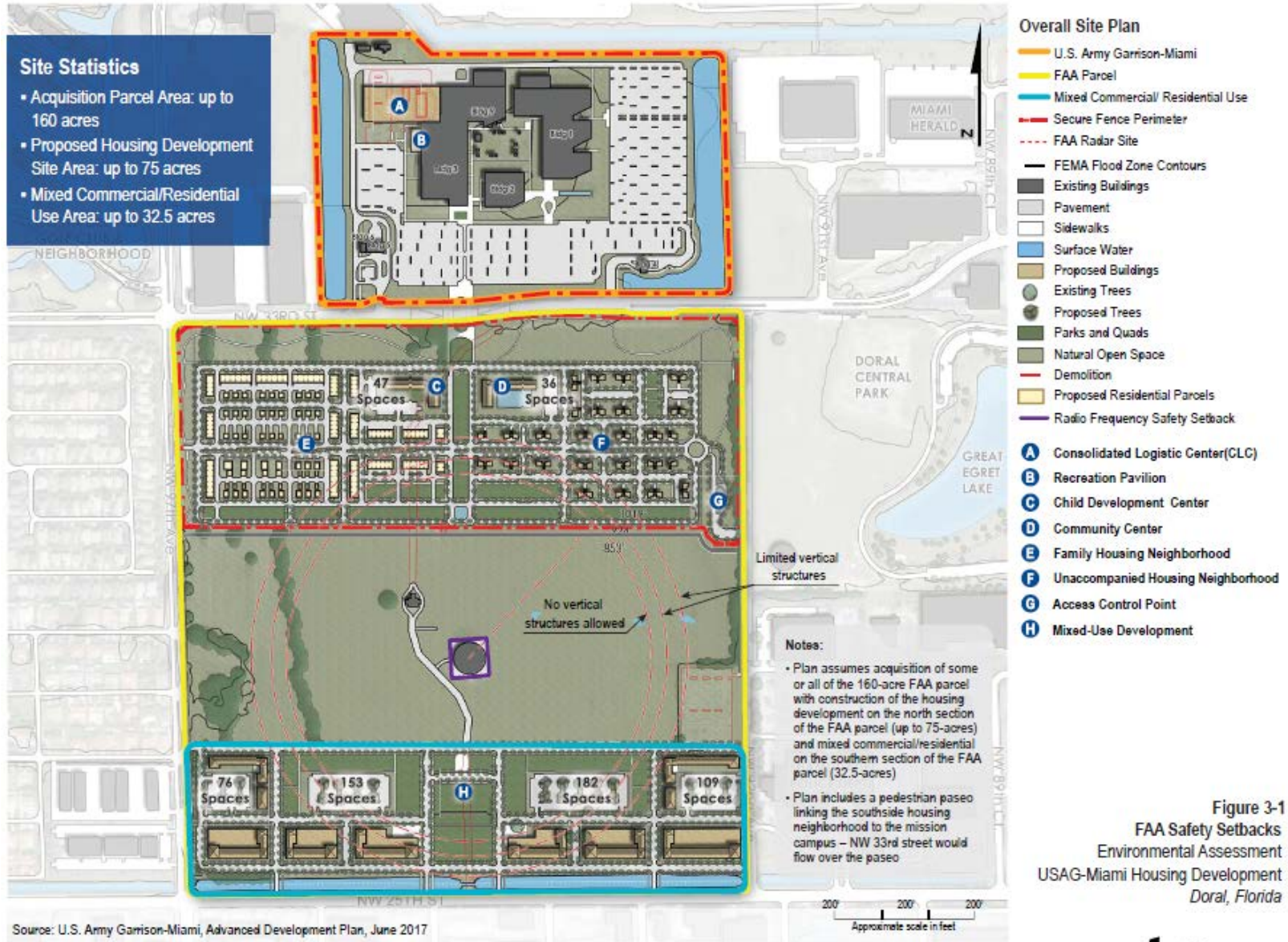


Figure 3-1
FAA Safety Setbacks
Environmental Assessment
USAG-Miami Housing Development
Doral, Florida

Source: U.S. Army Garrison-Miami, Advanced Development Plan, June 2017

GES0917191342ATL • Figure 2-3_FAA Safety Setbacks



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Equipment servicing and repair activities could temporarily generate oily and hazardous wastes, such as spent solvents, residual fuels, used oils, used batteries, antifreeze, and filters. Construction activities would be conducted consistent with hazardous waste and pollution use and storage regulations, with guidelines specified in a Stormwater Pollution Prevention Plan (SWPPP). It is anticipated that the quantity of hazardous materials used during construction activities would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials, which would be handled in accordance with federal and state regulations. BMPs documented in an SWPPP and/or a project-specific site construction safety plan would be followed to avoid significant risks or health hazards associated with the use of hazardous materials and hazardous waste generation and disposal. Short-term adverse direct effects from the use of hazardous and toxic substances during construction would be negligible with the use of BMPs. There would be negligible short-term adverse indirect impacts on hazardous materials with the use of BMPs and the SWPPP. Implementation of the MILCON Alternative would not impact any of the hazardous materials or buildings identified on the FAA parcel by the ECP report (CH2M, 2017). These buildings and materials would be within the secure FAA area and would be inaccessible to unauthorized personnel.

3.15.2.2 EUL Alternative

Under the EUL Alternative, the types of impacts to hazardous materials described for the MILCON Alternative (Section 3.15.2.1) would occur over a larger area, 107.5 acres. In addition, the construction associated with the mixed-use development would increase the amount of hazardous materials and petroleum products used. The EUL Alternative would have a greater impact to hazardous materials compared to the MILCON Alternative, not only from a larger development but also the longer construction duration. However, with proper management and implementation of BMPs documented in an SWPPP and/or a project-specific site construction safety plan, adverse direct and indirect impacts on hazardous materials would be short-term and negligible.

3.15.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.15.1 would continue. There would be no impacts to hazardous materials from the Proposed Action.

3.16 Traffic and Transportation

3.16.1 Affected Environment

The City of Doral has created a Traffic Relief Management Plan to help alleviate high levels of congestion on its major roads (City of Doral, 2019d). Efforts to improve traffic flow include updating traffic signal timing, monitoring traffic conditions in real-time to be able to recommend additional traffic signal updates, and evaluating improvements to provide additional capacity at signalized intersections.

The 160-acre parcel is bounded by NW 33rd Street on the north, NW 92nd Avenue on the east, NW 25th Street on the south, and NW 97th Avenue on the west (Figure 1-1). These are all paved, four-lane roads (two lanes in each direction) with turn lanes. There are traffic lights at the intersections of NW 33rd Street and NW 97th Avenue and at the intersections of NW 25th Street and NW 97th Avenue. There are stop signs at the other two intersections. There are public bus stops along NW 97th Avenue and NW 25th Street and sidewalks along both sides of all four roads except the western side of NW 92nd Avenue and the northern side of NW 25th Street. Average Annual Daily Traffic in 2018 was 12,800 in both directions along NW 33rd Street, 19,900 in both directions along NW 97th Avenue, and 33,500 in both directions along NW 25th Street (FDOT, 2019). Data for NW 92nd Avenue was not available.

3.16.2 Environmental Consequences

3.16.2.1 MILCON Alternative

Under the MILCON Alternative, there would be a short-term moderate adverse direct impact on traffic during construction of the connector road between the housing development and the SOUTHCOM headquarters. During

this time, a portion of NW 33rd Street would need to be closed and detours around the construction area would be required. To the extent practicable, a single lane of traffic and a team to direct traffic would be provided to limit the impacts to local traffic. The construction contractor would obtain the necessary permits required to complete the connector road and the elevation of NW 33rd Street.

There would be short-term minor adverse direct impacts on traffic from an increase in construction and personal vehicles along local roads during construction of the housing development. Fill would be brought to the parcel via dump trucks. This would add to local traffic during the early stages of the site development. Heavy equipment, such as graders and pavers, would be stored on the 160-acre parcel while being used, rather than being brought in daily.

The increase in construction-related traffic generated by the proposed project and construction of the pedestrian walkway beneath NW 33rd Street could have a minor short-term adverse direct impact on emergency vehicle response times.

Under the MILCON Alternative, there would be long-term minor adverse direct impacts on local traffic from an increase in personal vehicle use by residents of the new housing development. Traffic between the housing development and SOUTHCOR headquarters would follow the connector road under NW 33rd Street and would not impact local traffic. There would be a negligible long-term beneficial impact to regional traffic because SOUTHCOR personnel would not need to commute through local roads to work.

3.16.2.2 EUL Alternative

Under the EUL Alternative, the types of impacts to traffic and transportation described for the MILCON Alternative (Section 3.16.2.1) would occur for a larger area, 107.5 acres. The EUL Alternative would have a greater adverse impact on traffic and transportation compared to the MILCON Alternative. There would also be additional impacts from construction and operation of the mixed-use development and the longer construction duration. Heavy equipment, such as graders and pavers, would be stored on the site while being used, rather than being brought in daily. No lane closures or other disruptions to circulation patterns would be required for construction. No activities that would create traffic hazards are anticipated. Adverse traffic impacts from the construction of the mixed-use development would be short-term, direct and minor.

Under EUL Alternative, there could be long-term minor adverse direct impacts on traffic from an increase in vehicles on local roads from the use of the new mixed-use development by residents and patrons of the businesses, but there also could be a long-term beneficial direct impact on regional roads as services are provided closer to where people live, which would reduce overall traffic.

3.16.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.16.1 would continue. There would be no impacts to traffic or transportation from the Proposed Action.

3.17 Recreation

3.17.1 Affected Environment

There are no recreational facilities on the 160-acre parcel. The 82-acre Doral Central Park is east of the northern portion of the 160-acre parcel across NW 92nd Avenue. The park includes a walking and jogging trail, an exercise station, grills, and picnic benches (City of Doral, 2019e). The Beacon Trail is a 1.2-mile asphalt trail within the canal easement along the northern side of NW 25th Street between NW 97th Avenue and NW 107th Avenue (Rails to Trails, 2019).

The City of Doral prepared a Bicycle Network Plan in 2015 which shows the full proposed route of the Beacon Trail running from State Route 821 along the northern side of NW 25th Street (and along the southern portion of the 162-acre parcel) to State Route 826 Palmetto Expressway (Kimley-Horn and Associates, 2015). The City of Doral Parks System Master Plan recommends linking the Doral Central Park with the Beacon Trail by connecting the two

south along NW 92nd Avenue to NW 25th Street (Browning Day, Mullins, Dierdorf, 2018). The City of Doral Parks System Master Plan also recommends adding a bicycle and walking path along NW 33rd Street west of Doral Central Park as a pilot project for the City’s connectivity vision (Browning Day, Mullins, Dierdorf, 2018).

3.17.2 Environmental Consequences

3.17.2.1 MILCON Alternative

Under the MILCON Alternative, there would be no direct impacts to recreation because there are no recreational facilities on the parcel. Entry and exits from the housing development would not interfere with access to the Doral Central Park because access to the park is from NW 87th Avenue, east of the park. The construction contractor would coordinate with the City of Doral during the planning and construction phases to avoid or minimize scheduling and other impacts to any planned recreation-related construction projects ongoing in the area.

Under the MILCON Alternative, there could be negligible long-term indirect adverse impacts to recreation from the increased use of Doral Central Park by new local residents from housing construction. The proposed construction would not prohibit the future expansion of the Beacon Trail as proposed in the 2015 Bicycle Network Plan (Kimley-Horn and Associates, 2015). The Beacon Trail expansion could still be constructed within the canal easement.

3.17.2.2 EUL Alternative

Under the EUL Alternative, there would be no direct impacts to recreation because there are no recreational facilities on the parcel.

Under the EUL Alternative, the types of impacts to recreation described for the MILCON Alternative (Section 3.17.2.1) would occur over a larger area, 107.5 acres. In addition, there could be long-term minor indirect adverse impacts to recreation from the increased use of Doral Central Park by new residents moving into housing constructed under the EUL. The EUL Alternative would have a greater indirect impact on recreation compared to the MILCON Alternative, from the larger development, more residents, and persons from outside the area patronizing the commercial development. With increased use of the recreation system, impacts are anticipated to be minor. The proposed construction would not prohibit the future expansion of the Beacon Trail as proposed in the 2015 Bicycle Network Plan (Kimley-Horn and Associates, 2015). The Beacon Trail expansion could still be constructed within the canal easement.

3.17.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.17.1 would continue. There would be no impacts to recreation from the Proposed Action.

3.18 Utilities

3.18.1 Affected Environment

3.18.1.1 Potable Water

The Biscayne aquifer is the primary drinking water source for Miami-Dade County and, therefore, the subject property. The Biscayne aquifer supplies water to more than 5 million residents in Miami-Dade, Broward, and southern Palm Beach counties and is the most intensely used water source in Florida (SFWMD, 2019). Miami-Dade WASD supplies potable drinking water to the area through county supply lines. The only active water lines are present in the far northeastern portion of the FAA property at the Florida National Guard facility and in the central portion of the property, providing water to the Miami-Dade Fire Rescue Department building (CH2M, 2017).

3.18.1.2 Wastewater System

Wastewater treatment and disposal for the FAA parcel is provided by Miami-Dade WASD. The Miami-Dade WASD-operated South District Wastewater Treatment Plant treats wastewater from the FAA property (CH2M, 2017).

3.18.1.3 Stormwater

The City of Doral receives stormwater from heavy rainfall, tropical storms, and hurricanes. Three secondary canals are located within the city and they are operated and maintained by Miami-Dade County and the South Florida Water Management District. The purpose of maintaining the canals is to avoid flooding events (CH2M, 2017).

The North Line Canal is located south of and adjacent to the subject property and runs along NW 25th street from State Route 826 to the Florida Turnpike. The subject property lies within a FEMA-defined Special Flood Hazard Area (FEMA, 2009). Because the subject property is adjacent to a canal and within a Special Flood Hazard Area, strong storm events have the potential to exceed the designs of the canals (CH2M, 2017).

3.18.1.4 Energy Sources

Electric service is provided by Florida Power and Light. Natural gas is provided by Florida City Gas and TECO Peoples Gas (Potomac-Hudson Engineering, 2006).

3.18.1.5 Solid Waste

Solid waste in Doral, Florida is currently handled by several franchised, private haulers. In addition, the Miami-Dade County Solid Waste Management has neighborhood trash and recycling centers for self-disposal of waste (City of Doral, 2019f). Two landfills, North Dade Landfill and South Dade Landfill, are available in Miami-Dade County for permitted private haulers, municipal waste haulers, and permitted landscapers. The North Dade Landfill has two cells, with only one currently accepting trash. Disposal capacity at the North Dade Landfill is anticipated to last through 2020. The South Dade Landfill has five cells, three of which have been filled and closed. The fourth cell is active, and construction of the fifth cell is underway (Miami-Dade County, 2019b).

3.18.2 Environmental Consequences

3.18.2.1 MILCON Alternative

Short-term minor direct adverse impacts on utilities would be expected from the MILCON Alternative during construction. Short-term interruptions could occur when buildings are disconnected from or connected to utilities. Interruptions in services would be coordinated with area users prior to disconnection, to the extent practicable. Existing utilities in and near the construction footprint would be identified in advance of construction to limit impacts.

Long-term negligible to minor direct adverse impacts on utility systems would be expected from the MILCON Alternative because the demand for utility services from the new housing units and associated facilities would be relocated from within the region and not a new demand. New buildings would require expansion of existing utility delivery to provide service, but there would be no change in infrastructure capacity. New housing would be energy efficient and would likely require less energy than the housing currently accommodating personnel. Energy supply, water supply, and wastewater treatment capacity are sufficient to accommodate the increased demand resulting from the new structures.

A stormwater permit from the SFWMD would be obtained prior to construction activities. With implementation of construction stormwater controls, the increase in stormwater discharge during construction would be minimized. Further, because appropriate post-construction stormwater controls would be included in the design, any increase in stormwater discharge resulting from operation of the MILCON Alternative would be limited to events that exceed the design storm for the post-construction stormwater controls. These increases in stormwater runoff would not exceed the capacity of the local stormwater conveyance system and any adverse indirect impacts on the stormwater system would be short-term and negligible.

The MILCON Alternative would result in a short-term minor adverse direct impact to solid waste from an increase in construction debris. Solid waste generated from the proposed construction activities would consist of building materials such as solid pieces of concrete, metals, and lumber. Contractors would be required to recycle construction debris to the maximum extent practicable in accordance with installation policy, thereby diverting it from landfills.

The MILCON Alternative would result in a long-term minor adverse direct effect to solid waste by permanently using landfill capacity for the disposal of nonrecyclable construction debris. Solid waste generated by occupants of the housing development would not change the future quantity of solid waste generated compared to existing levels. Residents of the housing development would be relocating from within the County where they are already using solid waste disposal and landfill resources.

Under the MILCON Alternative, utility use by permanent residents in military housing would result in negligible indirect adverse impacts on local utilities from an increase in demand because the demand would just be relocated from within the region.

3.18.2.2 EUL Alternative

Under the EUL Alternative, impacts to utilities described under the MILCON Alternative (Section 3.18.2.1) would occur. In addition, there would be additional demand related to the EUL development. Compared to the MILCON Alternative, there would be minor long-term increases in utility demand and waste disposal due to the proposed mixed residential and commercial development that would be constructed in the southern portion of the acquired parcel. However, the capacity of supply systems and regional facilities would be sufficient to accommodate this increase and overall adverse direct impacts would be negligible considering these resources serve approximately 2.8 million people in Miami-Dade County (U.S. Census Bureau, 2018b). There could also be an increase in utility outages associated with connecting new buildings to supply systems resulting in a short-term minor adverse direct impact.

3.18.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.18.1 would continue. There would be no impacts to utility infrastructure or service from the Proposed Action.

3.19 Visual Resources

3.19.1 Affected Environment

The parcel is an open grassy field with an FAA radar and associated vacant buildings in the center. An access road runs from NW 25th Street to the center of the parcel. Several rows of trees run north to south on the western side of the parcel. The site is used as a cow pasture and includes several sheds and farm equipment. There are barbed wire fences across the site to keep the cows out of the radar area. Existing development surrounds the parcel with the exception of Doral Central Park to the east of the parcel.

3.19.2 Environmental Consequences

3.19.2.1 MILCON Alternative

The MILCON Alternative would result in moderate, short-term adverse direct impacts to visual resources during construction. Adverse impacts to visual resources could occur from stockpiles of materials, construction vehicles onsite, and partially constructed buildings. These impacts would be temporary and would end after completion of the construction activities.

The MILCON Alternative would result in moderate, long-term adverse direct impacts to visual resources because of the changes associated with an undeveloped area becoming a developed site. After construction, the views into the site on the north would be of a residential area consistent with the area west of the parcel.

3.19.2.2 EUL Alternative

Under the EUL Alternative, the impacts to visual resources described for the MILCON Alternative (Section 3.19.2.1) would occur in addition to adverse impacts from construction and operation of the mixed-use development. Short-term moderate adverse direct impacts to visual resources on the southern portion of the site would be similar to those on the northern portion of the parcel.

The EUL Alternative would result in moderate, long-term adverse direct impacts to visual resources because of the changes associated with an undeveloped area becoming a developed site. After construction, the views into the site on the north would be of a residential area consistent with the area west of the parcel and views into the site on the south would be of a retail area consistent with the area south of the site across NW 25th Street.

3.19.2.3 No Action Alternative

Under the No Action Alternative, no development would occur. Existing conditions described in Section 3.19.1 would continue. There would be no impacts to visual resources from the Proposed Action.

Cumulative Impacts

4.1 Introduction

As defined in 40 CFR 1508.7 (CEQ Regulations), a cumulative effect is the “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.” Principles of cumulative effects analysis are described in the CEQ guide, *Considering Cumulative Effects under the National Environmental Policy Act*. CEQ guidance on cumulative impacts analysis states:

For cumulative effects analysis to help the decision-maker and inform interested parties, it must be limited through scoping to effects that can be evaluated meaningfully. The boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly or the effects are no longer of interest to affected parties. (CEQ, 1997)

This section addresses the potential for cumulative impacts resulting from interaction of the Proposed Action with other past, present, and reasonably foreseeable actions occurring at USAG-Miami and in the surrounding community.

4.1.1 Projects Identified with the Potential for Cumulative Effects

Projects identified with potential for cumulative effects with the Proposed Action include the following:

- *Development of Doral Central Park* (estimated FY 2020) – construction and operation of a 75,000-plus square-foot indoor recreation center, outdoor aquatics complex, large parking structure, waterfront promenade and event pavilion, playgrounds, multi-use sports and athletic fields, and other features at Doral Central Park. Doral Central Park is located immediately east of the proposed project area.
- *Doral Cultural Arts Center* (estimated FY 2020) – construction and operation of a large art gallery space with associated indoor and outdoor facilities at Downtown Doral Park. Downtown Doral Park is approximately 1.4 miles northeast of the proposed project area.
- *Jackson West Medical Center* (FY 2019-2020) – construction and operation of a 275,000-square-foot facility that will include a 100-bed hospital (José Milton Memorial Hospital). The Jackson West Medical Center is approximately 1.3 miles east of the proposed project area.
- *Bicycle/Pedestrian Walkway across Doral Boulevard* (FY 2021–2022) – construction of a pedestrian/wildlife overpass.

4.2 Land Use

4.2.1 MILCON Alternative

There is a limited amount of open space in the vicinity of the proposed project area. Under the MILCON Alternative, developing the FAA parcel would result in a loss of open space and pasture available for grazing but would be consistent with the existing land use. In combination with the development of the adjacent Doral Central Park, the MILCON Alternative would have a moderate cumulative impact on loss of open space in the local area. No other known development would affect grazing in the local area. There would be moderate cumulative impacts on pasture in the local area under the MILCON Alternative.

4.2.2 EUL Alternative

Under the EUL Alternative, the amount of converted pastureland would be greater than for the MILCON Alternative (Section 4.2.1) due to the greater loss of open space from the development of the southern portion of the parcel. Because of the small total area involved, cumulative impacts on loss of open space in the local area would be moderate and there would be moderate cumulative impacts on pasture under the EUL Alternative.

4.2.3 No Action Alternative

Under the No Action Alternative, open space and available pasture would remain. There would be no cumulative impacts to soils associated with projects identified in Section 4.1.1.

4.3 Soils

4.3.1 MILCON Alternative

Moderate soil disturbance would result from construction and clearing activities of up to 75 acres associated with the MILCON Alternative. Increased erosion following soil disturbance from grading and excavation to support construction could contribute to cumulative impacts to soils when combined with potential impacts from other local projects that may be implemented. Such impacts are expected to be less than significant because these projects are localized and because project development would be expected to comply with Miami-Dade County requirements for stormwater control and implementation of BMPs.

4.3.2 EUL Alternative

Under the EUL Alternative, the cumulative impacts to soils described for the MILCON Alternative (Section 4.3.1) would occur. In addition, there would be cumulative impacts to soils from construction of the mixed-use development. Overall, cumulative impacts to soils are expected to be less than significant, because project development would be expected to comply with Miami-Dade County requirements for stormwater control and implementation of BMPs.

4.3.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to soils associated with projects identified in Section 4.1.1.

4.4 Groundwater

4.4.1 MILCON Alternative

Implementation of the MILCON Alternative would have a negligible impact on groundwater with the implementation of BMPs. The Biscayne aquifer that underlies the project area provides drinking water for over 5 million people across multiple counties in southeastern Florida. The impacts on aquifer recharge from an increase in impervious surface area from development of the MILCON Alternative are small compared to the size of this aquifer, 50 acres versus 4,000 square miles. Less than significant cumulative impacts to groundwater would be anticipated from interaction of the MILCON Alternative with other past, present, and reasonably foreseeable projects.

4.4.2 EUL Alternative

Under the EUL Alternative, the cumulative impacts to groundwater described for the MILCON Alternative (Section 4.4.1) would occur. While there would be additional construction associated with the mixed-use development, the intensity of cumulative impacts to groundwater from the EUL Alternative would be slightly greater than those described for the MILCON Alternative (Section 4.4.1), approximately 82 acres versus 4,000 square miles. Less than

significant cumulative impacts to groundwater would be anticipated from interaction of the EUL Alternative with other past, present, and reasonably foreseeable projects.

4.4.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to groundwater associated with projects identified in Section 4.1.1.

4.5 Surface Water

4.5.1 MILCON Alternative

The MILCON Alternative would not encroach upon any surface waters. Impacts from site runoff could interact with other projects; however, appropriate BMPs would be used to minimize site runoff from reaching nearby surface waters. Less than significant cumulative impacts to surface waters from interaction of the MILCON Alternative with other past, present, and reasonably foreseeable projects would likely occur.

4.5.2 EUL Alternative

Under the EUL Alternative, the cumulative impacts to surface water described for the MILCON Alternative (Section 4.5.1) would occur. While there would be additional construction associated with the mixed-use development, the intensity of cumulative impacts to surface water from the EUL Alternative would be slightly greater to those described for the MILCON Alternative (Section 4.5.1) with implementation of BMPs.

4.5.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to surface water associated with projects identified in Section 4.1.1.

4.6 Water Quality

4.6.1 MILCON Alternative

Appropriate BMPs would be implemented to minimize sedimentation and stormwater runoff. Post-construction stormwater management features would be constructed to minimize an increase in stormwater runoff once the housing is built. No cumulative impacts to water quality from interaction of the MILCON Alternative with other past, present, and reasonably foreseeable projects would likely occur.

4.6.2 EUL Alternative

Under the EUL Alternative, there would be additional construction associated with the mixed-use development; however, cumulative impacts to water quality would still be comparable to the MILCON Alternative (Section 4.6.1) with implementation of BMPs and stormwater controls.

4.6.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There could be minor cumulative impacts to surface water quality from the interaction of site runoff from the development of Doral Central Park and organic loading associated with cattle grazing on the FAA parcel.

4.7 Flood Hazards

4.7.1 MILCON Alternative

Impacts to the flood hazard area from the MILCON Alternative would be limited to the project area. In this area, flooding typically results from surge associated with storm events and not overbank events. The area does not appreciably function for flood storage or flood conveyance and would not interact with other developments to increase flood risk. Increased impervious surfaces associated with development have the potential to affect flooding rates. The increase in impervious surface under this alternative would have a less than significant indirect effect on flood hazard area because the stormwater controls would minimize runoff increase. In addition, the EUL project area, which is greater than the MILCON Alternative, would be less than 0.1 percent of the surrounding area and would result in less than 0.01 inch in rise of floodwater in the region. Projects identified in Section 4.1.1 would also be required to comply with stormwater regulations. Therefore, minor cumulative impacts to the flood hazard area from interaction of the MILCON Alternative with other past, present, and reasonably foreseeable projects would occur.

4.7.2 EUL Alternative

Under the EUL Alternative, the cumulative impacts to the flood hazard area described for the MILCON Alternative (Section 4.7.1) would occur. While there would be additional construction associated with the mixed-use development, the intensity of cumulative impacts to the flood hazard area from the EUL Alternative would be slightly greater than those described for the MILCON Alternative (Section 4.7.1) with implementation of BMPs.

4.7.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to the flood hazard area associated with projects identified in Section 4.1.1.

4.8 Air Quality

4.8.1 MILCON Alternative

Air quality impacts associated with construction of the MILCON Alternative would be minor and temporary. There could be incremental additions of dust from land disturbance associated with implementing the MILCON Alternative and unrelated planned or potential projects. Appropriate BMPs, as described in Section 3.8.3.1, would be implemented to minimize dust generation, as appropriate. There also would be minor short-term localized increases in combustion engine emissions from equipment operation during construction, but these would not be expected to result in exceedances of air quality standards and cumulative impacts on air quality are expected to be less than significant.

4.8.2 EUL Alternative

Under the EUL Alternative, the cumulative impacts to air quality described for the MILCON Alternative (Section 4.8.1) would occur. There would be a minor increase in cumulative effects to air quality from the additional construction and operation of the mixed-use development compared to the MILCON Alternative. However, with implementation of BMPs, these would not be expected to result in exceedances of air quality standards and cumulative impacts on air quality are expected to be less than significant.

4.8.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to air quality associated with projects identified in Section 4.1.1.

4.9 Noise

4.9.1 MILCON Alternative

The MILCON Alternative could result in moderate cumulative effects to construction-related noise in the local area when added to other planned projects in the area. After construction of the proposed housing development is complete, construction noise would cease and noise from the parcel would be consistent with noise from adjacent parcels. No significant cumulative impacts to noise are expected.

4.9.2 EUL Alternative

Under the EUL Alternative, the cumulative impacts to noise described for the MILCON Alternative (Section 4.9.1) would occur. There would be a minor increase in noise associated with construction of the mixed-use development. However, the cumulative noise levels would still be less than significant, especially when considering that construction of the projects identified in Section 4.1.1 may not occur simultaneously with construction of the EUL Alternative and that not all projects are close enough for noise effects to combine.

4.9.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to noise associated with projects identified in Section 4.1.1.

4.10 Biological Resources

4.10.1 MILCON Alternative

The proposed project area is surrounded by urban development and contains low-quality habitat for wildlife. Special-status wildlife species are not known to occur within the proposed project area. Minor cumulative impacts to wildlife would result from interaction of the MILCON Alternative with other past, present, and reasonably foreseeable projects.

Minor impacts to vegetation would result from clearing and grading associated with construction of the MILCON Alternative. Special-status or rare plant species are not known to occur within the proposed project area and negligible cumulative impacts to vegetation would result from interaction of the MILCON Alternative with other past, present, and reasonably foreseeable projects.

4.10.2 EUL Alternative

Under the EUL Alternative, the cumulative impacts to biological resources described for the MILCON Alternative (Section 4.10.1) would occur. There would be an increase in the size and duration of construction compared to the MILCON Alternative from the mixed-use development. However, cumulative effects to biological resources are still expected to be less than significant (Section 4.10.1).

4.10.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to biological resources associated with projects identified in Section 4.1.1.

4.11 Cultural Resources

4.11.1 MILCON Alternative

No cultural resources would be impacted by the project because none are present. Therefore, no cumulative impacts to cultural resources would be anticipated from interaction effects of the MILCON Alternative with other past, present, and reasonably foreseeable projects.

4.11.2 EUL Alternative

Under the EUL Alternative, cumulative impacts to cultural resources would be identical to the MILCON Alternative (Section 4.11.1).

4.11.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to cultural resources associated with projects identified in Section 4.1.1.

4.12 Socioeconomic Resources

4.12.1 MILCON Alternative

The MILCON Alternative would result in minor to moderate beneficial cumulative effects to economic development in the region. Cumulative benefits would derive from construction employment and associated wages and increased sales of construction-related materials. In the event multiple construction projects are occurring simultaneously in the area, the MILCON Alternative would contribute to adverse cumulative effects on emergency vehicle response times. Minor adverse impacts on emergency vehicle response times would end with construction and therefore be less than significant. There would be minor adverse cumulative impacts to schools and housing and moderate cumulative effects to cattle grazing in the local area from the interaction of the MILCON Alternative with projects identified in Section 4.1.1.

With both positive and negative cumulative effects, the net cumulative effect to socioeconomic resources would be minor and adverse.

4.12.2 EUL Alternative

Under the EUL Alternative, the cumulative impacts to socioeconomic resources described for the MILCON Alternative (Section 4.12.1) would occur. In addition, due to the construction and operation of the mixed-used development, cumulative impacts to socioeconomic resources would be greater than for the MILCON Alternative (Section 4.12.1). The net cumulative effect on socioeconomic resources for the EUL Alternative would be minor and beneficial due to the greater benefit of the mixed-use development.

4.12.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to socioeconomic resources associated with projects identified in Section 4.1.1.

4.13 Coastal Zone Management

4.13.1 MILCON Alternative

Per the Coastal Zone Act Consistency Determination prepared for this project (Appendix B) under the MILCON Alternative, impacts to coastal zone resources would be no more than negligible. Because there would be no

offsite effects and because there would be no loss of coastal resources, any cumulative impacts to coastal zone management from interaction with other past, present, and reasonably foreseeable projects would be negligible.

4.13.2 EUL Alternative

Under the EUL Alternative, cumulative impacts to coastal zone resources would be comparable to the MILCON Alternative (Section 4.13.1).

4.13.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to coastal zone management associated with projects identified in Section 4.1.1.

4.14 Safety and Occupational Health

4.14.1 MILCON Alternative

The MILCON Alternative would result in short-term construction hazards to construction workers that would be addressed through construction safety plans. There would be no adverse effects from exposure to RF radiation. Minor cumulative impacts to safety and occupational health would result from interaction of the MILCON Alternative with other past, present, and reasonably foreseeable projects.

4.14.2 EUL Alternative

Under the EUL Alternative, impacts to safety and occupational health would be comparable to the MILCON Alternative (Section 4.14.1). As with the MILCON Alternative, minor cumulative impacts to safety and occupational health would be expected.

4.14.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to safety and occupational health associated with projects identified in Section 4.1.1.

4.15 Hazardous Materials

4.15.1 MILCON Alternative

Construction and demolition projects could have the potential for an incremental increase in generation of hazardous wastes. With proper handling and disposal of hazardous materials, the potential for cumulative impacts to hazardous materials resulting from interaction of the MILCON Alternative with other past, present, and reasonably foreseeable projects would be negligible.

4.15.2 EUL Alternative

Under the EUL Alternative, the cumulative impacts to hazardous materials described for the MILCON Alternative (Section 4.15.1) would occur. There would be slightly more hazardous waste generated compared to the MILCON Alternative from construction of the mixed-use development. However, with proper disposal and handling of hazardous materials, cumulative effects to hazardous materials would be negligible.

4.15.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to hazardous materials associated with projects identified in Section 4.1.1.

4.16 Traffic and Transportation

4.16.1 MILCON Alternative

The MILCON Alternative could result in cumulative effects to construction-related traffic on or around the parcel if multiple construction projects were to occur at the same time. There could also be cumulative adverse impacts on local traffic if construction hours overlap with rush hour. These impacts would not be significant because most heavy equipment would be stored onsite during construction, and related traffic would end once construction is complete.

The MILCON Alternative could result in minor cumulative effects to local traffic from an increase in personal vehicle use by residents of the new housing development. However, traffic between the housing development and SOUTHCOM headquarters would follow the connector road under NW 33rd Street and would not contribute to local traffic.

4.16.2 EUL Alternative

Under the EUL Alternative, the cumulative effects to traffic described for the MILCON Alternative (Section 4.16.1) would occur. The EUL Alternative could also result in long-term, minor to moderate cumulative effects to traffic on and around the parcel from the residents and visitors of the mixed-use development. Efforts by the City of Doral to ease traffic congestion, as specified in the Traffic Relief Management Plan (City of Doral, 2019d), would help to minimize the traffic impacts. No significant cumulative impacts to traffic and transportation are expected.

4.16.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to traffic associated with projects identified in Section 4.1.1.

4.17 Recreation

4.17.1 MILCON Alternative

The MILCON Alternative could have impacts to recreation from the increased use of Doral Central Park by new local residents and guests associated with the proposed newly constructed military housing units. Minor cumulative impacts could occur if there is an increase in persons who move into the area and use the new Doral Central Park facilities or if visitors to the Jackson West Medical Center or the Doral Cultural Arts Center also use the Doral Central Park facilities.

4.17.2 EUL Alternative

Under the EUL Alternative, cumulative impacts to recreation described for the MILCON Alternative (Section 4.17.1) would occur. Cumulative impacts to recreation may be higher compared to the MILCON Alternative (Section 4.17.1) from additional residents of the mixed-use development; however, cumulative impacts would still be less than significant.

4.17.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to recreation associated with projects identified in Section 4.1.1.

4.18 Utilities

4.18.1 MILCON Alternative

The incremental impact of the MILCON Alternative when combined with other past, present, and reasonably foreseeable projects would increase the demand on local utilities. The housing units currently occupied by USAG-Miami personnel would become available on the market and some of these units likely would be occupied by people within the region. It is unlikely that people from outside the region would relocate to the region because of the availability of this housing, but rather would take advantage of the available housing market upon moving to the region. Because residents associated with military housing would be relocated from within the region and would not represent a new demand on utility services, cumulative effects to utilities would be minor. The increased demand from the Proposed Action combined with the demand from the Jackson West Medical Center and the other actions identified in Section 4.1.1 would have a potential moderate adverse cumulative impact on utilities; however, the increase in utility demand would be within the regional capacity.

4.18.2 EUL Alternative

Under the EUL Alternative, the cumulative impacts to utilities described for the MILCON Alternative (Section 4.18.1) would occur. There would be additional demand on local utilities associated with the mixed-use development that would interact with other past, present, and reasonably foreseeable projects. The increased demand would have a less than significant cumulative impact on utilities because the increase in utility demand would be within the regional capacity.

4.18.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to utilities associated with projects identified in Section 4.1.1.

4.19 Visual Resources

4.19.1 MILCON Alternative

When considered cumulatively, impacts to visual resources from the construction of the proposed housing development and other planned projects would be moderate but less than significant. The view from outside the parcel would change from open space to new buildings. However, the views would be consistent with the existing views of the surrounding area. Therefore, no significant cumulative impacts to visual resources are expected.

4.19.2 EUL Alternative

Under the EUL Alternative, the cumulative impacts to visual resources described for the MILCON Alternative (Section 4.19.1) would occur. In addition, there would be a greater loss of open space from the development of the southern portion of the FAA parcel; however, views would still be consistent with the existing views of the surrounding area and no significant cumulative impacts to visual resources are expected.

4.19.3 No Action Alternative

Under the No Action Alternative, existing conditions would continue. There would be no cumulative impacts to visual resources associated with projects identified in Section 4.1.1.

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List of Preparers

Table 6-1. List of Preparers*Construction of a Military Housing Development for USAG-Miami, Doral, Florida*

Name	Degree(s)	Years of Work Experience
Ursula Rogers	B.S. Biology	13
Laura Haught	B.S. Biology	21
Betsy Jorgensen	B.S. Biology	15
Rich Reaves	Ph.D. Wetland and Wildlife Ecology	25
Caitlin Santinelli	B.S. Earth and Atmospheric Sciences	8

SECTION 7

Distribution List

Florida State Clearing House

Miami-Dade Public Library – Doral Branch

SECTION 8

Persons Consulted

Mr. Matthew Fortunato
U.S. Army Garrison - Miami

Ms. Jenny Lechuga
U.S. Army Environmental Command

Appendix A
Government Correspondence

*State Agency Correspondence, Tribal Correspondence,
and Cooperative Agreements will be included when they have been received.*

Appendix B
Coastal Zone Consistency Determination

Federal Agency Coastal Zone Management Act Consistency Determination

Introduction

This document provides the State of Florida with the Consistency Determination under Coastal Zone Management Act (CZMA) Section 307 and 15 Code of Federal Regulations (CFR) Part 930 subpart C developed by the United States Army Garrison-Miami (USAG-Miami). The information in this Consistency Determination is provided pursuant to 15 CFR Section 930.39 and Section 307 of the Coastal Zone Management Act, 16 United States Code (U.S.C.) § 1456, as amended, and its implementing regulations at 15 CFR Part 930. This federal consistency determination addresses the Proposed Action in the Environmental Assessment: *of a Military Housing Development for U.S. Army Garrison-Miami, Doral, Florida* for the building of a housing development on federal property acquired from the Federal Aviation Administration (FAA) and adjacent to U.S. Southern Command (SOUTHCOM).

Proposed Action

The Proposed Action is for USAG-Miami to acquire FAA land west of NW 92 Ave and south of NW 33rd Street across from the SOUTHCOM headquarters in Doral, Florida and construct a military housing development on the property. The property houses a large FAA radar tower and associated support buildings near its center and no housing would be constructed within the FAA established antenna standoff area to avoid interference with operation of the radar system; however, non-vertical assets such as stormwater retention infrastructure, roads, or parking may be located within this radius.





Proposed construction of the housing development would include construction of buildings with masonry block and stucco exterior wall and concrete tile roof. Family housing would have living areas, kitchens, bathrooms, bedrooms, storage, double-car garages, and private entrances. Unaccompanied housing units would have living and sleeping areas, baths, and storage. All housing would meet requirements for soundproofing, and all General Officers' quarters would meet Sensitive Compartmented Information Facility requirements. Construction of supporting facilities would include the following site work: earthwork consisting of 3 feet of fill, utilities and connections, lighting, paving, parking, walks, curbs and gutters, storm drainage, information systems connectivity, the pedestrian walkway beneath NW 33rd Street, and landscaping and signage. Heating and air conditioning would be provided by self-contained systems, and residential smoke detectors would be provided.

The Army is considering two alternatives to implement the proposed action. The first is the MILCON Alternative that involves acquiring some or all of the approximately 160-acre FAA parcel to construct, operate, manage, and maintain service member housing on up to 75 acres of the property. Under this alternative, no building structures would be built on the central portion (52.4 acres) of the parcel as not to interfere with radar tower operations; however, non-vertical assets such as stormwater retention infrastructure, roads, or parking may be located within this radius. The second is the Enhanced Use Lease (EUL) Alternative, where USAG-Miami would obtain an EUL agreement with a private developer to construct and operate residential, retail, and parking spaces on up to 107.5 acres of the approximately 160-acre FAA parcel. The same restriction on the 52.4 acre center as the MILCON Alternative would apply.

The consistency determination is based on the assumption that the military housing would be constructed and EUL-driven, mixed-use development could also occur.



Legend

-  Proposed Housing Development Site
-  FAA Parcel
-  Secure Fence Perimeters
-  U.S. Army Garrison-Miami

05/09/17/19134/ATL - Figure 1-1_Location Map

Figure 1-1
Location Map
USAG-Miami Housing Development
Doral, Florida



Federal Consistency Review

The Proposed Action is consistent to the extent practicable with the enforceable provisions of the Florida Coastal Zone Management Program. Statutes addressed as part of the Florida Coastal Zone Management Program consistency review and considered in the analysis of the proposed action are discussed in the following table. Pursuant to 15 C.F.R. § 930.41, the Florida State Clearinghouse has 60 days from receipt of this document in which to concur with or object to this Consistency Determination, or to request an extension, in writing, under 15 C.F.R. § 930.41(b). Florida’s concurrence will be presumed if USAG-Miami does not receive its response on the 60th day from receipt of this determination.

Table 1. Florida Coastal Management Program Consistency Review

Statute	Consistency	Scope
Chapter 161 <i>Beach and Shore Preservation</i>	The proposed project would not adversely affect beach and shore management, specifically as it pertains to: <ul style="list-style-type: none"> • The Coastal Construction Permit Program. • The Coastal Construction Control Line (CCCL) Permit Program. • The Coastal Zone Protection Program. All land activities would occur inland on federal property.	Authorizes the Bureau of Beaches and Coastal Systems within Florida Department of Environmental Protection to regulate construction on or seaward of the states’ beaches.
Chapter 163, Part II <i>Growth Policy; County and Municipal Planning; Land Development Regulation</i>	The Proposed Action would not have a negative effect on county and municipal planning. The project is on federal land not subject to Miami-Dade County planning and land regulation. USAG-Miami would adhere to applicable policies.	Requires local governments to prepare, adopt, and implement comprehensive plans that encourage the most appropriate use of land and natural resources in a manner consistent with the public interest.
Chapter 186 <i>State and Regional Planning</i>	The Proposed Action would not have a negative effect on state plans for water use, land development, or transportation.	Details state-level planning requirements. Requires the development of special statewide plans governing water use, land development, and transportation.
Chapter 252 <i>Emergency Management</i>	The Proposed Action would not increase the state’s vulnerability to natural disasters. Emergency response and evacuation procedures would not be impacted by the Proposed Action.	Provides for planning and implementation of the state’s response to, efforts to recover from, and the mitigation of natural and manmade disasters.
Chapter 253 <i>State Lands</i>	All activities would occur on restricted federal property; therefore, there would be no impact to state or public lands.	Addresses the state’s administration of public lands and property of this state and provides direction regarding the acquisition, disposal, and management of all state lands.
Chapter 258 <i>State Parks and Preserves</i>	State parks, recreational areas, and aquatic preserves would not be affected by the Proposed Action.	Addresses administration and management of state parks and preserves (Chapter 258).
Chapter 259 <i>Land Acquisition for Conservation or Recreation</i>	Activities would be on federal land not subject to state acquisition at this time. Tourism and outdoor recreation would not be affected by the Proposed Action.	Authorizes acquisition of environmentally endangered lands and outdoor recreation lands (Chapter 259).
Chapter 260 <i>Recreational Trails System</i>	Opportunities for recreation on state lands would not be affected by the Proposed Action.	Authorizes acquisition of land to create a recreational trails system and to facilitate management of the system (Chapter 260).

Table 1. Florida Coastal Management Program Consistency Review

Statue	Consistency	Scope
Chapter 375 <i>Multipurpose Outdoor Recreation; Land Acquisition, Management, and Conservation</i>	Opportunities for recreation on state lands would not be affected by the Proposed Action.	Develops comprehensive multipurpose outdoor recreation plan to document recreational supply and demand, describe current recreational opportunities, estimate need for additional recreational opportunities, and propose means to meet the identified needs (Chapter 375).
Chapter 267 <i>Historical Resources</i>	A substantial portion of the FAA parcel has been previously disturbed from construction of the antenna and support buildings and for other infrastructure that has since been removed from the site. No archaeological or historical sites have been identified within the proposed project area. There would be no impacts to identified cultural resources under the Proposed Action.	Addresses management and preservation of the state's archaeological and historical resources.
Chapter 288 <i>Commercial Development and Capital Improvements</i>	Military base closures or base reuse plans would not be affected by the Proposed Action. The EUL would promote and support commercial development.	Provides the framework for promoting and developing the general business, trade, and tourism components of the state economy.
Chapter 334 <i>Transportation Administration</i>	The Proposed Action would not have an impact on transportation other than short-term increased traffic volume and detours necessary for construction.	Addresses the state's policy concerning transportation administration (Chapter 334).
Chapter 339 <i>Transportation Finance and Planning</i>	The Proposed Action would have no effect on the finance and planning needs of the state's transportation system.	Addresses the finance and planning needs of the state's transportation system (Chapter 339).
Chapter 370 <i>Saltwater Fisheries</i>	The Proposed Action would not have an impact on saltwater fisheries.	Addresses management and protection of the state's saltwater fisheries.
Chapter 372 <i>Wildlife</i>	The proposed project area is significantly disturbed and is dominated by exotic, invasive vegetation. Wildlife use would be limited but there could be limited displacement from foraging by species protected by the State of Florida. The Proposed Action would not have a negative impact on wildlife resources.	Addresses the management of the wildlife resources of the state.
Chapter 373 <i>Water Resources</i>	No impacts to water resources would occur. To reduce the potential for impact to water resources, best management practices (BMPs) will be used to control erosion and stormwater runoff. Applicable permitting requirements will be satisfied in accordance with 62-25 Florida Administrative Code (FAC) and National Pollutant Discharge Elimination System (NPDES). An application for a NPDES stormwater permit would be filed prior to project initiation.	Addresses the state's policy concerning water resources.
Chapter 376 <i>Pollutant Discharge Prevention and Removal</i>	The Proposed Action would not involve the discharge of pollutants.	Regulates transfer, storage, and transportation of pollutants, and cleanup of pollutant discharges.

Table 1. Florida Coastal Management Program Consistency Review

Statue	Consistency	Scope
Chapter 377 <i>Energy Resources</i>	Energy resource production, including oil and gas, and the transportation of oil and gas, would not be affected by the Proposed Action.	Addresses regulation, planning, and development of oil and gas resources of the state.
Chapter 380 <i>Land and Water Management</i>	Under the Proposed Action, development of state lands with regional (i.e., more than one county) impacts would not occur. No changes to coastal infrastructure such as capacity increases of existing coastal infrastructure, or use of state funds for infrastructure planning, designing, or construction would occur.	Establishes land and water management policies to guide and coordinate local decisions relating to growth and development.
Chapter 381 <i>Public Health, General Provisions</i>	The Proposed Action does not involve the construction of an onsite sewage or treatment system.	Establishes public policy concerning the state's public health system.
Chapter 388 <i>Mosquito Control</i>	The Proposed Action would not affect mosquito control efforts.	Addresses mosquito control effort in the state.
Chapter 403 <i>Environmental Control</i>	The Proposed Action would have no impact on groundwater, water quality, air quality, pollution control, solid waste management, or other environmental control efforts.	Establishes public policy concerning environmental control in the state.
Chapter 582 <i>Soil and Water Conservation</i>	The Proposed Action would include construction activities and soil disturbance. Appropriate BMPs would be applied to prevent soil erosion and water quality degradation.	Establishes policies that require the conservation, development, and use of soil and water resources to preserve natural resources and control and prevent soil erosion.

Appendix C
FONSI and Public Comments

Finding of No Significant Impact:

Construction of a Military Housing Development for U.S. Army Garrison-Miami, Doral, Florida

U.S. Army Garrison-Miami (USAG-Miami) has prepared an Environmental Assessment (EA) that evaluates the potential environmental and socioeconomic impacts associated with the construction of a military housing development in an adjacent property currently owned by the Federal Aviation Administration (FAA). A major tenant of USAG-Miami in Doral is the U.S. Southern Command (SOUTHCOM). USAG-Miami also supports SOUTHCOM's subordinate commands, U.S. Marine Forces South and Special Operations Command South in Homestead, Florida, as well as various other organizations.

There is no military housing on the USAG-Miami cantonment and no space within the cantonment to construct military housing. The purpose of the Proposed Action is to provide military housing for USAG-Miami's housing requirement. This includes housing for 50 Key and Essential Family Units and 120 Unaccompanied Enlisted Units within 5 miles/15 minutes peak traffic commute from SOUTHCOM headquarters in Doral, Florida. This ensures essential personnel can walk to the installation and enables mission readiness. The remainder of the housing requirement (120 Family Units) should be within 20 miles/60 minutes peak traffic commute from SOUTHCOM headquarters. The need for the Proposed Action is to minimize mission interruption during emergency conditions and to improve security, increase affordability, and provide cohesion for families and staff.

The attached EA, which is incorporated by reference, was prepared pursuant to 32 *Code of Federal Regulations* (CFR) Part 651, the U.S. Council on Environmental Quality (CEQ) regulations (Title 40, U.S. Code, [USC] § 4321 et seq.) the CEQ National Environmental Policy Act (NEPA) Regulation (40 CFR 1500-1508); and applicable Army requirements, including the Army NEPA Regulation (32 CFR 651, Environmental Analysis of Army Actions) for implementing NEPA procedural requirements.

Description of the Proposed Action

The Proposed Action is for USAG-Miami to acquire FAA land south of NW 33rd Street across from the SOUTHCOM headquarters in Doral, Florida and construct a military housing development on the property. This action would construct enough units to address 90 percent of the Family Housing shortfall of 155 units and approximately 95 percent of the Unaccompanied Housing shortfall of 140 units.

The property houses a large FAA radar tower and associated support buildings near its center. No housing development would be constructed within the FAA established antenna standoff area to avoid interference with operation of the radar system; however, non-vertical assets such as stormwater retention infrastructure, roads, or parking may be located within this radius.

Alternative 1 – Military Construction Alternative

In the Military Construction (MILCON) Alternative, USAG-Miami would use congressionally approved appropriated funds to acquire some or all of the approximately 160-acre FAA parcel and pay for the construction, operation, management, and maintenance of service member housing on up to 75 acres of the property (refer to EA Figure 2-1). The MILCON Alternative would consist of constructing and operating a housing development as described in the Proposed Action. Under this alternative, no building structures would be built on the central portion (52.4 acres) of the parcel, so as not to interfere with radar tower operations; however, non-vertical assets such as stormwater retention infrastructure, roads, or parking may be located within this radius.

Alternative 2 – Enhanced Use Lease Alternative

In the Enhanced Use Lease (EUL) Alternative, USAG-Miami would use an EUL agreement with a private developer to construct and operate a housing development on the approximately 160-acre FAA parcel (Figure 2-2). This alternative would consist of constructing and operating a housing development as described in the Proposed Action (refer to EA Section 2.1) on up to 75 acres of the northern portion of the FAA parcel. In addition, up to 32.5 acres of the southern portion of the FAA parcel would be offered to a developer for a mixed-use development in exchange for funding the construction of the military housing. The total development footprint under this alternative would be 107.5 acres. The southern development would include up to 302,000 square feet of retail space below two levels of 167 apartments and would include up to 806 parking spaces. Under this alternative, no building structures would be built on the central portion (52.4 acres) of the parcel so as not to interfere with radar tower operations; however, non-vertical assets such as stormwater retention infrastructure, roads, or parking may be located within this radius.

Alternative 3 – No Action Alternative

Under the No Action Alternative, USAG-Miami would not acquire the FAA parcel directly adjacent to the SOUTHCOM headquarters in Doral, Florida, and would not construct a military housing development. Service members would continue to search for affordable housing in the local economy and be scattered across the city and county. This would continue to create an undue financial burden on many service members as they seek suitable quarters and would continue to adversely impact mission readiness for USAG-Miami and SOUTHCOM. Essential personnel would continue to be unable to quickly reach the SOUTHCOM headquarters facility to maintain operations during emergencies as a result of possible road closures and traffic. Higher-level personnel living offsite would not be provided with required additional security for personal protection.

Environmental Consequences

No significant environmental or socioeconomic consequences were identified in the EA as a result of the Proposed Action.

Alternative 1 – Military Construction Alternative

Implementation of the MILCON Alternative would result in adverse impacts on land use, soils, groundwater, surface water, water quality, flood hazard area, air quality, noise, biological resources, socioeconomic resources, coastal zone management, safety and occupational health, hazardous materials, traffic and transportation, recreation, utilities, and visual resources. All of these impacts were determined to be less than significant. Applicable construction permits would be obtained, and health and safety procedures would be implemented during construction. USAG-Miami would implement appropriate measures to further reduce less than significant unavoidable impacts of the proposed project. Project design measures would be used to minimize soil erosion, control fugitive dust emissions, manage hazardous materials, minimize construction-related traffic, and reduce the generation of wastes during construction and operations. Construction activities would occur during the daytime hours to reduce disturbance.

The appearance of the FAA parcel would transition from undeveloped to developed. This change would be consistent with the land use designation resulting in negligible long-term adverse direct impacts to land use. There would be long-term moderate adverse direct impacts to soil from construction, but use of appropriate construction and post-construction best management practices (BMPs) would minimize soil erosion from stormwater runoff. Indirect adverse impacts to soils would be short-term and negligible during construction and long-term and minor during operation. There would be negligible long-term indirect adverse impacts to groundwater from construction and operation due to the size of the development (75 acres) compared to the size of the aquifer (4,000 square miles). Use of appropriate construction and post-construction BMPs and implementation of stormwater controls would result in no more than negligible adverse impacts to surface water resources and water quality during construction and operation. There would be a long-term minor adverse direct impact to flood hazard area from raising the ground surface. Indirect impacts to flood hazard area would be long-

term, adverse but less than significant. There would be minor adverse direct impacts to air quality from construction (short-term) and operation (long-term). There would be moderate short-term adverse direct noise impacts during construction, but there would be no long-term impacts to noise-sensitive receptors from operational activities. Negligible long-term adverse indoor direct impacts from noise would be expected at any of the proposed residences within the 65 to 70 Day-Night Average Sound Level (DNL) noise contour for the Miami International Airport. There would be less than significant long-term adverse direct impacts from removal of vegetation during construction. There would be minor adverse direct impacts to wildlife from construction (short-term) and operations (long-term). There would be negligible short-term adverse direct impacts to state special status animal species and limited to displacement of foraging animals. No impact to special-status plant species. No federally protected animal species are known to occur within the proposed project area and occurrence is unlikely due to the extent of encroachment by invasive exotic plant species and the high level of disturbance and surrounding development. USAG-Miami has determined there would be no effect to federally threatened, endangered, or candidate species or their habitats and no concurrence with USFWS is necessary. If any protected species are observed within the construction areas, construction would stop until the protected species voluntarily leaves the construction area. The overall impact to biological resources is expected to be less than significant. Minor to moderate short-term beneficial impacts to the local economy would result from the proposed construction. The MILCON Alternative would also have beneficial impacts on housing availability in the local area. There would be negligible to minor adverse direct impacts to fire, police, emergency, and medical services, and schools from an increase in permanent residents. The MILCON alternative is consistent with the enforceable provisions of the Florida Coastal Zone Management Program and there would be negligible long-term adverse direct impacts to coastal zone resources. There would be minor short-term adverse direct impacts to safety and occupational health from construction. No activities (construction or operations) would occur within the radio frequency radiation setback and there would be no adverse impacts to construction workers or residents from exposure to radio frequency radiation. There would be negligible short-term adverse direct and indirect impacts from use of small quantities of potentially hazardous materials (for example, gasoline, oils, coolant, lubricants, paints, and solvents) during construction. A stormwater pollution prevention plan and/or a project-specific construction safety plan would be followed to avoid significant risks or health hazards. There would be minor to moderate short-term adverse impacts to traffic and transportation during construction. Adverse impacts to traffic and transportation would be minor after the completion of construction. There would be negligible long-term indirect adverse impacts from the increased use of Doral Central Park by new residents of the housing development. There would be a minor increase in solid waste generation and a long-term change in demand on public utilities and services. Overall, there would be negligible to minor adverse direct impacts to utilities from construction and operation of the Proposed Action. There would be moderate adverse direct impacts to visual resources, short-term and long-term, from construction and operation of the Proposed Action.

The potential for cumulative negative impacts resulting from interaction of the MILCON Alternative with other past, present, and reasonably foreseeable projects is less than significant. Demolition, construction, and improvement projects could result in localized short-term cumulative impacts to soil, water resources, air quality, noise, biological resources, safety and occupational health, hazardous materials, and traffic and transportation if multiple proposed projects occur at the same time. Long-term minor cumulative impacts to traffic and transportation would occur as a result of the traffic from the new residents is added to the roadways and interacts with traffic associated with other reasonably foreseeable projects. There would be long-term minor cumulative adverse impacts to recreation if there is an increase in persons who move into the area or visit the area and use the new Doral Central Park facilities. There would be a long-term moderate cumulative adverse impact on utilities due the increased demand from the MILCON alternative combined with other proposed projects.

No significant impacts would result from the MILCON Alternative.

Alternative 2 – Enhanced Use Lease Alternative

Implementation of the EUL Alternative would include the consequences as described under the MILCON Alternative, some with a higher degree of impact than the MILCON Alternative (Alternative 1) due to the 32.5

acres of additional construction under the EUL Alternative associated with the mixed-use development. This would increase the duration and area of construction-related impacts. Even though there would be an increase in impacts for some resource areas due to the larger construction acreage, the impacts would be less than significant based on comparison to existing thresholds or regional baselines for the resources. Resources discussed below were determined to have a different impact level than the MILCON Alternative.

The EUL Alternative would have minor to moderate adverse direct effects to surface water due to the larger area of impervious surface (approximately 82 acres). Use of appropriate construction and post-construction BMPs and implementation of stormwater controls would reduce the surface water resource impacts which would still be less than significant. There would be negligible long-term impacts to noise-sensitive receptors. There would be minor to moderate long-term benefit on the local economy from new business opportunities and jobs associated with commercial-use property. There is potential for a long-term beneficial impact on regional roads as services are provided closer to where people live, which would reduce overall traffic. There would be minor indirect adverse impacts from the increased use of Doral Central Park by new residents of the housing development, mixed-use development, and potentially persons from outside the area patronizing the commercial development. The EUL Alternative would have greater impacts to utilities, as there would be new residents of the housing component and utility use by the commercial component that are not occurring at present, with minor long-term adverse direct impacts to energy sources and solid waste. While impacts would be greater than the MILCON Alternative, no significant impacts would result from the EUL Alternative.

The potential for cumulative negative impacts resulting from interaction of the EUL Alternative with other past, present, and reasonably foreseeable projects is less than significant. Demolition, construction, and improvement projects could result in localized short-term cumulative impacts to water resources, air quality, noise, biological resources, safety and occupational health, hazardous materials, and traffic and transportation if multiple proposed projects occur at the same time. Long-term minor to moderate cumulative impacts to traffic and transportation would occur as a result of the traffic from the new residents and patrons of the commercial development is added to the roadways and interacts with traffic associated with other reasonably foreseeable projects. There would be long-term less than significant cumulative adverse impacts to recreation if there is an increase in persons who move into the area or visit the area and use the new Doral Central Park facilities. There would be a long-term moderate cumulative adverse impact on utilities due the increased demand from the MILCON alternative combined with other proposed projects.

No significant impacts would result from the EUL Alternative.

Alternative 3 – No Action Alternative

Under the No Action Alternative, conditions would remain as they are at USAG-Miami. Failure to accomplish the Proposed Action would result in a shortfall of housing for military personnel within a 5-mile commute for essential personnel and within a 20-mile commute for other personnel by 2023. Depending on where personnel can find housing, the lack of action could ultimately result in a minor to moderate long-term adverse direct impact to mission readiness. As service members are forced to seek housing farther away from the installation, mission readiness would be further adversely impacted due to essential personnel being unable to quickly reach the SOUTHCOM facility in the event of an emergency. In addition, the FAA may opt to dispose of the parcel adjacent to SOUTHCOM in the next few years; this would eliminate the possibility of revisiting the option of acquiring the FAA parcel in the future. Under the No Action Alternative, there is also the possibility that the FAA parcel would be developed in the future by another entity.

Public and Agency Review

A Notice of Availability of the Draft EA and the Finding of No Significant Impact (FONSI) will be published in the *Miami Herald*. The EA and FONSI will be made available to the public for a 30-day comment period.

Conclusion

Based on the analysis presented in the EA, I find that implementation of the Proposed Action would have no significant impact on the human or natural environment. Therefore, a FONSI is issued for the Proposed Action and no Environmental Impact Statement is required.

U.S. Army Garrison-Miami

Mrs. Greta M. Buccellato
Garrison Manager

Date

Public Comments will be included when they have been received.

Appendix D
Air Quality Emission Estimates and
Record of Non-Applicability

ALTERNATIVE 1

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: USAG-Miami
County(s): Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: USAG-Miami Housing Development

- Project Number/s (if applicable):

- Projected Action Start Date: 10 / 2023

- Action Purpose and Need:

USAG-Miami Housing Development

- Action Description:

USAG-Miami Housing Development

- Point of Contact

Name: Caitlin Santinelli
Title: Scientist
Organization: Jacobs
Email: caitlin.santinelli@jacobs.com
Phone Number: 678-530-4148

- Activity List:

	Activity Type	Activity Title
2.	Construction / Demolition	CDC
3.	Construction / Demolition	Community Center
4.	Construction / Demolition	Family Housing
5.	Construction / Demolition	Unaccompanied Housing
6.	Construction / Demolition	Access Control Point
7.	Construction / Demolition	Guardhouse/Bridge
8.	Construction / Demolition	Perimeter
9.	Construction / Demolition	Stormwater
10.	Construction / Demolition	Site Improvements
11.	Construction / Demolition	Utilities
12.	Construction / Demolition	Paving
13.	Construction / Demolition	Multipurpose Amenities

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location

County: Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: CDC

- Activity Description:

- Activity Start Date

Start Month: 10
Start Month: 2023

- Activity End Date

Indefinite: False
End Month: 3
End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.248289
SO _x	0.001239
NO _x	0.393716
CO	0.584761
PM 10	0.016017

Pollutant	Total Emissions (TONs)
PM 2.5	0.015971
Pb	0.000000
NH ₃	0.000478
CO _{2e}	119.9

2.1 Building Construction Phase

2.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 10
Start Quarter: 1
Start Year: 2023

- Phase Duration

Number of Month: 4
Number of Days: 0

2.1.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Commercial or Retail
Area of Building (ft²): 15000
Height of Building (ft): 15
Number of Units: N/A

- Building Construction Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.1.3 Building Construction Phase Emission Factor(s)**- Construction Exhaust Emission Factors (lb/hour) (default)**

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0754	0.0013	0.5027	0.3786	0.0181	0.0181	0.0068	128.79
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0258	0.0006	0.1108	0.2145	0.0034	0.0034	0.0023	54.454
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

2.1.4 Building Construction Phase Formula(s)**- Construction Exhaust Emissions per Phase**

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (0.32 / 1000) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 BA: Area of Building (ft²)
 BH: Height of Building (ft)
 (0.32 / 1000): Conversion Factor ft³ to trips (0.32 trip / 1000 ft³)
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = BA * BH * (0.05 / 1000) * HT$$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
 BA: Area of Building (ft²)
 BH: Height of Building (ft)
 (0.05 / 1000): Conversion Factor ft³ to trips (0.05 trip / 1000 ft³)
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

2.2 Architectural Coatings Phase

2.2.1 Architectural Coatings Phase Timeline Assumptions

- **Phase Start Date**
Start Month: 2
Start Quarter: 1
Start Year: 2024

- **Phase Duration**
Number of Month: 0
Number of Days: 15

2.2.2 Architectural Coatings Phase Assumptions

- **General Architectural Coatings Information**
Building Category: Non-Residential
Total Square Footage (ft²): 15000
Number of Units: N/A

- **Architectural Coatings Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- **Worker Trips**
Average Worker Round Trip Commute (mile): 20 (default)

- **Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDTV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Architectural Coatings Phase Emission Factor(s)

- **Worker Trips Emission Factors (grams/mile)**

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDTV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

2.2.4 Architectural Coatings Phase Formula(s)

- **Worker Trips Emissions per Phase**

$$VMT_{WT} = (1 * WT * PA) / 800$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 1: Conversion Factor man days to trips (1 trip / 1 man * day)
 WT: Average Worker Round Trip Commute (mile)
 PA: Paint Area (ft²)
 800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
 BA: Area of Building (ft²)
 2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
 0.0116: Emission Factor (lb/ft²)
 2000: Conversion Factor pounds to tons

2.3 Paving Phase

2.3.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 2
 Start Quarter: 1
 Start Year: 2024

- Phase Duration

Number of Month: 2
 Number of Days: 0

2.3.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 18800

- Paving Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.3.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.578	000.008	000.613	005.086	000.009	000.008		000.034	00391.932
LDGT	000.823	000.010	001.060	008.566	000.010	000.009		000.034	00522.586
HDGV	001.597	000.016	002.785	026.982	000.023	000.020		000.046	00814.010
LDDV	000.216	000.004	000.307	004.001	000.006	000.006		000.008	00402.372
LDDT	000.537	000.006	000.822	008.176	000.008	000.008		000.008	00626.077
HDDV	000.762	000.015	007.639	002.810	000.395	000.363		000.028	01633.017
MC	003.190	000.008	000.648	014.785	000.027	000.024		000.048	00392.026

2.3.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_p = (2.62 * PA) / 43560$$

VOC_p: Paving VOC Emissions (TONs)
 2.62: Emission Factor (lb/acre)
 PA: Paving Area (ft²)
 43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location

County: Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Community Center

- Activity Description:

- Activity Start Date

Start Month: 10
Start Month: 2023

- Activity End Date

Indefinite: False
End Month: 3
End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.248914
SO _x	0.001264
NO _x	0.401192
CO	0.587721
PM 10	0.016332

Pollutant	Total Emissions (TONs)
PM 2.5	0.016261
Pb	0.000000
NH ₃	0.000528
CO _{2e}	122.7

3.1 Building Construction Phase

3.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
 - Start Month: 10
 - Start Quarter: 1
 - Start Year: 2023
- Phase Duration
 - Number of Month: 4
 - Number of Days: 0

3.1.2 Building Construction Phase Assumptions

- General Building Construction Information
 - Building Category: Commercial or Retail
 - Area of Building (ft²): 15000
 - Height of Building (ft): 30
 - Number of Units: N/A
- Building Construction Default Settings
 - Default Settings Used: Yes
 - Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

3.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0754	0.0013	0.5027	0.3786	0.0181	0.0181	0.0068	128.79
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0258	0.0006	0.1108	0.2145	0.0034	0.0034	0.0023	54.454
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH₃	CO_{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDBGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

3.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (0.32 / 1000) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.32 / 1000): Conversion Factor ft³ to trips (0.32 trip / 1000 ft³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = BA * BH * (0.05 / 1000) * HT$$

VMT_{VT} : Vender Trips Vehicle Miles Travel (miles)
 BA: Area of Building (ft²)
 BH: Height of Building (ft)
 (0.05 / 1000): Conversion Factor ft³ to trips (0.05 trip / 1000 ft³)
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{VT} : Vender Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

3.2 Architectural Coatings Phase

3.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 2
Start Quarter: 1
Start Year: 2024

- Phase Duration

Number of Month: 0
Number of Days: 15

3.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Non-Residential
Total Square Footage (ft²): 15000
Number of Units: N/A

- Architectural Coatings Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

3.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

$$VMT_{WT} = (1 * WT * PA) / 800$$

- VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- 1: Conversion Factor man days to trips (1 trip / 1 man * day)
- WT: Average Worker Round Trip Commute (mile)
- PA: Paint Area (ft²)
- 800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

- V_{POL}: Vehicle Emissions (TONs)
- VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- 0.002205: Conversion Factor grams to pounds
- EF_{POL}: Emission Factor for Pollutant (grams/mile)
- VM: Worker Trips On Road Vehicle Mixture (%)
- 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$$

- VOC_{AC}: Architectural Coating VOC Emissions (TONs)
- BA: Area of Building (ft²)
- 2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
- 0.0116: Emission Factor (lb/ft²)
- 2000: Conversion Factor pounds to tons

3.3 Paving Phase

3.3.1 Paving Phase Timeline Assumptions

- Phase Start Date

- Start Month:** 2
- Start Quarter:** 1
- Start Year:** 2024

- Phase Duration

Number of Month: 2
 Number of Days: 0

3.3.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 14400

- Paving Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.3.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.578	000.008	000.613	005.086	000.009	000.008		000.034	00391.932
LDGT	000.823	000.010	001.060	008.566	000.010	000.009		000.034	00522.586
HDGV	001.597	000.016	002.785	026.982	000.023	000.020		000.046	00814.010
LDDV	000.216	000.004	000.307	004.001	000.006	000.006		000.008	00402.372
LDDT	000.537	000.006	000.822	008.176	000.008	000.008		000.008	00626.077
HDDV	000.762	000.015	007.639	002.810	000.395	000.363		000.028	01633.017
MC	003.190	000.008	000.648	014.785	000.027	000.024		000.048	00392.026

3.3.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)
 NE: Number of Equipment
 WD: Number of Total Work Days (days)
 H: Hours Worked per Day (hours)
 EF_{POL}: Emission Factor for Pollutant (lb/hour)
 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 PA: Paving Area (ft²)
 0.25: Thickness of Paving Area (ft)
 (1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
 HC: Average Hauling Truck Capacity (yd³)
 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

VOC_p: Paving VOC Emissions (TONs)
 2.62: Emission Factor (lb/acre)
 PA: Paving Area (ft²)
 43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

4. Construction / Demolition

4.1 General Information & Timeline Assumptions

- Activity Location

County: Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Family Housing

- Activity Description:

- Activity Start Date

Start Month: 4
Start Month: 2024

- Activity End Date

Indefinite: False
End Month: 3
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	2.331104
SO _x	0.004729
NO _x	1.526412
CO	2.170465
PM 10	0.055528

Pollutant	Total Emissions (TONs)
PM 2.5	0.055448
Pb	0.000000
NH ₃	0.001392
CO _{2e}	454.3

4.1 Building Construction Phase

4.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 4
Start Quarter: 1
Start Year: 2024

- Phase Duration

Number of Month: 12
Number of Days: 0

4.1.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Multi-Family
Area of Building (ft²): 314706
Height of Building (ft): N/A
Number of Units: 155

- Building Construction Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	7
Forklifts Composite	2	7
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

4.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Generator Sets Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0303	0.0006	0.2464	0.2674	0.0091	0.0091	0.0027	61.061
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875
Welders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0227	0.0003	0.1427	0.1752	0.0059	0.0059	0.0020	25.653

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628

HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

4.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = NU * 0.36 * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

NU: Number of Units

0.36: Conversion Factor units to trips

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = NU * 0.11 * HT$$

VMT_{VT}: Vender Tips Vehicle Miles Travel (miles)

NU: Number of Units

0.11: Conversion Factor units to trips

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

- V_{POL}: Vehicle Emissions (TONs)
- VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
- 0.002205: Conversion Factor grams to pounds
- EF_{POL}: Emission Factor for Pollutant (grams/mile)
- VM: Worker Trips On Road Vehicle Mixture (%)
- 2000: Conversion Factor pounds to tons

4.2 Architectural Coatings Phase

4.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 2
 Start Quarter: 1
 Start Year: 2025

- Phase Duration

Number of Month: 2
 Number of Days: 0

4.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Multi-Family
 Total Square Footage (ft²): N/A
 Number of Units: 155

- Architectural Coatings Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

4.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

$$VMT_{WT} = (1 * WT * PA) / 800$$

- VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- 1: Conversion Factor man days to trips (1 trip / 1 man * day)
- WT: Average Worker Round Trip Commute (mile)
- PA: Paint Area (ft²)
- 800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

- V_{POL}: Vehicle Emissions (TONs)
- VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- 0.002205: Conversion Factor grams to pounds
- EF_{POL}: Emission Factor for Pollutant (grams/mile)
- VM: Worker Trips On Road Vehicle Mixture (%)
- 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_{AC} = (NU * 850 * 2.7 * 0.0116) / 2000.0$$

- VOC_{AC}: Architectural Coating VOC Emissions (TONs)
- NU: Number of Units
- 850: Conversion Factor units to square feet (850 ft² / unit)
- 2.7: Conversion Factor total area to coated area (2.7 ft² coated area / total area)
- 0.0116: Emission Factor (lb/ft²)
- 2000: Conversion Factor pounds to tons

5. Construction / Demolition

5.1 General Information & Timeline Assumptions

- Activity Location

County: Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Unaccompanied Housing

- Activity Description:

- Activity Start Date

Start Month: 4
Start Month: 2024

- Activity End Date

Indefinite: False
End Month: 11
End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.900095

Pollutant	Total Emissions (TONs)
PM 2.5	0.035012

SO _x	0.002931
NO _x	0.959431
CO	1.376608
PM 10	0.035060

Pb	0.000000
NH ₃	0.000918
CO _{2e}	281.7

5.1 Building Construction Phase

5.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
 - Start Month: 4
 - Start Quarter: 1
 - Start Year: 2024

- Phase Duration
 - Number of Month: 8
 - Number of Days: 0

5.1.2 Building Construction Phase Assumptions

- General Building Construction Information
 - Building Category: Multi-Family
 - Area of Building (ft²): 93800
 - Height of Building (ft): N/A
 - Number of Units: 70
- Building Construction Default Settings
 - Default Settings Used: Yes
 - Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	6
Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

5.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Generator Sets Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0303	0.0006	0.2464	0.2674	0.0091	0.0091	0.0027	61.061
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875
Welders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0227	0.0003	0.1427	0.1752	0.0059	0.0059	0.0020	25.653

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

5.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = NU * 0.36 * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

NU: Number of Units

0.36: Conversion Factor units to trips

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = NU * 0.11 * HT$$

VMT_{VT}: Vender Tips Vehicle Miles Travel (miles)
 NU: Number of Units
 0.11: Conversion Factor units to trips
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

5.2 Architectural Coatings Phase

5.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 11
Start Quarter: 1
Start Year: 2024

- Phase Duration

Number of Month: 0
Number of Days: 23

5.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Multi-Family
Total Square Footage (ft²): N/A
Number of Units: 55

- Architectural Coatings Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

5.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

$$VMT_{WT} = (1 * WT * PA) / 800$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

1: Conversion Factor man days to trips (1 trip / 1 man * day)

WT: Average Worker Round Trip Commute (mile)

PA: Paint Area (ft²)

800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_{AC} = (NU * 850 * 2.7 * 0.0116) / 2000.0$$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)

NU: Number of Units

- 850: Conversion Factor units to square feet (850 ft² / unit)
- 2.7: Conversion Factor total area to coated area (2.7 ft² coated area / total area)
- 0.0116: Emission Factor (lb/ft²)
- 2000: Conversion Factor pounds to tons

6. Construction / Demolition

6.1 General Information & Timeline Assumptions

- Activity Location

County: Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Access Control Point

- Activity Description:

- Activity Start Date

Start Month: 12
Start Month: 2024

- Activity End Date

Indefinite: False
End Month: 1
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.049242
SO _x	0.000411
NO _x	0.103610
CO	0.171441
PM 10	0.003475

Pollutant	Total Emissions (TONs)
PM 2.5	0.003461
Pb	0.000000
NH ₃	0.000131
CO ₂ e	39.8

6.1 Building Construction Phase

6.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 12
Start Quarter: 1
Start Year: 2024

- Phase Duration

Number of Month: 2
Number of Days: 0

6.1.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft²): 2480
Height of Building (ft): 15

Number of Units: N/A

- Building Construction Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDTV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDTV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDTV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

6.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDTV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331

MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775
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6.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

6.2 Architectural Coatings Phase

6.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 1

Start Quarter: 3

Start Year: 2025

- Phase Duration

Number of Month: 0

Number of Days: 10

6.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category:

Total Square Footage (ft²): 2480

Number of Units: N/A

- Architectural Coatings Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

6.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

6.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

$$VMT_{WT} = (1 * WT * PA) / 800$$

- VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- 1: Conversion Factor man days to trips (1 trip / 1 man * day)
- WT: Average Worker Round Trip Commute (mile)
- PA: Paint Area (ft²)
- 800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

- V_{POL}: Vehicle Emissions (TONs)
- VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- 0.002205: Conversion Factor grams to pounds
- EF_{POL}: Emission Factor for Pollutant (grams/mile)
- VM: Worker Trips On Road Vehicle Mixture (%)
- 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$$

- VOC_{AC}: Architectural Coating VOC Emissions (TONs)
- BA: Area of Building (ft²)
- 2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
- 0.0116: Emission Factor (lb/ft²)
- 2000: Conversion Factor pounds to tons

7. Construction / Demolition

7.1 General Information & Timeline Assumptions

- Activity Location

County: Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Guardhouse/Bridge

- Activity Description:

- Activity Start Date

Start Month: 2
Start Month: 2025

- Activity End Date

Indefinite: False
End Month: 5
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.121548

Pollutant	Total Emissions (TONs)
PM 2.5	0.026202

SO _x	0.002041
NO _x	0.674525
CO	1.005596
PM 10	0.026280

Pb	0.000000
NH ₃	0.000772
CO _{2e}	197.4

7.1 Building Construction Phase

7.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 2
 Start Quarter: 1
 Start Year: 2025

- Phase Duration

Number of Month: 4
 Number of Days: 0

7.1.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Commercial or Retail
 Area of Building (ft²): 26565
 Height of Building (ft): 15
 Number of Units: N/A

- Building Construction Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	6
Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

7.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Generator Sets Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0287	0.0006	0.2329	0.2666	0.0080	0.0080	0.0025	61.057
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872
Welders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0214	0.0003	0.1373	0.1745	0.0051	0.0051	0.0019	25.650

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

7.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (0.32 / 1000) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.32 / 1000): Conversion Factor ft³ to trips (0.32 trip / 1000 ft³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM : Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 WD : Number of Total Work Days (days)
 WT : Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE : Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM : Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = BA * BH * (0.05 / 1000) * HT$$

VMT_{VT} : Vender Trips Vehicle Miles Travel (miles)
 BA : Area of Building (ft²)
 BH : Height of Building (ft)
 (0.05 / 1000): Conversion Factor ft³ to trips (0.05 trip / 1000 ft³)
 HT : Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{VT} : Vender Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM : Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

7.2 Paving Phase

7.2.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 4
Start Quarter: 1
Start Year: 2025

- Phase Duration

Number of Month: 2

Number of Days: 0

7.2.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 26500

- Paving Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

7.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.578	000.008	000.613	005.086	000.009	000.008		000.034	00391.932
LDGT	000.823	000.010	001.060	008.566	000.010	000.009		000.034	00522.586
HDGV	001.597	000.016	002.785	026.982	000.023	000.020		000.046	00814.010
LDDV	000.216	000.004	000.307	004.001	000.006	000.006		000.008	00402.372
LDDT	000.537	000.006	000.822	008.176	000.008	000.008		000.008	00626.077
HDDV	000.762	000.015	007.639	002.810	000.395	000.363		000.028	01633.017
MC	003.190	000.008	000.648	014.785	000.027	000.024		000.048	00392.026

7.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)
 H: Hours Worked per Day (hours)
 EF_{POL}: Emission Factor for Pollutant (lb/hour)
 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 PA: Paving Area (ft²)
 0.25: Thickness of Paving Area (ft)
 (1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
 HC: Average Hauling Truck Capacity (yd³)
 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

VOC_P: Paving VOC Emissions (TONs)
 2.62: Emission Factor (lb/acre)
 PA: Paving Area (ft²)
 43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

8. Construction / Demolition

8.1 General Information & Timeline Assumptions

- Activity Location

County: Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Perimeter

- Activity Description:

- Activity Start Date

Start Month: 4
Start Month: 2025

- Activity End Date

Indefinite: False
End Month: 5
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.019853
SO _x	0.000431
NO _x	0.090323
CO	0.167589
PM 10	0.179453

Pollutant	Total Emissions (TONs)
PM 2.5	0.003133
Pb	0.000000
NH ₃	0.000056
CO ₂ e	40.7

8.1 Trenching/Excavating Phase

8.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 4
Start Quarter: 1
Start Year: 2025

- Phase Duration

Number of Month: 1
Number of Days: 0

8.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 17724
Amount of Material to be Hauled On-Site (yd³): 0
Amount of Material to be Hauled Off-Site (yd³): 0

- Trenching Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8

Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

8.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.578	000.008	000.613	005.086	000.009	000.008		000.034	00391.932
LDGT	000.823	000.010	001.060	008.566	000.010	000.009		000.034	00522.586
HDGV	001.597	000.016	002.785	026.982	000.023	000.020		000.046	00814.010
LDDV	000.216	000.004	000.307	004.001	000.006	000.006		000.008	00402.372
LDDT	000.537	000.006	000.822	008.176	000.008	000.008		000.008	00626.077
HDDV	000.762	000.015	007.639	002.810	000.395	000.363		000.028	01633.017
MC	003.190	000.008	000.648	014.785	000.027	000.024		000.048	00392.026

8.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
 ACRE: Total acres (acres)
 WD: Number of Total Work Days (days)
 2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)
 NE: Number of Equipment
 WD: Number of Total Work Days (days)
 H: Hours Worked per Day (hours)
 EF_{POL}: Emission Factor for Pollutant (lb/hour)
 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
 HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
 HC: Average Hauling Truck Capacity (yd³)
 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

9. Construction / Demolition

9.1 General Information & Timeline Assumptions

- Activity Location

County: Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Stormwater

- Activity Description:

- Activity Start Date

Start Month: 6
Start Month: 2025

- Activity End Date

Indefinite: False

End Month: 8
 End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.059558
SO _x	0.001292
NO _x	0.270970
CO	0.502768
PM 10	2.512503

Pollutant	Total Emissions (TONs)
PM 2.5	0.009399
Pb	0.000000
NH ₃	0.000168
CO _{2e}	122.1

9.1 Trenching/Excavating Phase

9.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
 Start Quarter: 1
 Start Year: 2025

- Phase Duration

Number of Month: 3
 Number of Days: 0

9.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 83873
 Amount of Material to be Hauled On-Site (yd³): 0
 Amount of Material to be Hauled Off-Site (yd³): 0

- Trenching Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
--	------	------	------	------	------	------	----

POVs	50.00	50.00	0	0	0	0	0
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9.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.578	000.008	000.613	005.086	000.009	000.008		000.034	00391.932
LDGT	000.823	000.010	001.060	008.566	000.010	000.009		000.034	00522.586
HDBGV	001.597	000.016	002.785	026.982	000.023	000.020		000.046	00814.010
LDDV	000.216	000.004	000.307	004.001	000.006	000.006		000.008	00402.372
LDDT	000.537	000.006	000.822	008.176	000.008	000.008		000.008	00626.077
HDDV	000.762	000.015	007.639	002.810	000.395	000.363		000.028	01633.017
MC	003.190	000.008	000.648	014.785	000.027	000.024		000.048	00392.026

9.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

- PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
- 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
- ACRE: Total acres (acres)
- WD: Number of Total Work Days (days)
- 2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

- CEE_{POL}: Construction Exhaust Emissions (TONs)
- NE: Number of Equipment
- WD: Number of Total Work Days (days)
- H: Hours Worked per Day (hours)
- EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
- HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
- HC: Average Hauling Truck Capacity (yd³)
- (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
- HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

- V_{POL}: Vehicle Emissions (TONs)
- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 0.002205: Conversion Factor grams to pounds
- EF_{POL}: Emission Factor for Pollutant (grams/mile)
- VM: Vehicle Exhaust On Road Vehicle Mixture (%)
- 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

- VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- WD: Number of Total Work Days (days)
- WT: Average Worker Round Trip Commute (mile)
- 1.25: Conversion Factor Number of Construction Equipment to Number of Works
- NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

- V_{POL}: Vehicle Emissions (TONs)
- VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
- 0.002205: Conversion Factor grams to pounds
- EF_{POL}: Emission Factor for Pollutant (grams/mile)
- VM: Worker Trips On Road Vehicle Mixture (%)
- 2000: Conversion Factor pounds to tons

10. Construction / Demolition

10.1 General Information & Timeline Assumptions

- Activity Location

County: Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Site Improvements

- Activity Description:

- Activity Start Date

Start Month: 6
Start Month: 2025

- Activity End Date

Indefinite: False
End Month: 3
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	2.756749
SO _x	0.084153
NO _x	25.123406
CO	11.845070
PM 10	98.549666

Pollutant	Total Emissions (TONs)
PM 2.5	0.973991
Pb	0.000000
NH ₃	0.152120
CO _{2e}	9272.7

10.1 Site Grading Phase

10.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 10
Start Quarter: 1
Start Year: 2025

- Phase Duration

Number of Month: 6
Number of Days: 0

10.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 1633500
Amount of Material to be Hauled On-Site (yd³): 4900500
Amount of Material to be Hauled Off-Site (yd³): 0

- Site Grading Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	3	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

10.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}

Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HdGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

10.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

11. Construction / Demolition

11.1 General Information & Timeline Assumptions

- Activity Location

County: Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Utilities

- Activity Description:

- Activity Start Date

Start Month: 8
Start Month: 2025

- Activity End Date

Indefinite: False
End Month: 10
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.059558
SO _x	0.001292
NO _x	0.270970
CO	0.502768
PM 10	8.303890

Pollutant	Total Emissions (TONs)
PM 2.5	0.009399
Pb	0.000000
NH ₃	0.000168
CO _{2e}	122.1

11.1 Trenching/Excavating Phase

11.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
 - Start Month: 8
 - Start Quarter: 1
 - Start Year: 2025
- Phase Duration
 - Number of Month: 3
 - Number of Days: 0

11.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
 - Area of Site to be Trenched/Excavated (ft²): 277929
 - Amount of Material to be Hauled On-Site (yd³): 0
 - Amount of Material to be Hauled Off-Site (yd³): 0
- Trenching Default Settings
 - Default Settings Used: Yes
 - Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

- Average Hauling Truck Capacity (yd³): 20 (default)
- Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

- Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

11.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.578	000.008	000.613	005.086	000.009	000.008		000.034	00391.932
LDGT	000.823	000.010	001.060	008.566	000.010	000.009		000.034	00522.586
HDGV	001.597	000.016	002.785	026.982	000.023	000.020		000.046	00814.010

LDDV	000.216	000.004	000.307	004.001	000.006	000.006		000.008	00402.372
LDDT	000.537	000.006	000.822	008.176	000.008	000.008		000.008	00626.077
HDDV	000.762	000.015	007.639	002.810	000.395	000.363		000.028	01633.017
MC	003.190	000.008	000.648	014.785	000.027	000.024		000.048	00392.026

11.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

- PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
- 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
- ACRE: Total acres (acres)
- WD: Number of Total Work Days (days)
- 2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

- CEE_{POL}: Construction Exhaust Emissions (TONs)
- NE: Number of Equipment
- WD: Number of Total Work Days (days)
- H: Hours Worked per Day (hours)
- EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
- HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
- HC: Average Hauling Truck Capacity (yd³)
- (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
- HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

- V_{POL}: Vehicle Emissions (TONs)
- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 0.002205: Conversion Factor grams to pounds
- EF_{POL}: Emission Factor for Pollutant (grams/mile)
- VM: Vehicle Exhaust On Road Vehicle Mixture (%)
- 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

- VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- WD: Number of Total Work Days (days)
- WT: Average Worker Round Trip Commute (mile)
- 1.25: Conversion Factor Number of Construction Equipment to Number of Works
- NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

12. Construction / Demolition

12.1 General Information & Timeline Assumptions

- Activity Location

County: Miami-Dade
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Paving

- Activity Description:

- Activity Start Date

Start Month: 11
 Start Month: 2025

- Activity End Date

Indefinite: False
 End Month: 5
 End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.302473
SO _x	0.004233
NO _x	1.421290
CO	1.685878
PM 10	33.253687

Pollutant	Total Emissions (TONs)
PM 2.5	0.062777
Pb	0.000000
NH ₃	0.001038
CO _{2e}	423.7

12.1 Site Grading Phase

12.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 11
 Start Quarter: 1
 Start Year: 2025

- Phase Duration

Number of Month: 2
 Number of Days: 0

12.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 1668213

Amount of Material to be Hauled On-Site (yd³): 0
Amount of Material to be Hauled Off-Site (yd³): 0

- Site Grading Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	3	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

12.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HdGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

12.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

- V_{POL}: Vehicle Emissions (TONs)
- VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- 0.002205: Conversion Factor grams to pounds
- EF_{POL}: Emission Factor for Pollutant (grams/mile)
- VM: Worker Trips On Road Vehicle Mixture (%)
- 2000: Conversion Factor pounds to tons

12.2 Paving Phase

12.2.1 Paving Phase Timeline Assumptions

- **Phase Start Date**
 - Start Month: 2
 - Start Quarter: 1
 - Start Year: 2026

- **Phase Duration**
 - Number of Month: 4
 - Number of Days: 0

12.2.2 Paving Phase Assumptions

- **General Paving Information**
 - Paving Area (ft²): 1668213
- **Paving Default Settings**
 - Default Settings Used: Yes
 - Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Pavers Composite	1	8
Paving Equipment Composite	2	8
Rollers Composite	2	6

- **Vehicle Exhaust**
 - Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- **Worker Trips**
 - Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

12.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

12.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

- CEE_{POL}: Construction Exhaust Emissions (TONs)
- NE: Number of Equipment
- WD: Number of Total Work Days (days)
- H: Hours Worked per Day (hours)
- EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- PA: Paving Area (ft²)
- 0.25: Thickness of Paving Area (ft)
- (1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
- HC: Average Hauling Truck Capacity (yd³)
- (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
- HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_p = (2.62 * PA) / 43560$$

VOC_p: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

13. Construction / Demolition

13.1 General Information & Timeline Assumptions

- Activity Location

County: Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Multipurpose Amenities

- Activity Description:

- Activity Start Date

Start Month: 6
Start Month: 2026

- Activity End Date

Indefinite: False
End Month: 9

End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.084991
SO _x	0.001355
NO _x	0.461502
CO	0.608564
PM 10	0.577000

Pollutant	Total Emissions (TONs)
PM 2.5	0.019896
Pb	0.000000
NH ₃	0.000345
CO _{2e}	133.8

13.1 Site Grading Phase

13.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
 Start Quarter: 1
 Start Year: 2026

- Phase Duration

Number of Month: 2
 Number of Days: 0

13.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 28000
 Amount of Material to be Hauled On-Site (yd³): 0
 Amount of Material to be Hauled Off-Site (yd³): 0

- Site Grading Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
--	------	------	------	------	------	------	----

POVs	50.00	50.00	0	0	0	0	0
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13.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HdGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

13.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

- PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
- 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
- ACRE: Total acres (acres)
- WD: Number of Total Work Days (days)
- 2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

- CEE_{POL}: Construction Exhaust Emissions (TONs)
- NE: Number of Equipment
- WD: Number of Total Work Days (days)
- H: Hours Worked per Day (hours)
- EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
- HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)
 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

13.2 Paving Phase

13.2.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 8
Start Quarter: 1
Start Year: 2026

- Phase Duration

Number of Month: 2
Number of Days: 0

13.2.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 28000

- Paving Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
----------------	---------------------	---------------

Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

13.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

13.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_p = (2.62 * PA) / 43560$$

VOC_p: Paving VOC Emissions (TONs)

2.62: Emission Factor (lb/acre)

PA: Paving Area (ft²)

43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

ALTERNATIVE 1

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force’s Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: USAG-Miami
County(s): Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: USAG-Miami Housing Development

c. Project Number/s (if applicable):

d. Projected Action Start Date: 10 / 2023

e. Action Description:

USAG-Miami Housing Development

f. Point of Contact:

Name: Caitlin Santinelli
Title: Scientist
Organization: Jacobs
Email: caitlin.santinelli@jacobs.com
Phone Number: 678-530-4148

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

applicable
 not applicable

Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the “worst-case” and “steady state” (net gain/loss upon action fully implemented) emissions.

“Air Quality Indicators” were used to provide an indication of the significance of potential impacts to air quality. These air quality indicators are EPA General Conformity Rule (GCR) thresholds (de minimis levels) that are applied out of context to their intended use. Therefore, these indicators do not trigger a regulatory requirement; however, they provide a warning that the action is potentially significant. It is important to note that these indicators only provide a clue to the potential impacts to air quality.

Given the GCR de minimis threshold values are the maximum net change an action can acceptably emit in non-attainment and maintenance areas, these threshold values would also conservatively indicate an actions emissions within an attainment would also be acceptable. An air quality indicator value of 100 tons/yr is used based on the GCR de minimis threshold for the least severe non-attainment classification for all criteria pollutants (see 40 CFR 93.153). Therefore, the worst-case year emissions were compared against the GCR Indicator and are summarized below.

Analysis Summary:

2023

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.065	100	No
NOx	0.349	100	No
CO	0.519	100	No
SOx	0.001	100	No
PM 10	0.012	100	No
PM 2.5	0.012	100	No
Pb	0.000	100	No
NH3	0.000	100	No
CO2e	122.8		

2024

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.543	100	No
NOx	2.602	100	No
CO	3.744	100	No
SOx	0.008	100	No
PM 10	0.098	100	No
PM 2.5	0.098	100	No
Pb	0.000	100	No
NH3	0.003	100	No
CO2e	762.2		

2025

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	3.965	100	No
NOx	15.157	100	No
CO	9.701	100	No
SOx	0.051	100	No
PM 10	93.536	100	No
PM 2.5	0.584	100	No
Pb	0.000	100	No
NH3	0.078	100	No
CO2e	5534.7		

2026

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.609	100	No
NOx	13.589	100	No
CO	7.246	100	No
SOx	0.045	100	No
PM 10	49.882	100	No

PM 2.5	0.537	100	No
Pb	0.000	100	No
NH3	0.077	100	No
CO2e	4911.2		

2027 - (Steady State)

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	100	No
NOx	0.000	100	No
CO	0.000	100	No
SOx	0.000	100	No
PM 10	0.000	100	No
PM 2.5	0.000	100	No
Pb	0.000	100	No
NH3	0.000	100	No
CO2e	0.0		

None of estimated emissions associated with this action are above the GCR indicators, indicating no significant impact to air quality; therefore, no further air assessment is needed.

Caitlin Santinelli, Scientist

DATE

ALTERNATIVE 2 DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: USAG-Miami
County(s): Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: USAG-Miami Mixed Use Property

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2024

- Action Purpose and Need:

USAG-Miami Housing Development - Mixed Use Property

- Action Description:

USAG-Miami Housing Development - Mixed Use Property

- Point of Contact

Name: Caitlin Santinelli
Title: Scientist
Organization: Jacobs
Email: caitlin.santinelli@jacobs.com
Phone Number: 678-530-4148

- Activity List:

	Activity Type	Activity Title
2.	Construction / Demolition	Mixed Use Property

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location

County: Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Mixed Use Property

- Activity Description:

- Activity Start Date

Start Month: 1
Start Month: 2024

- Activity End Date

Indefinite: False
End Month: 12

End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	3.765667
SO _x	0.012841
NO _x	3.975734
CO	4.507029
PM 10	0.163890

Pollutant	Total Emissions (TONs)
PM 2.5	0.159084
Pb	0.000000
NH ₃	0.011777
CO _{2e}	1311.8

2.1 Building Construction Phase

2.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 1
 Start Quarter: 1
 Start Year: 2024

- Phase Duration

Number of Month: 12
 Number of Days: 0

2.1.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Commercial or Retail
 Area of Building (ft²): 906000
 Height of Building (ft): 45
 Number of Units: N/A

- Building Construction Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	7
Forklifts Composite	3	8
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	3	7
Welders Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Generator Sets Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0303	0.0006	0.2464	0.2674	0.0091	0.0091	0.0027	61.061
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875
Welders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0227	0.0003	0.1427	0.1752	0.0059	0.0059	0.0020	25.653

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

2.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (0.32 / 1000) * HT$$

VMT_{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
 BA: Area of Building (ft²)
 BH: Height of Building (ft)
 (0.32 / 1000): Conversion Factor ft³ to trips (0.32 trip / 1000 ft³)
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = BA * BH * (0.05 / 1000) * HT$$

VMT_{VT} : Vender Trips Vehicle Miles Travel (miles)
 BA: Area of Building (ft²)
 BH: Height of Building (ft)
 (0.05 / 1000): Conversion Factor ft³ to trips (0.05 trip / 1000 ft³)
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{VT} : Vender Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

2.2 Architectural Coatings Phase

2.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 10
 Start Quarter: 1
 Start Year: 2024

- Phase Duration

Number of Month: 3
 Number of Days: 0

2.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Non-Residential
 Total Square Footage (ft²): 270700
 Number of Units: N/A

- Architectural Coatings Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.282	000.002	000.207	003.392	000.006	000.005		000.023	00341.791
LDGT	000.376	000.003	000.373	004.889	000.007	000.006		000.024	00439.705
HDGV	000.832	000.005	000.964	016.217	000.016	000.014		000.046	00814.851
LDDV	000.084	000.003	000.127	002.822	000.004	000.004		000.008	00334.379
LDDT	000.227	000.004	000.365	004.850	000.007	000.006		000.008	00473.628
HDDV	000.423	000.014	004.175	001.653	000.176	000.162		000.028	01559.331
MC	003.040	000.003	000.626	013.017	000.026	000.023		000.052	00392.775

2.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

$$VMT_{WT} = (1 * WT * PA) / 800$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

1: Conversion Factor man days to trips (1 trip / 1 man * day)

WT: Average Worker Round Trip Commute (mile)

PA: Paint Area (ft²)

800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

- V_{POL}: Vehicle Emissions (TONs)
- VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- 0.002205: Conversion Factor grams to pounds
- EF_{POL}: Emission Factor for Pollutant (grams/mile)
- VM: Worker Trips On Road Vehicle Mixture (%)
- 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$$

- VOC_{AC}: Architectural Coating VOC Emissions (TONs)
- BA: Area of Building (ft²)
- 2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
- 0.0116: Emission Factor (lb/ft²)
- 2000: Conversion Factor pounds to tons

2.3 Paving Phase

2.3.1 Paving Phase Timeline Assumptions

- Phase Start Date

- Start Month: 3
- Start Quarter: 1
- Start Year: 2024

- Phase Duration

- Number of Month: 6
- Number of Days: 0

2.3.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 335200

- Paving Default Settings

- Default Settings Used: Yes
- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	8
Paving Equipment Composite	2	6
Rollers Composite	2	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.3.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH₃	CO_{2e}
LDGV	000.578	000.008	000.613	005.086	000.009	000.008		000.034	00391.932
LDGT	000.823	000.010	001.060	008.566	000.010	000.009		000.034	00522.586
HDGV	001.597	000.016	002.785	026.982	000.023	000.020		000.046	00814.010
LDDV	000.216	000.004	000.307	004.001	000.006	000.006		000.008	00402.372
LDDT	000.537	000.006	000.822	008.176	000.008	000.008		000.008	00626.077
HDDV	000.762	000.015	007.639	002.810	000.395	000.363		000.028	01633.017
MC	003.190	000.008	000.648	014.785	000.027	000.024		000.048	00392.026

2.3.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

VOC_P: Paving VOC Emissions (TONs)

2.62: Emission Factor (lb/acre)

PA: Paving Area (ft²)

43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

ALTERNATIVE 2 AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force’s Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: USAG-Miami
County(s): Miami-Dade
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: USAG-Miami Mixed Use Property

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2024

e. Action Description:

USAG-Miami Housing Development - Mixed Use Property

f. Point of Contact:

Name: Caitlin Santinelli
Title: Scientist
Organization: Jacobs
Email: caitlin.santinelli@jacobs.com
Phone Number: 678-530-4148

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

applicable
 not applicable

Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the “worst-case” and “steady state” (net gain/loss upon action fully implemented) emissions.

“Air Quality Indicators” were used to provide an indication of the significance of potential impacts to air quality. These air quality indicators are EPA General Conformity Rule (GCR) thresholds (de minimis levels) that are applied out of context to their intended use. Therefore, these indicators do not trigger a regulatory requirement; however, they provide a warning that the action is potentially significant. It is important to note that these indicators only provide a clue to the potential impacts to air quality.

Given the GCR de minimis threshold values are the maximum net change an action can acceptably emit in non-attainment and maintenance areas, these threshold values would also conservatively indicate an actions emissions within an attainment would also be acceptable. An air quality indicator value of 100 tons/yr is used based on the GCR de minimis threshold for the least severe non-attainment classification for all criteria pollutants (see 40 CFR 93.153). Therefore, the worst-case year emissions were compared against the GCR Indicator and are summarized below.

Analysis Summary:

2024

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	3.766	100	No
NOx	3.976	100	No
CO	4.507	100	No
SOx	0.013	100	No
PM 10	0.164	100	No
PM 2.5	0.159	100	No
Pb	0.000	100	No
NH3	0.012	100	No
CO2e	1311.8		

2025 - (Steady State)

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	100	No
NOx	0.000	100	No
CO	0.000	100	No
SOx	0.000	100	No
PM 10	0.000	100	No
PM 2.5	0.000	100	No
Pb	0.000	100	No
NH3	0.000	100	No
CO2e	0.0		

None of estimated emissions associated with this action are above the GCR indicators, indicating no significant impact to air quality; therefore, no further air assessment is needed.

 Caitlin Santinelli, Scientist

 DATE

Appendix E
Special-status Species Descriptions

Special-status Species Descriptions

Plants

Blodgett's Silverbush (*Argythamnia blodgettii*)

The Blodgett's silverbush is a perennial herb in the Spurge (Euphorbiaceae) family that is federally threatened and Florida endangered. This species reaches 2 feet tall and has 0.6- to 1.6-inch-long leaves and small, white flowers that grow in leaf axils along the stems. Flowering occurs year-round. Blodgett's silverbush is endemic to Miami-Dade and Monroe counties in Florida where it occurs in low, moist limestone areas near the margins of pine rocklands and in sunny edges and gaps in pine rocklands, rockland hammocks, and coastal berm habitats (NatureServe, 2019). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Crenulate Lead-plant (*Amorpha crenulata*)

The crenulate lead-plant is a perennial, deciduous shrub in the Pea (Fabaceae) family that is federally endangered and Florida endangered. This species reaches 5 feet tall and has reddish-purple branches, 0.5- to 1.5-inch-long leaves, and 6- to 8-inch-long flower spikes (FNAI, 2000a). Crenulate tarplant is endemic to Miami-Dade County in Florida where it occurs on poorly drained Opalocka sands within pine rocklands or in wet prairies with Opalocka-rock outcrop complex soils (USFWS, 1999a). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Florida Brickell-bush (*Brickellia mosieri*)

The Florida Brickell-bush is a perennial herb in the Aster (Asteraceae) family that is federally endangered and Florida endangered. This species reaches 1 to 3.5 feet tall and has 0.4- to 1.2-inch-long leaves and white disk flowers that grow in small, dense heads. Flowering occurs primarily between August and October. Florida Brickell-bush is endemic to Miami-Dade County where it occurs in pine rocklands with open shrub layer, exposed limestone, and minimal leaf litter (FNAI, 2000b). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Deltoid Spurge (*Chamaesyce deltoidea* ssp. *deltoidea*)

The deltoid spurge is a prostrate, perennial herb in the Spurge (Euphorbiaceae) family that is federally endangered and Florida endangered. This species forms mats up to 6 inches wide and has 0.25-inch-long leaves and flowers that occur singly, in leaf axils. Flowering happens between November and May. Deltoid spurge is endemic to Miami-Dade County in Florida where it is found in areas of pine rocklands with an open shrub canopy, exposed limestone, and minimal leaf litter (USFWS, 1999b). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Garber's Spurge (*Chamaesyce garberi*)

The Garber's spurge is a perennial herb in the Spurge (Euphorbiaceae) family that is federally endangered and Florida endangered. This species has stems up to 12 inches long, leaves to 0.5 inch long, and single flowers held by cyathia in leaf axils. Garber's spurge is endemic to Miami-Dade and Monroe counties in Florida where it occurs on thin, sandy soils composed mostly of Pamlico sands or directly on limestone in a variety of open to moderately shaded habitat types (USFWS, 1999c). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Pineland Sandmat (*Chamaesyce deltoidea pinetorum*)

The pineland sandmat is a perennial herb in the Spurge (Euphorbiaceae) family that is federally threatened and Florida endangered. This species forms mats up to 6 inches wide and has erect stems, 0.25-inch-long leaves with straight, spreading hairs, and flowers that occur singly, in leaf axils. Flowering occurs April through November. Pineland sandmat is endemic to Miami-Dade County in Florida where it occurs on calcareous soils in pine rocklands on the Miami Rock Ridge (FNAI, 2000c). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Cape Sable Thoroughwort (*Chromolaena frustrata*)

The Cape Sable thoroughwort is a perennial herb in the Aster (Asteraceae) family that is federally endangered and Florida endangered. This species is 8 to 40 inches in height with hairy stems, 0.6- to 1.6-inch-long leaves, and flower heads on long stalks at the ends of branches. Flowering occurs year-round. Cape Sable thoroughwort is endemic to Monroe County in Florida where it occurs on coastal rock barrens and berms and on sunny edges of rockland hammocks (FNAI, 2000d). There are currently only four or five known protected occurrences of this species; therefore, it is not expected to occur within the project area.

Florida Semaphore Cactus (*Consolea corallicola*)

The Florida semaphore cactus is a perennial shrub in the Cactus (Cactaceae) family that is federally endangered and Florida endangered. This species is an erect cactus that reaches 3 to 15 feet in height and has 1- to 4-inch-long spines. Older branches (pads, joints) are two to four times as long as they are wide and held at right angles to the ground. Young joints are cylindrical with fruits or flowers at their tips. Flowering can occur year-round, but primarily between December and April (FNAI, 2000e). Florida semaphore cactus is endemic to Monroe County in Florida where it is known only from a few sites in the Florida Keys. It occurs on bare rocks with only a slight covering of humus in the hardwood hammocks near sea level (NatureServe, 2019). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Okeechobee Gourd (*Cucurbita okeechobeensis ssp. okeechobeensis*)

The Okeechobee gourd is an annual or perennial vine in the Gourd (Cucurbitaceae) family that is federally endangered and Florida endangered. This species is a high-climbing vine with tendrils, heart- to kidney-shaped leaf blades, and cream-colored flowers that are bell-shaped, forms mats up to 6 inches wide and has erect stems, 0.25-inch-long leaves with straight, spreading hairs, and flowers that occur singly, in leaf axils (USFWS, 1999d). Flowering occurs in the spring and summer. Okeechobee gourd is endemic to Glades and Palm Beach counties where it occurs in pond apple swamps and mucky soils on Lake Okeechobee shores and islands and in floodplain forests along the St. Johns River (FNAI, 2000f). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Florida Prairie-clover (*Dalea carthagenensis floridana*)

The Florida prairie-clover is a perennial shrub in the Pea (Fabaceae) family that is federally endangered and Florida endangered. This species has a woody base and red, contorted, velvety, non-woody branches that grow to 6 feet tall. Leaves consist of 11 to 23 oval, gland-tipped leaflets, and whitish flowers occur in small, loose heads at the ends of hairy, glandular stalks. Flowering occurs year-round. Florida prairie-clover is endemic to Miami-Dade, Monroe, and Palm Beach counties in Florida where it occurs in pine rocklands, edges of rockland hammocks, coastal uplands, and marl prairie (FNAI, 2000g). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Florida Pineland Crabgrass (*Digitaria pauciflora*)

The Florida pineland crabgrass is a perennial herb in the Grass (Poaceae) family that is federally threatened and Florida endangered. This species is a clump-forming grass with stems and leaves that are covered with soft white hairs. Culms are 1.6 to 3.3 feet tall, leaves are blue-green, and flowers are dull green and borne in small, wiry spikes. Florida pineland crabgrass is endemic to Miami-Dade and Monroe counties in Florida where it occurs in pine rocklands and the open ecotone between grassy marl prairie and pine rockland communities (NatureServe, 2019). This species is currently only known to occur at one site in Everglades National Park. There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Small's Milkpea (*Galactia smallii*)

Small's milkpea is a perennial herb in the Pea (Fabaceae) family that is federally endangered and Florida endangered. This species has trailing stems up to 6 feet long, leaves less than 1 inch long that consist of three broadly oval leaflets, and typical pink/purple pea flowers that are about 0.5 inch long and grow in clusters of 1 to 5 at the ends of stems or on stalks. Flowering occurs a few weeks following fire, primarily in the summer. Small's milkpea is endemic to Miami-Dade County where it occurs on Redland pine rocklands (FNAI, 2000h). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Beach Jacquemontia (*Jacquemontia reclinata*)

The beach jacquemontia is a perennial vine in the Morning Glory (Convolvulaceae) family that is federally endangered and Florida endangered. This species has a woody base with non-woody, creeping or twinning stems up to 6 feet long. Leaves are about 1 inch long and the white flowers are 1 inch across with 5 lobes. Flowering occurs between November and May (FNAI, 2000i). Beach clustervine is endemic to Broward, Miami-Dade, and Palm Beach counties in Florida where it occurs on moist, well-drained sandy soils without a humusy top layer in dunes and disturbed openings in maritime hammock, coastal strand, and coastal scrub (NatureServe, 2019; IRC, 2016). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Sand Flax (*Linum arenicola*)

Sand flax is a perennial herb in the Flax (Linaceae) family that is federally endangered and Florida endangered. This species has wiry stems reaching up to 28 inches tall. Leaves are few, alternate, and early deciduous. Flowers are in terminal cymes, five-parted, less than 2.5 inches wide, with ephemeral yellow petals and separate styles. Sand flax is endemic to Miami-Dade and Monroe counties where it occurs in pine rockland, marl prairie habitats which require periodic wildfires to maintain an open, shrub-free subcanopy and reduce litter levels. Only small and isolated occurrences remain in a restricted range of southern Florida and the Florida Keys (USFWS, 2015a). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Carter's Small-flowered Flax (*Linum carteri*)

The Carter's flax is an annual herb in the Flax (Linaceae) family that is federally endangered and Florida endangered. This species is 2 to 24 inches tall with 0.4- to 1.2-inch-long narrow leaves and 0.5-inch-wide yellow-orange flowers. Flowering occurs between February and May. Carter's flax is endemic to Miami-Dade County in Florida where it occurs in pine rocklands (FNAI, 2000j). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Tiny Polygala (*Polygala smallii*)

The tiny polygala is a perennial herb in the Milkwort (Polygalaceae) family that is federally endangered and Florida endangered. This species has one to four, typically unbranched stems that are about 4 inches tall. Leaves are 0.5 inch wide and 2 inches long and flowers are small and numerous in a yellow-green crowded head at the top of the stem. Flowering occurs year-round. Tiny polygala is endemic to Broward, Martin, Miami-Dade, and Palm Beach counties in Florida where it occurs in pine rockland, scrub, and sandhill habitats and in open coastal spoil piles (FNAI, 2000k). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Everglades Bully (*Sideroxylon reclinatum* ssp. *austrofloridense*)

The Everglades bully is a perennial shrub in the Sapodilla (Sapotaceae) family that is federally threatened. This species is deciduous and thorny with leaves less than 2.8 inches long and flowers in axillary cymes. Everglades bully is endemic to Miami-Dade and Monroe counties in Florida where it occurs in pine rockland and marl prairie habitats (NatureServe, 2019). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Florida Bristle Fern (*Trichomanes punctatum* ssp. *floridanum*)

The Florida bristle fern is a perennial herb in the Filmy Fern (Hymenophyllaceae) family that is federally endangered and Florida endangered. This species has long-creeping, thread-like stems with filmy and delicate leaves less than 1 inch long. Florida bristle fern is endemic to Florida where it occurs on tree trunks in hammocks, edges of limesinks, and limestone boulders (FNAI, 2000l). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Carter's Mustard (*Warea carteri*)

The Carter's mustard is an annual herb in the Mustard (Brassicaceae) family that is federally endangered and Florida endangered. This species is up to 40 inches tall with many slender, branching stems that form a rounded crown. Leaves are about 2 inches long near the base of the stem and decrease in size as they move upwards. Flowers are white, grow in rounded clusters, and bloom September through October. Carter's mustard is endemic to south and central Florida where it occurs after fire in sandhill, scrubby flatwoods, and inland and coastal scrub habitats (FNAI, 2000m). There is no suitable habitat for this species within the project area; therefore, it is not expected to occur within the project area.

Birds

Bachman's Warbler (*Vermivora bachmanii*)

The Bachman's warbler is a federally endangered and MBTA-protected migratory species. This species bred formerly in southeastern U.S. and wintered in Cuba and Isle of Pines. The last confirmed sightings of Bachman's warbler were near Charleston, South Carolina in 1961. Nesting habitats are thought to include trees associated with headwater swamps, wet flats and bottomland hardwoods. Other possible nesting sites could include old-grown stands of bottomland hardwoods. Bachman's warbler feeds primarily on insects and other small arthropods, favoring caterpillars and spiders during the breeding season, and mainly insects during the winter (Hamel, 2011). This possibly extinct species is highly unlikely to occur within the proposed project area.

Cape Sable Seaside Sparrow (*Ammodramus maritimus mirabilis*)

The Cape Sable seaside sparrow is federally endangered and protected under the MBTA. It is one of seven subspecies of the seaside sparrow. It is differentiated from other subspecies by its greenish olive dorsum, white ventrum, and lack of a breast band. Of the seven, this subspecies prefers freshwater interior marshes of Collier, Monroe, and Miami-Dade counties over salt marshes. The seaside sparrow forages around smooth cordgrass where they probe mud for the preferred food items of beetles and spiders. Other food sources include seeds, insects, decapods, amphipods, and mollusks in the winter, and larva insects and amphipods in the breeding season (Post and Greenlaw, 2009). Breeding occurs between February and August. Habitat is located within the

Everglades National Park and Big Cypress National Preserve in seasonally inundated freshwater interior marshes (FNAI, 2001a). Nesting sites generally require open vegetation such as pools and creek edges so that nesting and feeding sites are contiguous. During non-breeding seasons, the Cape Sable seaside sparrow have an average range of 12 hectares, but are relatively sedentary (Post and Greenlaw, 2009). Due to a lack of suitable habitat, this species is highly unlikely to occur within the proposed project area.

Everglade Snail Kite (*Rostrhamus sociabilis plumbeus*)

The Everglade snail kite is a federally endangered and MBTA-protected nonmigratory, medium-sized raptor. This species inhabits large, open freshwater marshes and lakes with shallow open waters. Open water areas lacking emergent vegetation are required for foraging. In Florida, the Everglade snail kite is restricted to the St. Johns River headwaters; southwestern Lake Okeechobee; small areas in Broward, Miami-Dade, and Palm Beach counties; and parts of Everglades National Park, Loxahatchee National Wildlife Refuge, and Big Cypress National Preserve (NatureServe, 2019). The primary foraging species for this subspecies is the apple snail. The main nesting period is January through August. Nesting occurs over water in low trees or shrubs, such as willows, wax myrtles, pond apples, or buttonbushes, dahoon holly, cocoplum, Brazilian pepper, sawgrass, cat-tail, bulrush, and reed (FNAI, 2001b; USFWS, 1999e). Due to a lack of suitable habitat, this species is highly unlikely to occur within the proposed project area.

Florida Burrowing Owl (*Athene cunicularia floridana*)

The Florida burrowing owl is a state threatened and MBTA-protected species that resides in central and south Florida and on the Bahamas. This subspecies breeds in the grasslands of central and south Florida (Poulin et al., 2011). The Florida burrowing owl is predominantly nonmigratory and maintains home ranges and territories while nesting. Habitats include high, sparsely vegetated, sandy ground. In addition to “natural” habitats, such as dry prairie and sandhills, ruderal areas such as pastures, airports, ball fields, parks, school grounds, university campuses, road rights-of-way, and vacant spaces in residential areas are regularly used (FNAI, 2001c). This species is known to occur in Doral and has a moderate potential to occur within the proposed project area.

Florida Grasshopper Sparrow (*Ammodramus savannarum*)

The Florida grasshopper sparrow is a federally endangered and MBTA-protected subspecies that occurs in Three Lakes Wildfire Management Area and Avon Park Air Force Range of Florida and does not migrate from south-central Florida. Nesting only occurs in Florida between the months of early April and late June. Nests are built in shallow ground as excavations in sand substrate. This subspecies forages for insects such as grasshoppers, crickets, beetles, weevils, moths and their larvae as well as vegetation such as sedge seeds and star grass. Suitable habitat consists of flat and dry prairie lands in central and south Florida with vegetation consisting of saw palmettos, dwarf oaks, bluestem grasses, St. John’s wort, and wiregrasses (USFWS, 1999f). Due to a lack of suitable habitat, this species is highly unlikely to occur within the proposed project area.

Florida Scrub-jay (*Aphelocoma coerulescens*)

The Florida scrub-jay is a federally threatened and MBTA-protected species. This nonmigratory species inhabits open areas without a dense canopy in oak scrub found on white, drained sand. The Florida scrub-jay is mostly restricted to scrub ridges of central, peninsular Florida, with a few occurrences on Gulf and Atlantic coastal ridges. This species has been extirpated from Miami-Dade County. It forages for lizards and arthropods in the spring and summer and acorns in fall and winter (NatureServe, 2019). Nesting occurs March through June in low, dense shrubs such as sand live oak, Archbold oak, and myrtle oak (Woolfenden and Fitzpatrick, 1996). Due to its current restricted range and a lack of suitable habitat, this species is highly unlikely to occur within the proposed project area.

Ivory-billed Woodpecker (*Campephilus principalis*)

The ivory-billed woodpecker is a federally endangered and MBTA-protected species. The historical habitat of the rare, and possibly extinct, ivory-billed woodpecker has been associated with bottomland swamp forests in the southeast United States and Cuba. Trees associated with the habitat are soft-wood species such as pines, red maples, sugarberry, and cabbage palmetto. This species forages for beetle larvae as its primary food source.

Nesting occurs in partly dead trees along the edges of dense swamps. The nests themselves are built in the dead part of the tree (Jackson, 2002). Due to a lack of suitable habitat, it is highly unlikely the Ivory-billed woodpecker would occur within the project area.

Kirtland's Warbler (*Setophaga kirtlandii*)

The Kirtland's warbler is a federally endangered and MBTA-protected migratory species that forages on insects, fruits, and flowers and nests in young jack pine forests with well-drained sandy soils in northern North America. This species migrates to the Bahamian archipelago for winters. Nesting occurs on the ground concealed by grasses and other vegetation (Mayfield, 2014). Due to a lack of suitable habitat, this species is unlikely to occur within the proposed project area.

Least Tern (*Sternula antillarum*)

The least tern is a state threatened and MBTA-protected migratory species. This species breeds widely along coastal beaches and major interior rivers of North America and winters broadly across marine coastlines of Central and South America. The least tern nests on relatively open beaches and islands that are kept free of vegetation by natural scouring from tidal or river action. Least tern have recently begun breeding on flat gravel rooftops in certain coastal areas, particularly where natural habitats have been disturbed or lost. This species feeds mostly on small, shallow-bodied fresh- and saltwater fish, but its diet is varied and includes small crustaceans and insects. Foraging occurs in shallow-water habitats or on the marine coast such as bays, lagoons, estuaries, river and creek mouths, tidal marshes and lakes. Inland feeding sites include rivers, streams, sloughs, dike fields, marshes, ponds, sand pits, and reservoirs. This species wanders widely after breeding season, especially in interior U.S., before migrating southward (Thompson et al., 1997). Due to a lack of suitable habitat, this species is unlikely to occur within the proposed project area.

Piping Plover (*Charadrius melodus*)

The piping plover is a federally threatened species that breeds along the northern central region of North America and Canada and along the northern East Coast. Piping plover winter along the southern Atlantic Coast and the Gulf Coast along beaches, mudflats and sandflats. Habitat for breeding is generally open sandy beaches. Nests are in ground in open sand, gravel and shell-covered substrates in patchy vegetation areas. Beaches and alkali flats are preferred during migration. The piping plover forages for washed up freshwater and marine invertebrates (Elliott-Smith and Haig, 2004). Due to a lack of suitable habitat, this species is highly unlikely to occur within the proposed project area.

Red Knot (*Calidris canutus rufa*)

The rufa red knot is a federally threatened and MBTA-protected migratory species. This subspecies breeds in the lower latitudes of Canada and winters anywhere from the Gulf of Mexico to eastern South America. Wintering and migration habitats are typically muddy or sandy coastal areas. One group of red knots have been observed wintering in Florida (Baker et al., 2013). Due to a lack of suitable habitat, this species is highly unlikely to occur within the proposed project area.

Red-cockaded Woodpecker (*Picoides borealis*)

The red-cockaded woodpecker is a federally endangered and MBTA-protected nonmigratory species. It lives in small, fragmented populations in the southeast where it breeds year-round. Breeding occurs in old-growth pine forests that have been maintained by summer fires. This species forages in the trunks of pines mainly for arthropods such as beetles, ants, roaches, spiders and others. Seeds and fruits can be a food source as well. Nesting and roosting occurs in excavated mature pines (Jackson, 1994; USFWS, 2016). Due to a lack of suitable habitat, this species is highly unlikely to occur within the proposed project area.

Southeastern American Kestrel (*Falco sparverius paulus*)

The southeastern American kestrel is a Florida threatened subspecies and year-round resident of Florida. It is most common in peninsular Florida with sightings in the panhandle. Northern subspecies of the southeastern American kestrel migrate to Florida in the winters and can be confused for the *Falco sparverius paulus* subspecies.

The habitat for this subspecies consists of open pines, woodland edges, prairies, and pastures. Sandhill habitat is preferred, but flatwoods with patches of grass and bare grounds will do as well. Nesting sites include tall dead trees and utility poles with open surroundings. (FNAI, 2001d). There is potentially suitable habitat for this species within the proposed project area and it has a moderate potential to occur.

White-crowned Pigeon (*Patagioenas leucocephala*)

The white-crowned pigeon is a Florida threatened species that is restricted in the United States to Florida Bay, Biscayne Bay, and the Florida Keys. A few individuals also potentially nest inland in Monroe and Miami-Dade counties. This species inhabits low-lying forests with ample fruiting trees and their diet primarily consists of tropical hardwood fruit trees. Breeding occurs May through September (FFWCC, 2019a). Due to a lack of suitable habitat, this species is highly unlikely to occur within the proposed project area.

Wood Stork (*Mycteria Americana*)

The wood stork is a federally threatened and MBTA-protected nonmigratory species. In Florida, wood storks are rare to abundant in the peninsula and Big Bend, but are much rarer in the panhandle and Florida Keys. There has been a dramatic decline in large colonies formerly found in south Florida and smaller more numerous colonies in central and northern Florida are being observed more frequently. Wetlands are essential for wood stork habitat (FNAI, 2001e). Due to a lack of suitable habitat, this species is unlikely to occur within the proposed project area.

Invertebrates

Bartram's Scrub-hairstreak and Florida Leafwing Butterfly

The Bartram's scrub-hairstreak and Florida leafwing butterfly are federally endangered species. These species occur only within pine rocklands and pineland croton (*Croton linearis*) is their only known hostplant (USFWS, 2015b). This habitat type and host plant do not occur within the proposed project area; therefore, this species is highly unlikely to occur.

Miami Blue Butterfly

The Miami blue butterfly is a federally endangered species that inhabits tropical hardwood hammocks, tropical pine rocklands, and beachside scrub in Florida. This species is no longer known to occur on the mainland of Florida (FFWCC, 2019b) and is highly unlikely to occur within the proposed project area.

Schaus Swallowtail Butterfly

The Schaus swallowtail is a federally endangered species that currently occurs in small numbers in the tropical hardwood hammock of North Key Largo and Elliot Key in Florida (USFWS, 2015c). Due to its current restricted range, this species is highly unlikely to occur within the proposed project area.

Stock Island Tree Snail

The Stock Island tree snail is a federally threatened species that originally occurred exclusively in hardwood hammocks of the Florida Keys. Due to people collecting snails, their distribution has been extended to the southernmost parts of mainland Florida. This species is active primarily during the May through November wet season and feeds on epiphytic growth on hardwood tree trunks, branches, and leaves (USFWS, 1999g). Due to a lack of suitable habitat, this species is unlikely to occur within the proposed project area.

Mammals

Florida Bonneted Bat (*Eumops floridanus*)

The federally endangered Florida bonneted bat is the largest bat species native to Florida. It is active year-round and does not have periods of hibernation or torpor. This bat occurs in urban/suburban areas as well as wooded areas in southern Florida and will use both natural and artificial habitat structures. The Florida bonneted bat roosts in tree hollows, tree snags, and foliage of palms. It also has been found beneath rocks, near excavations, in

rock fractures, and on limestone outcrops. In buildings, it will roost under Spanish roof tiles, but it also may roost in attics, rock or brick chimneys, and fireplaces (NatureServe, 2019). The Florida bonneted bat has been observed throughout Miami-Dade County. There are two known roost sites in Coral Gables, near the Granada golf course, and along the Ludlam Trail. This species is unlikely to roost within the proposed project area.

Reptiles

American Crocodile (*Crocodylus acutus*)

The American crocodile is a federally threatened species that inhabits brackish or saltwater areas and can be found in ponds, coves, and creeks in mangrove swamps. Along the southern Florida coast, this species is also occasionally encountered in freshwater areas (FFWCC, 2019c). The American crocodile may occur in the drainage canals in the vicinity of the project but would not be expected to occur in the immediate project area.

American Alligator (*Alligator mississippiensis*)

The American alligator is a federally threatened species, due to their similarity of appearance to the American crocodile. The American alligator may occur in the drainage canals in the vicinity of the project but would not be expected to occur in the immediate project area.

Eastern Indigo Snake (*Drymarchon couperi*)

The Eastern indigo snake is a federally threatened species that inhabits a broad range of habitats including scrub, sandhill, wet prairies, and mangrove swamps. Occupied sites are often near wetlands frequently associated with gopher tortoise burrows. This species is active nearly year-round in southern Florida and lays eggs in May and June (NatureServe, 2019). Due to a lack of suitable habitat, this species is unlikely to occur within the proposed project area.