Draft

ENVIRONMENTAL ASSESSMENT
FOR THE BEDDOWN OF TACTICAL AIR SUPPORT SQUADRON
NELLIS AIR FORCE BASE
CLARK COUNTY, NEVADA

Prepared for:

United States Air Force
Nellis Air Force Base
99th Air Base Wing

Contract No. W9126G-12-D-0012
Task Order 0029

April 2017

DRAFT FINDING OF NO SIGNIFICANT IMPACT

1.0 NAME OF PROPOSED ACTION

Standup and Beddown of a Tactical Air Support Squadron, Nellis Air Force Base, Nevada

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The U.S. Air Force (USAF) proposes to stand up the Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada, using excess F-16 aircraft from Hill AFB, Utah. The F-16s were replaced at Hill AFB by F-35 aircraft, which was addressed by a separate National Environmental Policy Act (NEPA) action. Implementation of the proposed action would improve and expand training opportunities for both aviators and in-demand Joint Terminal Attack Controllers (JTAC) and the Close Air Support (CAS) environment. It would also develop combined training for all U.S. Department of Defense services and allow training aircrews to be capable of supporting joint and coalition combat missions and other national security operations.

The Preferred Alternative and the No Action Alternative were analyzed in detail in the environmental assessment (EA). Three bases evaluated for the proposed action were eliminated from further consideration because multiple construction or organizational actions would be needed to duplicate or transfer existing capabilities and/or missions found at Nellis AFB, including establishing range instrumentation with tracking, scoring, and related teaching facilities; relocating both the JTAC qualification course and the JTAC Weapons School; and relocating multiple Combat Training Squadrons specifically established to support the U.S. Army National Training Center. Under the No Action Alternative the activation and beddown of the TASS would not occur.

The Preferred Alternative is to stand up the TASS at Nellis AFB. The new TASS would be an integral element of the CAS Integration Group (CIG), and would be integrated into the existing 57th Operations Group (57 OG) at Nellis AFB. The action would transfer and assign up to 16 4th Generation F-16C aircraft, (14 Primary Aircraft Inventory and two Backup Aircraft Inventory) to the TASS. Standup of the TASS at Nellis AFB would increase the base population by approximately 123 USAF and government support positions and 170 contract maintenance positions.

Several military construction (MILCON) and operations and maintenance (O&M) projects would be required to support the beddown. On the east side of the existing airfield, the ramp space and live ordnance loading area (LOLA) would need to be expanded to accommodate the additional aircraft. Approximately 11.5 acres and 7.0 acres, respectively, would be required for these MILCON actions. A new support facility would also be required at the LOLA. O'Bannon Road would be realigned to allow the expansion of the ramp and LOLA.

Building 295, which is currently used as administrative space to support the 57th Aircraft Maintenance Squadron (57 AMXS) commander and staff, would be demolished, and a new Maintenance hangar and Aircraft Maintenance Unit (AMU) facility would be constructed at the same site. The TASS/CIG Headquarters would be a new 27,300-square-foot building, constructed adjacent to Freedom Park on the west side of the airfield. Construction of these facilities would occur over a 4-year period, beginning in calendar year 2020.

The TASS, when fully operational, would be expected to fly approximately 2,700 annual sorties as part of the CAS training mission. The aircraft would depart Nellis AFB and transit to the Nevada Test and Training Range (NTTR) using existing restricted or established airspace. The NTTR has the range and airspace capacity to accommodate TASS operations. TASS operations would represent only a negligible increase.

3.0 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

The EA provides an analysis of potential environmental impacts of the Preferred Alternative within the region of influence, which includes Clarke County, Nevada. No impacts were identified regarding airspace, visual resources, geology, and environmental justice. Eleven resource areas were evaluated during the preparation of the EA. Insignificant impacts would be incurred on these other resources, as identified below. The No Action Alternative would result in no change to existing conditions.

Noise (EA Section 4.2): The U.S. Air Force Civil Engineering Center recently updated the Nellis AFB AICUZ report and modeled the proposed TASS F16 aircraft operations as part of this update. The models indicate that the proposed TASS operations would not result in any perceptible change in the 65 and 75 A-weighted decibels (dBA) day-night level (DNL) noise contours. Construction noise would primarily remain on base and would be temporary and sporadic. Construction of the TASS/CIG Headquarters building would result in temporary noise off-base, but no residential housing areas or other noise sensitive receptors would be impacted by noises greater than 65 dBA.

Air Quality (EA Section 4.3): There would be no significant impacts on the region's air quality under the Preferred Alternative. Annual air emissions from aircraft operations, as well as from construction activities, were calculated to be below *de minimis* thresholds for all criteria pollutants and greenhouse gases. The 2016 USAF guidance was used to identify and address state-specific and location specific potential and exacerbating impacts, using the 4-step process, regarding greenhouse gases and climate change and no substantial impacts were identified. Therefore, the requirements of the General Conformity Rule are not applicable and there would be no major effect on climate change.

Water Resources (EA Section 4.4): Minor and temporary effects from stormwater runoff could occur during construction activities. A Stormwater Pollution Prevention Plan (SWPPP) would be required and would include best management practices for controlling runoff. The Nellis AFB stormwater collection basin would be modified to accommodate the increased hard surface runoff volume resulting from the over-pavement and/or fill of the LOLA extension and east apron expansion. Some minor fill of ephemeral streams, which could be considered jurisdictional under Section 404 of the Clean Water Act, may be required for the ramp expansion and O'Bannon Road realignment. These activities would require a Section 404 permit from the U.S. Army Corps of Engineers. No impacts on groundwater quality or supplies would be expected.

Biological Resources (EA Section 4.5): Approximately 28 acres of desert habitat would be removed from biological production for the construction of the new TASS/CIG HQ, ramp expansion, LOLA expansion, and relocation of O'Bannon Road. Since these areas have been previously disturbed and the surrounding areas contain much higher quality habitat, this loss would be considered a minor effect. No threatened or endangered species would be affected.

Earth Resources (EA Section 4.6): Approximately 28 acres of soils would be disturbed and over-paved due to the MILCON projects. The best management practices that would be implemented as part of the SWPPP would reduce any indirect erosion during and after construction. No hydric or prime or unique farmland soils would be impacted.

Hazardous Materials/Waste (EA Section 4.7): Demolition of Building 295 could potentially expose asbestos containing material and lead-based paint. All such material, if found, would be removed and disposed of in accordance with Federal and state regulations. No existing or former Environmental Restoration Program sites would be affected by the proposed MILCON or O&M projects.

Cultural Resources (EA Section 4.8): Cultural resources surveys conducted within the project's footprint, as well as previous surveys conducted in the vicinity, discovered no significant cultural features or sites. An evaluation of Building 295 was also conducted, which revealed that the building did not present any significant value relative to the Cold War Era structures. The Air Force is currently in the processing of consulting with the Nevada State Historic Preservation Office regarding potential impacts to archaeological and historic resources under Section 106 of the National Historic Preservation Act (NHPA) and is seeking a finding of no adverse effect; NHPA consultation requirements will be complete prior to finalization of this EA and signature of this FONSI, and will be included in the Final EA documentation.

Land Use (EA Section 4.9): While the specific use of the land within the MILCON projects' footprint would change from natural, but disturbed habitat, to hardened structures, the overall land use would still remain military use. The changes are compatible with the Nellis AFB Real Estate Master Plan. Consequently, these effects would be negligible.

Public Health and Safety (EA Section 4.11): Public safety risks would not be measurably increased under the Preferred Alternative. The risk factors for F-16 aircraft are extremely low. Because there would be an imperceptible shift in the 65 dBA DNL contour, no significant adverse effects on public health would be expected.

Socioeconomics (EA Sections 4.10 and 4.12): No long-term adverse effects on the region's socioeconomic conditions would be expected; however, some temporary adverse effects would occur during construction related to traffic and minor noise increases. Some short-term benefits would occur during the construction activities, which would occur over a 4-year period; the construction costs are currently estimated to have a value of approximately $81 million. Long-term negligible benefits to the socioeconomic conditions would occur from the 279 new jobs that would be created at Nellis AFB, which would add an estimated $24.7 million in annual earnings for Clark County residents. There would be no additional disproportionately high and adverse impacts on minority and low-income populations near Nellis AFB compared to those impacts associated with the No Action Alternative. There would also be no additional disproportional impacts regarding the protection of children.

4.0 CONCLUSION

Based on the analysis of the EA conducted pursuant to the relevant requirements of National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321 et seq.), the Council on Environmental Quality (CEQ) NEPA Implementing Regulations (40 CFR § 1508.13 et seq.) regulations, and Air Force Environmental Impact Analysis Process (EIAP) (32 CFR Part 989.15), and after careful review of the potential impacts, I conclude that both the activation and beddown of the TASS at Nellis AFB (Preferred Alternative) and the No Action Alternative would result in no significant impacts on the quality of the human or natural environments. Therefore, a Finding of No Significant Impact is warranted, and an Environmental Impact Statement is not required for this action. The signing of this Finding of No Significant Impact completes the environmental impact analysis process.

______________________________ ______________________

PAUL J. MURRAY Date
Colonel, USAF
Commander

EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been prepared to identify the potential effects, beneficial and adverse, that would result from the proposed beddown of a Tactical Air Support Squadron (TASS) using F-16 aircraft from Hill Air Force Base (AFB) that have been replaced by F-35s. Beddown of the F-35s was addressed under a separate National Environmental Policy Act (NEPA) action and, thus, is not addressed in this EA. The Chief of Staff of the Air Force (CSAF) hosted a week-long Close Air Support (CAS) Focus Conference at the Pentagon on 2-5 March 2015 that included representatives from all the services, U.S. Special Operations Command, and other stakeholders. The conference brought together each service's CAS experts and generated several new joint initiatives to improve the CAS mission. The service representatives agreed to improve and expand training opportunities for both aviators and in-demand Joint Tactical Air Control Parties, by using live virtual constructive training and CAS aircraft for Joint Terminal Attack Controller (JTAC) training.

PUPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to improve and expand training opportunities for both aviators and in-demand Joint Tactical Air Control Parties. The Proposed Action is to ensure CAS capability outside the counterinsurgency environment and across the full range of military operations in increasingly complex environments by standing up and activating a TASS. The Proposed Action is needed to meet the goals of the CSAF by enhancing the CAS environment; developing combined training for all U.S. Department of Defense services; and training aircrews to be capable of supporting joint and coalition combat missions and other national security operations.

PREFERRED ACTION ALTERNATIVE

The U.S. Air Force (USAF) proposes to stand up the TASS at Nellis AFB. The new TASS would be an integral element of the CAS Integration Group (CIG), and would be integrated into the existing 57th Operations Group (57 OG) at Nellis AFB. The action would transfer/assign up to 16 4th Generation F-16C aircraft, (14 Primary Aircraft Inventory [PAI] and two Backup Aircraft Inventory [BAI]) to the TASS.

Personnel at Nellis AFB would increase by a total of 123 USAF and government support positions and 170 contract maintenance positions. The 123 positions include billets for the TASS, minor additions to the CIG Staff, munitions personnel, and base operating support personnel. All contract maintenance personnel would arrive by the end of Fiscal Year (FY) 18; of the 123 government personnel, 57 would be expected to arrive in FY 18 and the remainder the following year.

Several military construction (MILCON) and operations and maintenance (O&M) projects would be required to support the beddown. The east side of the existing ramp space would be expanded by approximately 11.5 acres to accommodate aircraft displaced by the 16 F-16s which will be parked on the west ramp. The live ordnance loading area (LOLA) would also be expanded by approximately 7 acres. A new 9,225-square-foot support facility at the LOLA would be constructed. These actions would also require that the existing O'Bannon Road be relocated to accommodate the apron and LOLA expansions.

The TASS/CIG HQ would be a new 27,300-square-foot building and would be constructed adjacent to Freedom Park on the west side of the airfield. A new maintenance (Mx) hangar and Aircraft Maintenance Unit (AMU) facility would require demolition of Building 295 and new construction on-site. The new Mx Hangar/AMU would be 55,000 square feet.

These projects would be expected to require 12 to 18 months to complete and would be phased over a 4-year period beginning with the O&M projects in late calendar year 2017. Approximately 20 to 50 construction personnel would be on-site during the construction period, particularly during the peak construction action when concrete is being delivered.

The TASS, when fully operational, would be expected to fly approximately 2,700 annual sorties as part of the CAS training mission. Of these, about 300 (or approximately 11 percent) are expected to be flown at night between 10:00 p.m. and 7:00 a.m. The aircraft would depart Nellis AFB and transit to the Nevada Test and Training Range (NTTR) using restricted airspace (R-2508) and the NTTR's Military Operation Airspace (MOA). Aircraft carrying live munitions always depart to the north, away from downtown Las Vegas. The NTTR has the range and airspace capacity to accommodate TASS operations. TASS operations would represent only a negligible increase.

NO ACTION ALTERNATIVE

CEQ regulations (40 CFR §1502.14(d)) that implement NEPA require analysis of a No Action Alternative. "No action" means that the Proposed Action (i.e., CIG and TASS beddown at Nellis AFB) would not take place. Under the No Action Alternative, no TASS beddown would occur at Nellis AFB and no on-base construction or personnel increases would be implemented. Nellis AFB, the NTTR, R-2508, and surrounding airspace would remain status quo. From the operational perspective, taking no action countermands CSAF direction and multi-service desires to advance and preserve the joint CAS enterprise.

MITIGATION MEASURES

As only negligible to minor adverse impacts were identified relative to the Proposed Action, no mitigation measures were required. However, several best management practices were identified to be implemented to further reduce potential effects. A Stormwater Pollution Prevention Plan would be developed and implemented, as part of the General Construction Permit, to control stormwater from the construction sites and reduce erosion. All construction equipment would be properly maintained and construction sites would be watered to reduce air emissions. If clearing or grubbing of construction sites would occur during migratory bird breeding season, surveys would be conducted for nests and breeding birds, and buffer zones around the nesting areas would be established to avoid disturbance to breeding/nesting pairs.

POTENTIAL ENVIRONMENTAL IMPACTS

Implementation of the Proposed Action would have negligible to minor temporary impacts on air quality, water quality, local transportation, and ambient noise levels during the construction period. A total of approximately 28 acres of desert habitat would be removed from biological production to the construction of the new TASS/CIG HQ, ramp expansion, LOLA expansion, and relocation of O'Bannon Road. Since these areas have been previously disturbed and the surrounding areas contain much higher quality habitat, this loss would be considered a minor effect. No threatened or endangered species would be affected. No adverse effects on historic properties would be anticipated; surveys of the construction sites, as well as an evaluation of Building 295, were conducted in compliance with Section 106 of the National Historic Preservation Act.

The addition of the F-16 aircraft operations would have a negligible effect on the day-night level (DNL) contours at Nellis AFB and any changes would be imperceptible to the surrounding community. The increase in operational and support staff for the CIG and TASS would result in long-term beneficial minor effects on the local socioeconomic conditions by increasing employment, purchase of goods and materials, and sales taxes.

THIS PAGE LEFT INTENTIONALLY BLANK

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF PHOTOGRAPHS

LIST OF APPENDICES

ACRONYMS AND ABBREVIATIONS

57 OG	57th Operations Group
ACC	Air Combat Command
ACM	Asbestos-Containing Materials
AFB	Air Force Base
AFI	Air Force Instruction
AGL	Above Ground Level
AICUZ	Air Installation Compatibility Use Zone
AMU	Aircraft Maintenance Unit
APE	Area of Potential Effect
APZ	Accident Potential Zone
BAI	Backup Aircraft Inventory
BCT	Brigade Combat Teams
BEA	Bureau of Economic Analysis
BLM	U.S. Bureau of Land Management
BLS	Bureau of Labor Statistics
BMP	Best Management Practice
BP	Before Present
CAA	Clean Air Act
CAS	Close Air Support
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CIG	CAS Integration Group
CLS	Contractor Logistics Support
CO	Carbon Monoxide
CO_2^e	Carbon Dioxide Equivalent
CSAF	Chief of Staff of the Air Force
CTS	Combat Training Squadron
dB	Decibel
dBA	A-weighted Decibel
DNL	Day-Night Average Sound Level
DoD	U.S. Department of Defense
DRC	Document Review Committee
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FR	Federal Register
FY	Fiscal Year
GBU	Guided Bomb Unit
GHG	Greenhouse Gas
GLO	General Land Office

HAP	Hazardous Air Pollutant
HQ	Headquarters
HUD	U.S. Department of Housing and Urban Development
ICRMP	Integrated Cultural Resources Management Plan
IO	Isolated Occurrence
JTAC	Joint Terminal Attack Controller
LBP	Lead-Based Paint
LOLA	Live Ordnance Loading Area
MAJCOM	Major Command
MILCON	Military Construction
MOA	Military Operations Area
mph	Miles Per Hour
MT	Metric Tons
MTR	Military Training Route
Mx	Maintenance
NAAQS	National Ambient Air Quality Standards
NACTS	Nellis Air Combat Tracking System
NDEP	Nevada Department of Environmental Pollution
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTC	National Training Center
NTTR	Nevada Test and Training Range
NVCRIS	Nevada Cultural Resources Information System
O&M	Operations and Maintenance
O_3	Ozone
PAI	Primary Aircraft Inventory
Pb	Lead
PM-2.5	Particulate Matter with a Diameter Less than or Equal to 2.5 Micrometers
PM-10	Particulate Matter with a Diameter Less than or Equal to 10 Micrometers
ppb	Parts Per Billion
ppm	Parts Per Million
QD	Quality Distance
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SNWA	Southern Nevada Water Authority
SO_2	Sulfur Dioxide
SQOPS	Squadron Operations
SWPPP	Stormwater Pollution Prevention Plan

TASS	Tactical Air Support Squadron
TCP	Traditional Cultural Property
TDY	Temporary Duty
$\mu g/m^3$	Microgram Per Cubic Meter
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WRF	Wastewater Recycling Facility

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 1.0
PURPOSE OF AND NEED FOR ACTION

1.0 PURPOSE OF AND NEED FOR ACTION

The U.S. Air Force (USAF), Air Combat Command (ACC), prepared this Environmental Assessment (EA) in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] §§4321-4317), implemented through the Council on Environmental Quality (CEQ) regulations of 1978 (40 Code of Federal Regulations [CFR] §§1500-1508), and codified at 32 CFR Part 989; and Air Force Instruction (AFI) 32-7061,*The Environmental Impact Analysis Process (EIAP)*. Other pertinent environmental statutes, regulations, and compliance requirements were also considered during the preparation of the EA and these authorities will be addressed in various sections throughout this EA when relevant to particular environmental resources and conditions.

1.1 INTRODUCTION

The USAF has prepared this EA addressing the potential effects, beneficial and adverse, resulting from the proposed beddown of a Tactical Air Support Squadron (TASS) using F-16 aircraft from Hill Air Force Base (AFB) that have been replaced by F-35s.

Chief of Staff of the Air Force (CSAF) hosted a week-long Close Air Support (CAS) Focus Conference at the Pentagon on 2-5 March 2015 that included representatives from all the services, U.S. Special Operations Command, and other stakeholders. The conference brought together each service's CAS experts and generated several new joint initiatives to improve the CAS mission. The conference outbrief was attended by CSAF, the Army Chief of Staff, the Marine Corps Commandant, the Navy Vice Admiral, the National Guard Bureau Chief, and others.

At the conference, service representatives agreed to improve and expand training opportunities for both aviators and in-demand Joint Tactical Air Control Parties, by using live virtual constructive training and CAS aircraft for Joint Terminal Attack Controller (JTAC) training. Service exercises would be aligned to better coordinate CAS training, such as combining Blue Flag exercises with the Army Warfighter Assessment.

1.2 PURPOSE OF AND NEED FOR THE ACTION

The purpose of the Proposed Action is to improve and expand training opportunities for both aviators and in-demand Joint Tactical Air Control Parties. The Proposed Action is to ensure CAS capability outside the counterinsurgency environment and across the full range of military operations in increasingly complex environments by standing up and activating a TASS. The Proposed Action is needed to meet the goals of the CSAF by enhancing the CAS environment; developing combined training for all U.S. Department of Defense services; and training aircrews to be capable of supporting joint and coalition combat missions and other national security operations.

1.3 DECISION TO BE MADE

The decision to be made upon completion of this EA is whether the proposed activation and standup of the TASS would result in significant environmental effects on the natural and human environments at the selected base. The need for mitigation measures or best management practices (BMPs) to reduce any potentially adverse effects, particularly in regards to associated construction activities, is also a decision to be made. If no significant impacts are identified during the NEPA process, the USAF will make the decision to sign the Finding of No Significant Impact and move forward with the Proposed Action. If significant impacts are identified, the USAF will decide to implement mitigation measures to reduce the impacts to a lower-than-significant threshold, proceed with the Notice of Intent to prepare an Environmental Impact Statement, or not implement the Proposed Action.

1.4 COOPERATING AGENCY AND INTERGOVERNMENTAL COORDINATION AND CONSULTATIONS

The Air Force encourages public participation in the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision-making. The Air Force set forth the Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) as a scoping process that informs local, state, tribal, and Federal agencies of proposed projects. 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.

The Air Force has initiated consultation under Section 106 of the National Historic Preservation Act (NHPA) with the Nevada State Historic Preservation Office (SHPO) and affected Native American Tribes. In addition, coordination letters have been sent to various other Federal and state agencies requesting their input regarding potential effects on resources that are managed by their agencies, including the U.S. Fish and Wildlife Service (USFWS), U.S. Bureau of Land Management (BLM), U.S. Environmental Protection Agency (USEPA), U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), and Nevada Department of Wildlife. These and other coordination letters are presented in Appendix A.

Public participation opportunities for the EA and decision-making on the Proposed Action are guided by 32 CFR Part 989. Upon completion, the EA will be made available to the public for 30 days, along with a draft Find of No Significant Impact (FONSI). At the end of the 30-day public review period, the Air Force will consider any comments submitted by individuals, agencies, or organizations on the EA or the draft FONSI. Correspondence can be found in Appendix A. As appropriate, the Air Force may then execute the FONSI and proceed with implementation of the Proposed Action. If it is determined prior to issuance of a final FONSI that implementation of the Proposed Action would result in significant impacts, the Air Force will publish a Notice of Intent to prepare an environmental impact statement (EIS) in the *Federal Register*, commit to mitigation actions sufficient to reduce impacts to less than significant levels, or not take the action.

Throughout this process, the public may obtain information on the status and progress of the Proposed Action and the EA through the 99th Air Base Wing Public Affairs, by calling (702) 652-2750; comments and questions can also be sent via email to 99ABW.PAOutreach@us.af.mil.

1.5 APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS

This EA was prepared by the USAF in accordance with NEPA of 1969 (42 U.S.C. §§4321-4347) and the CEQ regulations for implementing NEPA (40 CFR §§1500-1508), as well as 32 CFR Part 989, AFI 32-7061,*The Environmental Impact Analysis Process*, and other pertinent environmental statutes, regulations, and compliance requirements, as indicated in Table 1-1.

Table 1-1. Relevant Policy Documents, Invoking Actions, Regulatory Requirements, and Status of Compliance

Policy Document	Administrative Authority	Invoking Action	Requirements for Compliance	Status of Compliance
Archaeological Resources Protection Act of 1979 16 U.S.C. §470aa – 470mm	Department of the Interior	Excavation, removal, damage, or other alteration or defacing; or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands 43 Code Federal Regulations (CFR) §7.4	Because activities are exclusively for purposes other than the excavation and/or removal of archaeological resources, even though those activities might incidentally result in the disturbance of archaeological resources, no permit shall be required.	To be addressed in the EA
Clean Air Act of 1963, as amended 16 U.S.C. §7401-47671q	USEPA	Any Federal action where the total of direct and indirect emissions in a non-attainment area would equal or exceed the provided rates 40 CFR Part 51	Project emission levels were determined to be less than *de minimis* thresholds; therefore, a determination of conformity with applicable implementation plan is not required.	To be addressed in the EA
Comprehensive Environmental Response, Compensation and Liability Act of 1980 42 U.S.C. §9601 *et seq.*	USEPA	Release or threatened release of a hazardous substance 40 CFR Part 302	Development of emergency response plans, notification, and cleanup	To be completed by USAF during design and operation
Endangered Species Act (ESA) of 1973 16 U.S.C. §1531 *et seq.*	USFWS	All Federal actions in which there is discretionary involvement or control potentially impacting species listed under the ESA 50 CFR §402.03	Determination of no jeopardy to listed species and no destruction or adverse modification of critical habitat through consultation with the USFWS	To be addressed in the EA
Farmland Protection Policy Act of 1981 7 U.S.C. §9601 *et seq.*	NRCS	Any Federal action that impacts prime or unique farmland soils 7 CFR Part 658	Identify and take into account the adverse effects on the protection of farmland	To be addressed in the EA

Table 1-1, continued

Policy Document	Administrative Authority	Invoking Action	Requirements for Compliance	Status of Compliance
Federal Water Pollution Control Act of 1977 (also known as Clean Water Act or CWA) 33 U.S.C. §1251 *et seq.*	USEPA	Storage, use, or consumption of oil and oil products, which could discharge oil in quantities that could affect water quality standards, into or upon the navigable waters of the U.S. 40 CFR Part 112	Preparation of a Spill Prevention, Control, and Countermeasures Plan	To be completed by USAF or contractor
		Discharge of pollutants that could impact surface water or groundwater 40 CFR Part 122	Obtain a general National Pollutant Discharge Elimination System (NPDES) Permit	To be completed by USAF or contractor
	USEPA, U.S. Army Corps of Engineers (USACE)	Excavation, fill or discharge of materials into wetlands 40 CFR §230.404	Identification of wetlands and application for permit, if necessary	To be addressed in the EA
Migratory Bird Treaty Act of 1918 16 U.S.C. §703	USFWS	Any USAF action resulting in the take of any migratory bird, or the parts, nests, or eggs of such bird 50 CFR §21.11	Avoidance of take or application for permit	Proposed surveys prior to construction beginning during nesting season and in areas where nesting could occur
National Historic Preservation Act of 1966 54 U.S.C. §300101 *et seq.*	Advisory Council on Historic Preservation	Any Federal undertaking that could impact cultural resources 36 CFR Part 800	Assessment of effects through consultation with the Advisory Council on Historic Preservation	To be addressed in the EA
Occupational Health and Safety Act of 1970 29 U.S.C. §651 *et seq.*	Occupational Safety and Health Administration, Department of Labor	Employees performing in a workplace 29 CFR §1910.5(a)	Adherence to occupational health and safety standards	To be completed by USAF during design and operation

Table 1-1, continued

Policy Document	Administrative Authority	Invoking Action	Requirements for Compliance	Status of Compliance
Resource Conservation and Recovery Act (RCRA) of 1976 42 U.S.C. §6901 *et seq.*	USEPA	Collection of residential, commercial, and institutional solid wastes and street wastes 40 CFR Part 243	Adherence to guidelines for waste storage and safety and collection equipment, frequency, and management	To be completed by USAF during design and operation
		Procurement of more than $10,000 annually of products containing recovered materials 40 CFR Part 247	Procure designated items composed of the highest percentage of recovered materials practicable	To be completed by USAF during design and operation
		Recovery of resources from solid waste through source separation 40 CFR Part 246	Recovery of high-grade paper, residential materials, and corrugated containers	To be completed by USAF during design and operation
RCRA of 1976 42 U.S.C. §6901 *et seq.*	USEPA	Treatment, storage, or disposal of hazardous waste on-site 40 CFR §262.10(c)	Determination of hazardous or non-hazardous nature of solid waste, obtain a USEPA identification number if necessary, properly accumulate hazardous waste, and maintain a record	To be completed by USAF during design and operation
Executive Order (EO) 11988: Floodplain Management 42 Federal Register (FR) 26,951 (May 24, 1977)	Water Resources Council, Federal Emergency Management Agency	Acquisition and management of Federal lands; Federally undertaken, financed, or assisted construction; conducting Federal activities affecting land use in a floodplain	Determine whether the proposed action will occur in a floodplain, then evaluate potential effects of any action in a floodplain	To be addressed in the EA
EO 11990: Protection of Wetlands 42 FR 26,691 (May 24, 1977)	USACE, USEPA	Acquisition and management of Federal lands; Federally undertaken, financed, or assisted construction; conducting Federal activities affecting wetlands	Take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands	To be addressed in the EA

Table 1-1, continued

Policy Document	Administrative Authority	Invoking Action	Requirements for Compliance	Status of Compliance
EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations 59 FR 7629 (February 11, 1994)	USEPA	All programs or activities receiving Federal financial assistance that affect human health or the environment	Analyze the environmental effects, including human health, economic, and social effects of USAF actions, including effects on minority communities and low-income communities	To be addressed in the EA
EO 13045: Protection of Children from Environmental Health Risks and Safety Risks 62 FR 19883 (April 23, 1997)	USEPA	Any Federal action potentially affecting health and safety of children	Identify and assess environmental health risks and safety risks that may disproportionately affect children	To be addressed in the EA
EO 13423: Federal Environmental, Energy, and Transportation Management 72 FR 3919 (January 26, 2007)	USEPA, Department of Energy (DOE)	Acquisition planning, development of procurement programs, operation of a Federal facility	Incorporate waste prevention and recycling in the agency's daily operations and work to increase and expand markets for recovered materials through greater Federal Government preference and demand for such products	To be completed by USAF during design and operation
EO 13514: Federal Leadership in Environmental, Energy, and Economic Performance 74 FR 52117 (October 8, 2009)	CEQ	Construction, operation, and maintenance of a Federal facility; aircraft operations and worker commutes	Increase energy efficiency; measure, report, and reduce greenhouse gas emissions from direct and indirect activities; conserve and protect water resources through efficiency, reuse, and stormwater management; eliminate waste, recycle, and prevent pollution; design, construct, maintain, and operate high-performance sustainable buildings in sustainable locations	To be completed by USAF during design and operation

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 2.0
PROPOSED ACTION AND ALTERNATIVES

2.0 PROPOSED ACTION AND ALTERNATIVES

This section describes the alternatives that are analyzed in this EA. The action alternative analyzed in this EA meets the purpose and need, specifically to ensure effective CAS capability in increasingly complex operational environments, enhance the CAS environment over the next 10 years, preserve the USAF CAS culture, and train aircrews capable of supporting joint and coalition combat missions. Lack of realistic training would hinder ongoing and future global support and create unacceptable risks to the aircrews and those U.S. and allied ground forces that they support. As viewed by the CEQ, an alternative is considered reasonable if it is deemed to be "practical or feasible" from a "technical and economic" standpoint and meets the underlying purpose and need.

2.1 PROPOSED ACTION

The Proposed Action is to use up to 16 F-16s to beddown and activate the TASS to enhance the CAS training and support. The F-16s are excess aircraft from Hill AFB, which are being replaced with F-35s that were analyzed under a separate NEPA action. Additionally, a new organizational structure will be developed to provide supervision for the desired level of CAS training. The TASS would be organizationally integrated to an existing Operations Group (OG) and would reflect USAF emphasis on CAS and the USAF commitment to enhance and preserve the joint CAS culture to 2025 and beyond. The TASS would jointly train with existing Combat Training Squadrons (CTSs) at Nellis AFB (6 CTS and 549 CTS) and Fort Irwin (12 CTS) to fulfill this mission. The new TASS would be an integral element of the CAS Integration Group (CIG)[1], which is envisioned to be a joint participative (joint billeted) activity that would work to advance the CAS mission set through academics, practical instruction in the air and on the ground, and development and review of CAS doctrine.

2.2 SELECTION STANDARDS

NEPA and CEQ regulations mandate the consideration of reasonable alternatives to a proposed action. "Reasonable alternatives" are those that could also be utilized to meet the purpose of and need for a proposed action.

Per the requirements of 32 CFR Part 989, the Air Force Environmental Impact Analysis Process regulations, selection standards are used to identify alternatives for meeting the purpose and need for an Air Force action. In addition, selection standards may be used to narrow the range of alternatives to focus analyses, so as to meet the directive that environmental analyses be analytic rather than encyclopedic. Given the scope of the purpose and need as described previously in Section 1.2, the following selection

[1] The CAS Integration Group (CIG) is not an independent organizational unit, but rather an informal reference to the 57 OG, including its subordinate CTSs and the future TASS, meant to reflect the OG's significant mission of CAS integration.

standards have been identified. The first four selection standards are considered to be the most important in selecting a base for the beddown.

2.2.1 Interaction with JTAC Training Programs

Interaction with the cadre and students of JTAC training programs enhances professional expertise and optimizes training opportunities and efficiencies for high-demand JTACs. The ability to brief and debrief in a face-to-face environment leverages highly desirable training opportunities not normally available to CAS participants. This capability allows for critical and immediate feedback to the trainer and trainee, which helps evaluate the utility and value of tactics employed by both parties. This feedback process forms a continuous improvement cycle, or synergy, between CAS aviators and JTACs, which ultimately improves support to U.S. ground force maneuver elements. Since the CIG and TASS will provide experienced CAS aviators and staff charged with training, developing, refining, and testing CAS tactics, a location offering interaction with JTAC training is required.

2.2.2 Interaction with the U.S. Army National Training Center (NTC)

Interaction with cadre and participants of the NTC at Fort Irwin provides unparalleled training opportunities with U.S. Army Brigade Combat Teams (BCTs) preparing for combat. The NTC exercise is the capstone event for BCTs preparing to deploy to combat operations and provides tough, realistic Unified Land Operations with Unified partners, including CAS operations from all U.S. Services' aviation assets. The USAF Green Flag Exercise was established at Nellis AFB to host training exercises in support of the NTC, and is considered the preeminent CAS training for aircrews and ground maneuver forces alike. The 549 CTS is resident at Nellis AFB specifically in support of Green Flag. The 12 CTS resides at Fort Irwin and manages the airspace and exercise control for Green Flag. A location offering interaction with Green Flag exercises is required to further the vision of the CIG and TASS to advance the joint CAS enterprise and preserve the USAF CAS culture.

2.2.3 Maximum Use of Existing Missions and Infrastructure to Accommodate the CAS Mission

A base that requires minimal changes to accommodate the CIG and TASS would offer a more efficient and effective alternative than a site that needs extensive changes or improvements. Such efficiency and effectiveness can be measured in terms of relative costs. For example, fewer infrastructure improvements, personnel changes, or unit relocations would translate into lower overall costs. Making use of existing infrastructure could minimize new construction and ground disturbance, which may equate to fewer environmental impacts. Leveraging existing organizational structures and units would eliminate the need to uproot and transfer existing missions and personnel in order to realize training synergies. Finally, chronic shortages in USAF aircraft maintenance personnel require that the new mission be supported by Contractor Logistics Support (CLS) for backshop and flight line maintenance. In-place CLS would provide an efficient and cost-effective alternative to establishing a new contract at another base. A location that leverages existing infrastructure, missions, organizational structures, and CLS maintenance is required.

2.2.4 Runway Length

Due to the expected operational parameters for 4th Generation aircraft anticipated for the TASS, an 8,000-foot-long runway that includes an arresting cable would be required.

2.2.5 Integrated Battlespace for Training

An integrated battlespace environment for training consists of airspace, range, and other assets that support the full spectrum of CAS operations that could be encountered in combat. Such an environment supports realistic activities, including major exercises involving different types of aircraft, ground maneuver assets, joint command and control elements, and ground-based threats in an integrated battlespace environment that requires aircrews to operate and react as they would in combat. Since the TASS will train under as realistic conditions as feasible, a location offering an integrated battlespace environment is required.

2.2.6 ACC Base or Existing ACC Tenant Organization

ACC is the USAF's primary fighter command and the Major Command (MAJCOM) responsible for organizing, training, and equipping combat-ready forces to provide dominant combat airpower. CSAF directed ACC to establish the CIG under its organizational control, which is most effective when done on an ACC installation or under an existing ACC tenant organization. Competing priorities at other MAJCOM installations would jeopardize the ability of the CIG and TASS to meet their stated mission.

2.2.7 Ramp Space

The TASS, when fully established, would require a total of 16 aircraft (4th generation fighters/5th generation in the next 10 years) to meet the requirements of aircrew training, CAS support to NTC, support to JTAC training, and tactics review and development. Therefore, a base must provide sufficient ramp space to park 16 aircraft, or it must permit safe expansion of ramp space.

2.2.8 Ordnance Use and Ranges

Since the TASS would perform air-to-ground missions over 95 percent of the time, the availability of a full spectrum of air-to-ground training assets represents an essential criterion. To fully support JTAC training, the TASS must have access to and conduct operations at a tactical range that permits delivery of training (inert or nonexplosive) and live (explosive) ordnances using a myriad of techniques and tactics.

2.2.9 Range Instrumentation System

A significant proportion of the CIG and TASS mission would involve employing and evaluating the full range of CAS tactics used in combat. These activities, in part, test the capabilities of the aircraft and pilot, as well as ground maneuver forces, in realistic combat training situations. To provide the realism needed for these activities, TASS aircraft must engage in combat training with other aircraft and against a realistic array of ground threats. A range instrumentation system, therefore, must provide for live monitoring and recording of flight activities. Instructors and pilots can then review the training actions and use this feedback to improve performance and tactics.

2.2.10 Training Exercises

The CIG and TASS advance and preserve the CAS culture by successfully performing the CAS mission through realistic combat training with other friendly aircraft and realistic ground threats. To achieve this type of training, a base must offer an organizational structure and scheduled major exercises, as well as access to airspace and other interrelated training assets that promote the most realistic training available.

2.3 IDENTIFICATION OF BASING LOCATION FOR THE CIG AND TASS

To meet the specific and unique requirements of the CIG and TASS, a location must be able to satisfy each selection standard. Four bases were considered during this process, as indicated in Table 2-1. Of the 10 selection standards, the highest priority items are interaction with the JTAC Program, interaction with U.S. Army, NTC, maximum use of existing missions and infrastructure, and runway length. A base that scored poorly in one or more of these four areas was not necessarily disqualified, but may have a qualitative disadvantage when bases were evaluated in the strategic basing process. Only one location, Nellis AFB, meets these requirements, as described in the following paragraphs.

2.3.1 Interaction with JTAC Training Programs

JTAC Qualification Training and the JTAC Weapons School are both located exclusively at Nellis AFB. JTACs are critical to effective CAS and their production cannot keep up with demand for current combat operations. Nellis AFB offers the ability for maximum impact on JTAC training with opportunities for consistent, immediate, and face-to-face feedback between trainees and trainers.

2.3.2 Interaction with U.S. Army NTC

Nellis AFB is approximately 100 miles northeast of Fort Irwin and the NTC. Nellis AFB, as mentioned previously, is home to the 549 CTS, which hosts the USAF's premier CAS training exercise (Green Flag West) specifically in support of the NTC. Nellis AFB offers a USAF installation that permits participation in a large-scale realistic CAS training exercise with an established organizational structure and exercise control elements.

2.3.3 Maximum Use of Existing Missions and Infrastructure to Accommodate the CAS Mission

Three CTSs (6 CTS, 12 CTS, 549 CTS) with missions associated directly with CAS are currently located at Nellis AFB or nearby Fort Irwin. These CTSs are unique in their missions of training different elements involved with CAS and are able to capitalize on synergies between their specific training missions. Nellis AFB also has the 57th Operations Group (57 OG), which is the headquarters (HQ) element for the three CTSs and can easily transition to serve as the HQ element for the CIG. Lastly, Nellis AFB has a robust CLS program in place that can easily be expanded to include backshop and

Table 2-1. Summary of Screening Results

Considerations/Criteria	Nellis AFB	Hill AFB	Mountain Home AFB	Edwards AFB
Integrated Battlespace for Training	Easy, routine access to NTTR. Premier tactical ranges duplicate realistic combat operations. Instrumentation optimized to support training during large scale exercises. ACC controls the range	Easy, routine access to Utah Test and Training Range. Excellent tactical ranges and threat simulation. Instrumentation adequate. ACC controls the range. Range distance from primary customer diminishes utility.	Easy, routine access to MH Range Complex. Excellent tactical ranges and threat simulation. Instrumentation adequate. ACC controls the range. Range distance from primary customer diminishes utility.	Edwards AFB airspace optimized for test, not combat mission training. Access to China Lake complex, but owned by USN.
Interaction with JTAC training programs	Collocated JTAC training. Capacity for face-to-face briefs and debriefs.	JTAC training would have to relocate to Hill or go TDY for applicable training	JTAC training would have to relocate to MHAFB or go TDY for applicable training	JTAC training would have to relocate to Edwards or go TDY for applicable training
Interaction with U.S. Army NTC	NTC is nearby. Premier CAS exercise (Green Flag) already established out of Nellis	Impossible to support from home station due to distance away. Would need to go TDY to Nellis.	Impossible to support from home station due to distance away. Would need to go TDY to Nellis.	NTC is nearby. Could support but unable to attend Green Flag briefs and debriefs without going TDY to Nellis
Maximize use of existing missions and infrastructure	Home of premier CAS exercises and training. 3 x CTSs established on base. 57 OG mission easily absorbs another advanced training mission. Primary TASS customer (JTAC QC and JTAC WIC) collocated at Nellis. Existing tactical ranges and instrumentation easily support CAS mission. Maintenance (Mx) CLS currently exists for easy expansion to support TASS requirements.	CIG and TASS would be stand alone training unit. 388 OG focus needs to shift to include training. Primary units/exercises supported by CIG are not collocated on Hill. Primary TASS customer (JTAC QC and JTAC WIC) not collocated. Tactical ranges and instrumentation moderately support CAS mission. Mx CLS does not exist, necessitating new contract requirement.	366 OG focus already includes some training (RSAF). Primary units/exercises supported by CIG are not collocated on Hill. Primary TASS customer (JTAC QC and JTAC WIC) not collocated. Mx CLS does not exist, necessitating new contract requirement.	Edwards AFB primary mission is test. Training would be a significant focus shift. Requires significant unit reorganization to absorb CIG and TASS mission. Primary TASS customer (JTAC QC and JTAC WIC) not collocated. Tactical ranges and instrumentation inadequate to support CAS mission. Mx CLS does not exist, necessitating new contract requirement.
ACC base or existing ACC tenant organization	ACC Base	AFMC base w/ACC tenant	ACC Base	AFMC base w/ACC tenant
Runway Length	8000' min w/barriers. Multiple runways	8000' min w/barriers. Single runway	8000' min w/barriers. Single runway	8000' min w/barriers. Single runway
Ramp space	Inadequate. Need to build	Adequate, but requires AFMC surrender	Adequate	Adequate, but requires AFMC surrender
Ordnance use and ranges	Extensive tactical ranges with capacity for live and inert ordnance. Munitions build-up, transit, handling, and processing consistently exercised to support flying exercises, test, and Weapons School.	Substantial tactical ranges with capacity for live and inert ordnance. Munitions build-up, transit, handling, and processing exercised as required to meet operational training requirements.	Substantial tactical ranges with capacity for live and inert ordnance. Munitions build-up, transit, handling, and processing exercised as required to meet operational training requirements.	Tactical ranges available (USN permission) with capacity for live and inert ordnance. Munitions build-up, transit, handling, and processing is limited.
Range instrumentation system	Robust. Optimized for exercises and training	Moderate	Moderate	Significant. Optimized for Test
Training exercise	Home of multiple large scale, multi-unit, multi-service Flag exercises, including Green Flag to support U.S. Army. Infrastructure and organization optimized to execute exercises.	Range can support large scale exercise, but infrastructure and organization not set up to host routine exercises	Range can support large scale exercise, but infrastructure and organization not set up to host routine exercises	Test priority severely restricts training exercises in Edwards AFB airspace. Could support Nellis exercises, but with limited mission time.

Green – meets standards
Yellow – partially satisfies standard with minimal changes required
Red – does not meet standard

THIS PAGE LEFT INTENTIONALLY BLANK

flight line maintenance to support 4th generation aircraft maintenance requirements expected in the TASS.

2.3.4 Runway Length

Nellis AFB includes two runways, each measuring more than 10,000 feet in length and exceeding the 8,000-foot criterion for 4th Generation aircraft in the TASS. There are also arresting cables to meet this criterion.

2.3.5 Integrated Battlespace for Training

The Nevada Test and Training Range (NTTR) offers one of the best sets of facilities, ranges, infrastructure, and airspace to provide an integrated battlespace environment.

2.3.6 ACC Base or Existing ACC Tenant Organization

Nellis AFB is an ACC base and is home to multiple missions that directly or indirectly support the CAS mission set. Nellis AFB allows ACC to easily establish organizational control of the TASS and ensure that appropriate priority is given to CAS missions.

2.3.7 Ramp Space

Nellis AFB can accommodate over 140 aircraft on its ramps at the same time. While current and near future inventories of aircraft at the base remain at 151, the combination of aircraft from large force exercises and the TASS beddown creates the need for some additional ramp space. Nellis AFB has safe and secure areas to accommodate this needed ramp expansion.

2.3.8 Ordnance Use and Ranges

NTTR, which is managed and operated by Nellis AFB, meets this basing criterion. It includes more than 2,000 targets within 195 target complexes. A total of 81 target complexes permit ordnance delivery with live (explosive) weapons ranging from 5.56-caliber rounds to 2,000-pound bombs. Tactical targets within NTTR also permit use of inert (non-explosive) training ordnance. Almost every type of conventional (i.e., non-nuclear) air-to-ground ordnance is authorized for use on the NTTR. Additionally, restricted airspace R-2508, operated by Edwards AFB, is available for operations in support of the U.S. Army and the NTC, including live ordnance expenditure at Leach Lake Tactics Range.

2.3.9 Range Instrumentation System

NTTR provides extensive live monitoring, recording, and tracking instrumentation to support operations, including those supporting Green Flag and the NTC. Using the Nellis Air Combat Tracking System (NACTS), the Range Control Center at Nellis AFB can track and monitor a single aircraft’s entire mission or a multi-aircraft exercise. NACTS replaced the former Air Combat Maneuvering Instrumentation tracking and uses a system of aircraft transmitters and ground receivers, which allows recording of all flight maneuvers for later replay and flight debriefings. The range instrumentation system offers real-time coverage for monitoring operations and unmatched training opportunities via replay capabilities. For these reasons, NTTR and Nellis AFB meet this selection standard.

2.3.10 Training Exercises

Nellis AFB, along with the NTC and associated R-2508 airspace, represents the USAF's premier location to conduct complex, multi-aircraft CAS combat training exercises in support of ground maneuver units. These Green Flag exercises realistically simulate aircrew employment, actual battlefield combat, and the intense tempo of CAS operations. In terms of the TASS, the opportunity to participate in these Nellis AFB exercises would fulfill the selection standard defined above.

2.4 DETAILED DESCRIPTION OF THE ALTERNATIVES

2.4.1 Alternative 1 (Preferred Alternative)

The USAF proposes to stand up the TASS at Nellis AFB (Figure 2-1) and align it under the 57 OG. The aircraft requirement of the TASS is based on replicating, in a training environment, the CAS capability across the USAF. The action would transfer/assign up to 16 4th Generation F-16C aircraft, (14 Primary Aircraft Inventory [PAI] and two Backup Aircraft Inventory [BAI]) to the TASS.

Personnel would increase by a total of 123 USAF and government support positions and 170 contract maintenance positions. The 123 positions include billets for the TASS, minor additions to the CIG Staff, munitions personnel, and base operating support personnel. All 170 contract maintenance personnel would arrive by the end of FY 18. Fifty-seven of the 123 USAF and government support positions are programmed to arrive in FY18, with the remainder to arrive in FY19. The action would also include construction of new facilities and several building renovations, as outlined in the following paragraphs.

The base's Operation and Maintenance (O&M) facilities and runway aprons are at capacity; to avoid impediments to current missions on a long-term basis, several military construction (MILCON) and O&M facility projects would be required for full operational capability of the TASS. Given the extended timelines to secure MILCON funding, those facilities are not expected to be available for occupancy until at least 2022 (assuming Fiscal Year [FY] 20 funding and normal construction timelines). Since MILCON facilities could not be completed in time to meet the CSAF Initial Operating Capability requirements, near-term and mid-term mitigation strategies regarding facilities for maintenance and operations would be required to bridge the gap until new facilities are complete. Near-term strategies for operations would involve temporarily sharing space in existing facilities along with current missions already supported by the 57th Wing. Mid-term strategies would involve contracting temporary relocatable facilities (i.e., portable, modular buildings) until MILCON projects can be completed. Interim mitigation strategy for maintenance facilities would involve temporarily utilizing existing Green Flag and Red Flag maintenance facilities, which will degrade capacity to host Temporary Duty (TDY) units for large force exercises. The TASS aircraft would park on the Main Apron, reducing large-frame aircraft parking capacity. Interim mitigation strategy for additional eastside apron expansion would be to temporarily limit hosting large-frame aircraft for large force exercises.

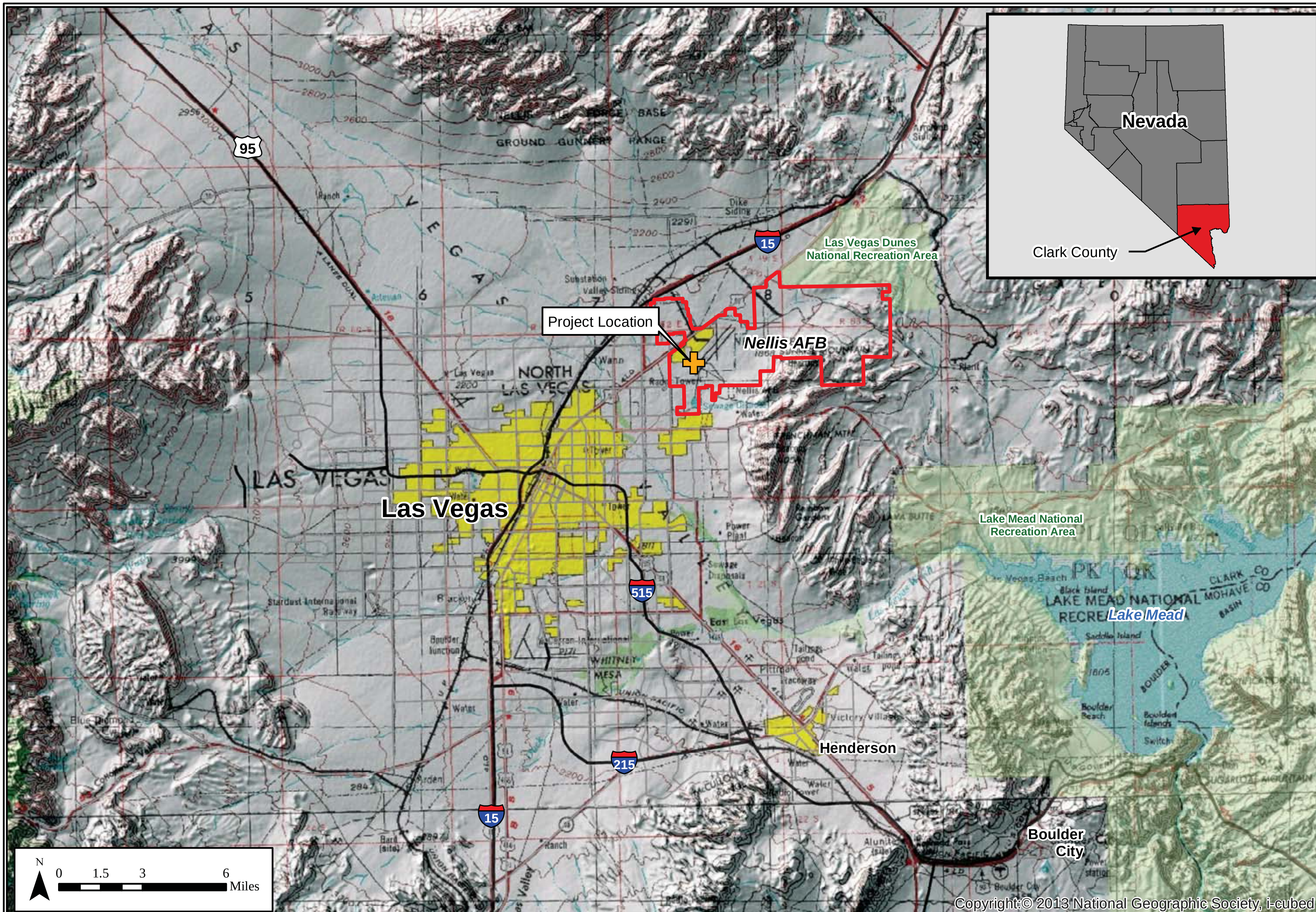


Figure 2-1. Vicinity Map

March 2017

Four MILCON facilities are required, two of which are anticipated to be funded during FY 20. The other two would be projected to be funded during FY 21. The first two projects would involve constructing the TASS Squadron Operations (SQOPS) and CIG HQ and the Maintenance (Mx) Hangar and Aircraft Maintenance Unit (AMU) facilities. The TASS/CIG HQ would be a 27,300-square-foot building and would be constructed adjacent to Freedom Park, in proximity to the Green Flag Operations Building and the JTAC Operations Building. This location would facilitate communication and coordination among these different and interoperable missions. Construction of this facility would require approximately 18 months.

Construction of the Mx Hangar/AMU would require the demolition of Building 295, which is a Vietnam-era building that currently is the home to the 57th Aircraft Maintenance Squadron. Building 295 does not provide the space required for the maintenance activities and support needed for the F-16s and AMU. The new Mx Hangar/AMU would be 55,000 square feet. Construction of the new Mx Hangar/AMU would also require the realignment of a road to accommodate the associated parking lot. Construction of these facilities would require approximately 24 months.

The other two MILCON projects involve expansion of the apron on the east side of the airfield to provide ramp space for displaced heavy aircraft and an addition to the Live Ordnance Loading Area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramp for six additional aircraft spaces and construct an associated support facility. The locations of these MILCON projects are presented in Figure 2-2.

The apron expansion would encompass approximately 500,940 square feet (ft^2) or 11.5 acres upon completion. The ramp area is currently being expanded to accommodate F-35 aircraft. The Proposed Action would provide additional expansion of this ramp space. Construction would be expected to start in August 2020 and require 12 months to complete.

The LOLA expansion would encompass approximately 295,000 ft^2 (7 acres) and the support facility would encompass 9,225 ft^2. The ramp and LOLA expansion would also require the relocation of O'Bannon Road, as depicted in Figure 2-2. Approximately 3,800 linear feet of the existing O'Bannon Road would be demolished. A new road would be constructed east of the apron and LOLA expansion, at least 750 feet from the Quality Distance (QD) arc of the LOLA. The new road would be approximately 6,000 feet in length and encompass approximately 13 acres. This new road project may also include the installation of culverts and will also include a staging area for equipment during construction. These projects would be expected to require 18 months to be completed, beginning in early 2021.

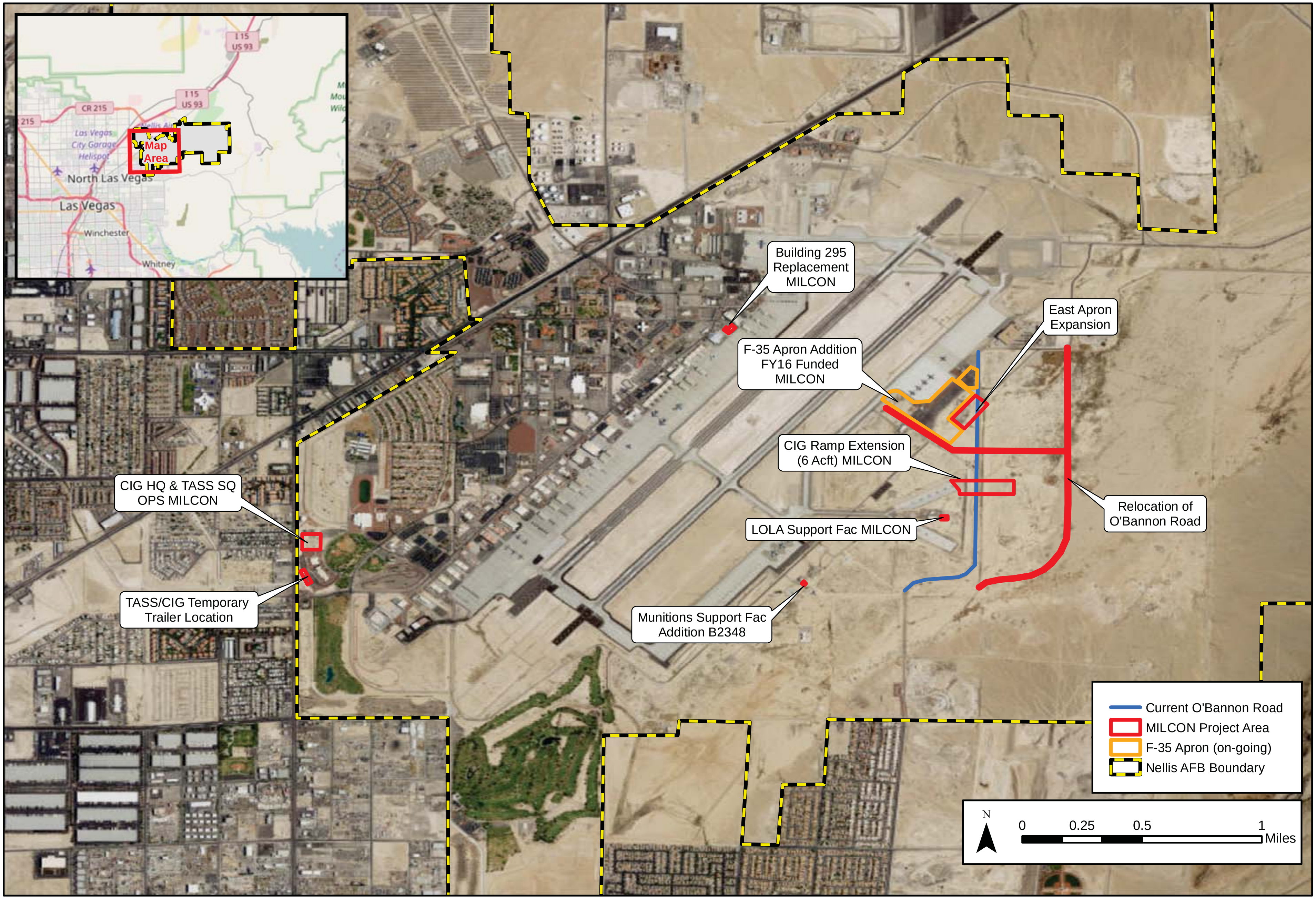


Figure 2-2. Locations of MILCON Projects

March 2017

Approximately 20 to 50 construction personnel would be on-site during the construction period, particularly during the peak construction action when concrete is being delivered. These crews include truck drivers, equipment operators, escort personnel, craftsmen, and supervisor personnel. The heavy construction equipment expected to be used is presented in Table 2-2.

Table 2-2. Heavy Construction Equipment

Equipment	Number
Water Trucks	5-10
Concrete Batch Plant	1
Concrete Trucks	5-10
Bulldozer/Excavator	5-10
Dump Trucks	5-10
Scrapers	1-5
Compactors/Vibrating Roller	1-5
Concrete Paving	1-5
Personnel Vehicles	5-20
Cranes	1-5
Forklift/Manlift	5-10

Two O&M projects were identified to support the CIG and TASS. Temporary modular facilities and an associated utility support project would be needed for interim space for operations and an addition to the Munitions Support Facility (Building 2348). All of these activities would need to occur immediately upon the final decision on the proposed beddown. Currently, these activities are anticipated to be started in late 2017 and would require 6 to 12 months to complete.

The TASS, when fully operational, would be expected to fly approximately 2,700 annual sorties as part of the CAS training mission. Of these, about 300 (or approximately 11 percent) are expected to be flown at night between 10:00 p.m. and 7:00 a.m. The F-16C is capable of flying a maximum short-endurance speed of Mach 2.02 (1,333 miles per hour [mph]) at 40,000 feet mean sea level (MSL). The maximum sustained speed is Mach 1.89 (1,247 mph) at 40,000 feet MSL. The proposed 2,700 annual sorties would be similar to the number of sorties flown by the 65th Aggressor Squadron, which was deactivated in 2015. The TASS sorties would use the same operational patterns as the current aircraft operations at Nellis AFB; that is, no change to flight paths, altitude, or airspace would be required to accommodate the TASS sorties.

The F-16C also has a varied payload of Guided Bomb Unit (GBU) types of ordnance and weapons, including GBU-10, GBU-12, GBU-24 Paveway family of laser-guided bombs, as well as the GBU-15 glide bomb, GBU-31, GBU-38 JDAM, and the M61 A1 Vulcan 20mm Gatling gun.

The aircraft would depart Nellis AFB and transit to the NTTR using R-2508 and the NTTR's Military Operations Area (MOA). Aircraft carrying live munitions always depart to the north, away from downtown Las Vegas. The amount of ordnance anticipated to be expended annually at the NTTR by the TASS relative to the existing missions at NTTR is presented in Table 2-3.

Table 2-3. Current and Projected Amount and Types of Ordnance to Be Expected at NTTR Annually*

Weapon Type	Current	Proposed by TASS
20 mm Target Practice Rounds	134,639	135,400
MJU-7 Flare	25,189	45,536
RR-188 Chaff	55,152	15,528
MK-82 LLD	1,159	190
BDU-50 BSU-33	141	180
GBU-12 PWII Inert BDU-50	80	322
BDU-331	48	3,538
2.75 White Phosphorus (M156)	1,937	2,352
2.75 IR ILLUM (M278)	92	448

* For Calendar Year 2015. Only those ordnance proposed by TASS depicted; numerous other weapons systems used at NTTR

2.4.2 No Action Alternative

CEQ regulations (40 CFR §1502.14(d)) that implement NEPA require analysis of a No Action Alternative. "No action" means that the Proposed Action (i.e., CIG and TASS beddown at Nellis AFB) would not take place, and the resulting environmental effects from taking no action would be compared to the effects of implementing the Proposed Action. Under the No Action Alternative, no TASS beddown would occur at Nellis AFB and no on-base construction or personnel increases would be implemented. Nellis AFB, the NTTR, R-2508, and surrounding airspace would remain status quo. From the operational perspective, taking no action countermands CSAF direction and multi-service desires to advance and preserve the joint CAS enterprise.

2.5 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

In compliance with NEPA, as promulgated under CEQ regulations 40 CFR §1502.14, the USAF must consider reasonable alternatives to the Proposed Action. Determining what constitutes a reasonable range of alternatives depends on the nature of the proposal and the facts in each case. The CEQ regulations require a brief discussion of the reasons for eliminating alternatives not considered reasonable (40 CFR §1502.14). Furthermore, the regulation implementing NEPA (promulgated at 32 CFR §989.8(b)) defines "reasonable" alternatives as those that meet the underlying purpose of and need for the Proposed Action and that would require a reasonable person to inquire further before choosing a particular course of action. To narrow the number of alternatives, 32 CFR §989.8(c) allows eliminating alternatives from detailed analysis based on reasonable selection standards (e.g., operational, technical, or environmental standards suitable for a particular project).

Several bases were screened by staff functional experts during the initial development of the Proposed Action. The bases were selected due to their similar mission, similar aircraft, or proximity to NTTR. Table 2-1, presented previously, summarizes the screening results and further supports CSAF guidance to establish the CIG and TASS at Nellis AFB.

Establishing the CIG and TASS at a base other than Nellis AFB would not be a reasonable alternative, as other bases do not meet the purpose and need or the selection standards identified in Section 2.2, including the mission requirement to support JTAC training programs and interacting with the U.S. Army NTC. The existence of these training programs firmly established at Nellis AFB make collocation of the CIG and TASS at Nellis AFB the only reasonable alternative. Other bases would need to make changes to their infrastructure, organization, and existing programs, and probably would need to reconfigure/create new airspace and ranges in order to meet the specific requirements of the CAS mission and support to ground maneuver forces. Changes would result in the following:

- A substantial increase in the costs of implementing the CIG and TASS, which is currently unprogrammed and will need to use execution-year funding to stand up. It is not possible to exactly quantify the costs to duplicate the existing infrastructure, airspace, and personnel for the CIG and TASS at an installation other than Nellis AFB and NTTR. Multiple actions would be needed at any base to duplicate or transfer existing capabilities and/or missions found at Nellis AFB. A conservative list of these actions includes the following: establishing range instrumentation with tracking, scoring, and related teaching facilities; relocating both the JTAC qualification course and the JTAC Weapons School; relocating multiple Combat Training Squadrons specifically established to support the U.S. Army NTC; adding new personnel or relocating existing personnel to establish a group organizational headquarters structure; and establishing a new CLS contract to provide backshop and flight line maintenance for 4th Generation aircraft. Also, if CTSs were to be relocated, extensive construction and millions of dollars could be required at other bases to accommodate their footprint.

- The likelihood of more extensive actions that could have effects on the environment greater than those potentially occurring from the Proposed Action.

No location or combination of locations other than Nellis AFB fulfill the unique purpose of and need for the Proposed Action. No reasonable action alternative to Nellis AFB exists. Therefore, only two alternatives were carried forward for detailed analysis: the No Action Alternative and the proposed beddown of the TASS at Nellis AFB.

2.6 SUMMARY OF ENVIRONMENTAL IMPACTS

Table 2-4 presents a summary of the impacts anticipated under the Proposed Action and No Action Alternative.

Table 2-4. Summary of Environmental Impacts

Affected Resource	Preferred Alternative	No Action Alternative
Biological Resources	Minor loss of or impacts on ground-nesting bird habitat; construction sites have been previously disturbed	No impacts, no change from current conditions
Cultural Resources	Surveys and assessments indicate that no significant resources are present; thus, construction activities would not result in any adverse impacts	No impacts
Land Use	No change in overall land use since it would remain as military lands; site-specific changes would occur	No change in land use
Air Quality	Minor impacts during new construction; additional negligible permanent impacts from aircraft and vehicles	No impacts
Water Resources	Minor impacts due to increased stormwater runoff; slight additional demand on water supply	No impacts
Noise	Negligible increase in noise due to addition of F-16Cs; construction noise would be imperceptible off-base and temporary	No impacts
Transportation	Minor to moderate impacts due to increased traffic during construction; slight additional increase in traffic on local streets upon completion of the beddown	No impacts
Utilities and Infrastructure	Negligible increase in utility resources by the new facilities and support personnel	No impacts
Socioeconomics	Temporary beneficial effects during construction from increased employment, local purchases of goods and materials, and sales taxes. Permanent minor, beneficial effects from additional earnings that would be spent in the ROI by the 293 additional personnel, revenues to local businesses, and taxes paid to state, county, and local governments.	No impacts

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 3.0
AFFECTED ENVIRONMENT

3.0 AFFECTED ENVIRONMENT

3.1 SCOPE OF THE ANALYSIS

The scope of this EA includes the analysis of effects resulting from the standup and activation of the TASS at Nellis AFB, including the construction activities required to support the enhanced mission. The scope also includes the realignment of the crews and support personnel from Hill AFB. The EA will identify, document, and evaluate the Proposed Action and No Action Alternative and the potential effects on the natural and human environments in the Region of Influence (ROI). Since the majority of effects would primarily occur in and surrounding Nellis AFB, the ROI used in this EA is Clark County, Nevada.

3.1.1 Resources Analyzed

Based on the components of the Proposed Action, the Air Force determined that there would be temporary and short-term effects due to construction or renovation projects at Nellis AFB, as well as long-term effects associated with the beddown and additional aircraft operations. As a result of this review, 12 resource categories are evaluated: land use; soils; air quality; noise; water resources; cultural resources; biological resources; socioeconomics; transportation; utilities; hazardous materials and waste; and safety.

3.1.2 Resources Eliminated from Detailed Analyses

The Air Force assessed numerous resources that have the potential to be affected by the Proposed Action or No Action Alternative. In accordance with CEQ regulations, this evaluation determined that three resources did not warrant further examination in the EA: 1) visual resources, 2) geology, and 3) airspace, as described in the following paragraphs.

Visual Resources

The Air Force anticipates no negative effects on or conflicts with visual resources as a result of the proposed projects for Nellis AFB. The justification is that construction and/or improvement projects would 1) take place on the installation and be consistent with the existing visual landscapes; 2) primarily occur in the developed portion of the installation; 3) be built of materials similar to other structures on the installation; and 4) be landscaped consistent with the existing habitat. The additional aircraft operations would be similar to those that are currently being conducted at Nellis AFB and most activities would occur within MOAs and over existing military ranges. For these reasons, implementation of the Proposed Action or No Action Alterative would not have an adverse impact on the visual environment at Nellis AFB or the lands surrounding the installation.

Geology

The Las Vegas Valley where Nellis AFB is located is part of the Basin and Range province of western North America, which was formed by the spreading of land between the surrounding mountain ranges. Surface geology consists of Quaternary alluvial deposits with no rare or important geological features (Price 2003). The valley is underlain by numerous strike slip faults capable of producing earthquakes in the 5 to 7 magnitude range. While the Las Vegas Valley is classified by the U.S. Geological Survey as a high-risk earthquake zone (McCallen et al. 2003), the Proposed Action would not impact the seismic risk for the area or for Nellis AFB. Similarly, the proposed construction activities would not affect subsurface geology or topography. Therefore, geology will not be discussed further in this EA.

Airspace

Nellis AFB airfield airspace environment comprises part of the Class B airspace that the Federal Aviation Administration (FAA) designates around the nation's busiest airports. Designed for air traffic operating under instrument flight rules, Class B airspace for Nellis AFB extends around Nellis AFB and Las Vegas' McCarran Airport. Class B airspace requires that all aircraft operating within the area be in contact with the controlling air traffic control facility. Upon departure from Nellis AFB, aircraft typically transit to NTTR using various airspace, military training routes (MTRs), MOAs, and Air Traffic Control Assigned Airspace overlying the MOAs (USAF 2011a). As mentioned previously, no changes to operational patterns, altitudes, or routes would be required to accommodate the TASS sorties.

NTTR includes restricted airspace that overlies the military lands and is adjacent to the MOA airspace. The restricted areas comprise special-use airspace within which the FAA has determined that potentially hazardous activities occur, including air-to-ground ordnance delivery. Regulations prohibit nonparticipating military and civil/commercial aircraft from flying within this airspace without authorization. Training activities within NTTR predominantly involve subsonic flight but supersonic flight is authorized in all NTTR airspace units, although at differing altitudes. The NTTR has the range and airspace capacity to accommodate TASS operations. TASS operations would represent only a negligible increase.

3.2 NOISE / ACOUSTIC ENVIRONMENT

Noise is generally described as unwanted sound, which can be based either on objective effects (e.g., hearing loss, damage to structures) or subjective judgments (e.g., community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is approximately 120 dB.

Noise levels occurring at night generally produce a greater annoyance than do the same levels occurring during the day. An A-weighted decibel (dBA) is a measure of noise for which the frequency content is adjusted to approximate the response of the human ears. Low and high frequencies are de-emphasized in A-weighted measures because the human ear does not respond equally to all frequencies, and is more efficient at medium range frequencies (AFI 32-7070).

A-weighted noise levels are averaged over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by the USEPA and has been adopted by most Federal agencies (USEPA 1974). A DNL of 65 dBA is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like construction. Acceptable DNL noise levels have been established by the U.S. Department of Housing and Urban Development (HUD) for construction activities in residential areas (HUD 1984):

- **Acceptable** (not exceeding 65 dBA DNL) – The noise exposure may be of some concern, but common building construction will make the indoor environment acceptable and the outdoor environment will be reasonably pleasant for recreation and play.

- **Normally Unacceptable** (above 65 but not greater than 75 dBA DNL) – The noise exposure is significantly more severe. Barriers may be necessary between the site and prominent noise sources to make the outdoor environment acceptable. Special building constructions may be necessary to ensure that people indoors are sufficiently protected from outdoor noise.

- **Unacceptable** (greater than 75 dBA DNL) – The noise exposure at the site is so severe that the construction costs to make the indoor noise environment acceptable may be prohibitive, and the outdoor environment would still be unacceptable.

As a general rule, noise generated by a stationary noise source, or "point source," will decrease by approximately 6 dBA for each doubling of the distance. For example, if a noise source produces a noise level of 85 dBA at a reference distance of 50 feet, then the noise level would be 79 dBA at a distance of 100 feet from the noise source, 73 dBA at a distance of 200 feet, and so on. To estimate the attenuation of the noise over a given distance, the following relationship is utilized:

Equation 1: $dBA_2 = dBA_1 - 20 \log (d_2/d_1)$

Where:

dBA_2 = dBA at distance 2 from source (predicted)
dBA_1 = dBA at distance 1 from source (measured)
d_2 = Distance to location 2 from the source
d_1 = Distance to location 1 from the source
Source: California Department of Transportation 1998

Noise modeling conducted by the Air Force Civil Engineering Center (AFCEC) in support of the updated Air Installation Capability Use Zone (AICUZ) identified the various noise levels (contours) that would occur outside of Nellis AFB, based on the current situation without the 65th Aggressor Squadron or the proposed TASS operations. Those noise contours are presented in Figure 3-1. The total area

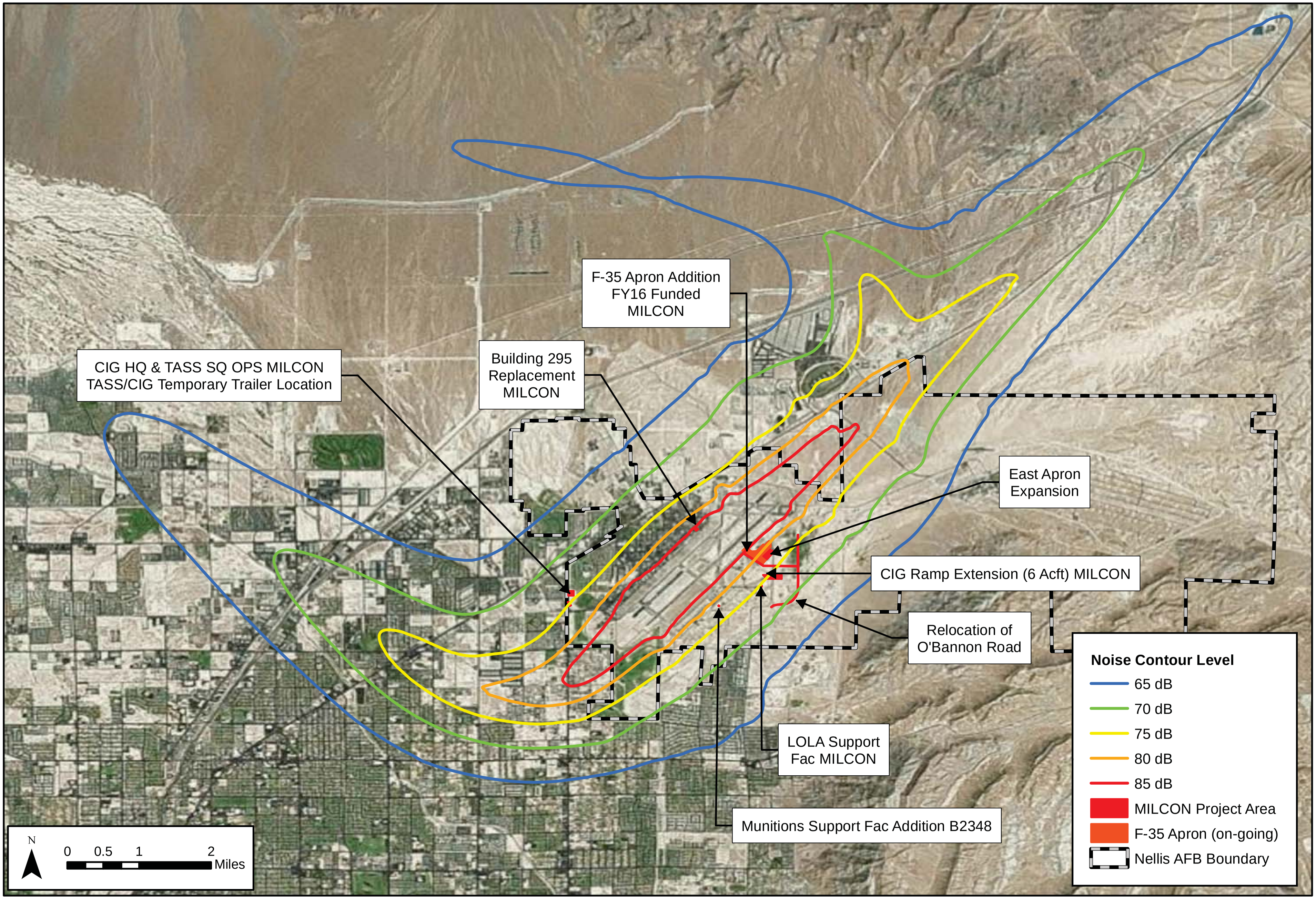


Figure 3-1. Current Noise Contours at Nellis AFB

March 2017

contained within the 65 dBA DNL contour is estimated to be 28,287 acres; the area between the 65 and the 70 dBA DNL is estimated to be 14,288 acres.

3.3 AIR QUALITY AND CLIMATE CHANGE

Air quality is defined by ambient air concentrations of specific pollutants determined by the USEPA to be of concern related to the health and welfare of the general public and the environment. The primary pollutants of concern are called “criteria pollutants” and include carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), suspended particulate matter with a diameter less than or equal to 10 micrometers (PM-10), fine particulate matter with a diameter less than or equal to 2.5 micrometers (PM-2.5), and lead. Under the Clean Air Act (CAA), the USEPA has established National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) for these pollutants (USEPA 2016a). These standards represent the maximum allowable atmospheric concentrations that may occur while ensuring protection of public health and welfare, with a reasonable margin of safety. Short-term standards (1-, 8-, and 24-hour periods) are established for pollutants contributing to acute health effects, while long-term standards (quarterly and annual averages) are established for pollutants contributing to chronic health effects. NAAQS, which are presented in Table 3-1, represent the maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect the public health and welfare. The Nevada Department of Environmental Pollution (NDEP), Bureau of Air Pollution Control, has adopted the NAAQS, with the exception of an additional 8-hour CO standard specific to elevations greater than 5,000 feet above mean seal level and a 1-hour standard for hydrogen sulfide. The amount of emissions is directly related to the area concentrations.

In addition to the ambient air quality standards for criteria pollutants, national standards exist for hazardous air pollutants (HAPs), which are regulated under Section 112(b) of the 1990 CAA Amendments. The National Emission Standards for Hazardous Air Pollutants regulate HAP emissions from stationary sources (40 CFR Part 61). HAPs emitted from mobile sources are called Mobile Source Air Toxics; these are compounds emitted from highway vehicles and non-road equipment (including aircraft engines) that are known or suspected to cause cancer or other serious health and environmental effects.

Areas that do not meet NAAQS standards are called nonattainment areas; areas that meet both primary and secondary standards are known as attainment areas. The Federal Conformity Final Rule (40 CFR Parts 51 and 93) specifies criteria or requirements for conformity determinations for Federal projects. The Federal Conformity Final Rule was first promulgated in 1993 by the USEPA, following the passage of Amendments to the Clean Air Act in 1990. The rule mandates that a conformity analysis must be performed when a Federal action generates air pollutants in a region that has been designated a nonattainment or maintenance area for one or more NAAQS.

Table 3-1. NAAQS

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 parts per million (ppm)	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3 month average	0.15 $\mu g/m^3$ (1)	Not to be exceeded
Nitrogen Dioxide (NO_2)		primary	1 hour	100 parts per billion (ppb)	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb (2)	Annual Mean
Ozone (O_3)		primary and secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution	$PM_{2.5}$	primary	1 year	12.0 $\mu g/m^3$	annual mean, averaged over 3 years
		secondary	1 year	15.0 $\mu g/m^3$	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 $\mu g/m^3$	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24 hours	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		primary	1 hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

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

(2) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

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

(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a State Implementation Plan (SIP) call under the previous SO_2 standards (40 CFR §50.4(3)), A SIP call is an USEPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the require NAAQS.

Source: USEPA 2016a: https://www.epa.gov/criteria-air-pollutants/naaqs-table

A conformity analysis is the process used to determine whether a Federal action meets the requirements of the General Conformity Rule. It requires the responsible Federal agency to evaluate the nature of a Proposed Action and associated air pollutant emissions, and calculate emissions as a result of that Proposed Action. If the emissions exceed established limits, as presented in Table 3-1, the proponent is required to implement appropriate mitigation measures.

Nellis AFB is located in Clark County, Nevada, which is listed as a marginal nonattainment/maintenance area for the 1997 8-hour O_3 standard and the 1971 CO standard. The portion of Clark County in proximity to the City of Las Vegas is designated as being in marginal nonattainment. The rest of Clark County, including Nellis AFB, is in attainment for all NAAQS. Because the Air Quality Control Region is in marginal nonattainment and a maintenance area for CO and O_3, the Clean Air Act General Conformity Rule (40 CFR Parts 51 and 93) applies and is addressed in the impact analysis. The entire NTTR area is in attainment for all NAAQS (USEPA 2016b).

Nellis AFB currently maintains a Title V air quality permit for stationary emissions from base operations. Current aircraft operations contribute to an increase in criteria pollutants in the Clark County airshed; however, the county is still in only partial nonattainment, primarily due to the effects of vehicle traffic in the City of Las Vegas.

Greenhouse Gases (GHGs) and Climate Change

GHGs are gases that trap heat in the atmosphere. These emissions occur from natural processes, as well as human activities. The accumulation of GHGs in the atmosphere regulates the earth's temperature. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative environmental, economic, and social consequences across the globe. Individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, an appreciable impact on global climate change would only occur when proposed GHG emissions combine with other GHG emissions from other man-made activities on a global scale.

Examples of Air Force-wide GHG reduction projects include energy-efficient construction, thermal and photovoltaic solar systems, and energy conservation programs. The Air Force continues to promote and install new renewable energy projects. As of 2015, the DoD has reduced their total GHG emissions by 13.2 percent (DoD 2016).

3.4 WATER RESOURCES

3.4.1 Affected Environment

3.4.1.1 Surface Water

Nellis AFB is located in the northeastern portion of the Las Vegas Valley, an intermountain basin of approximately 1,600 square miles within the Basin and Range Province of the United States, which extends southeasterly through the Las Vegas Wash into Lake Mead (Nellis AFB 2010a). No natural perennial streams, rivers, springs or lakes occur on Nellis AFB due to low precipitation, high evaporation rates, and low humidity. Surface water impoundments on Nellis AFB consist entirely of artificially constructed ponds within the golf course located within the southwestern corner of the installation. These impoundments are unlikely to be jurisdictional due to their isolation and lack of connectivity to other water bodies. Stormwater drainage channels have been excavated within and adjacent to the airfield, as well as within the residential areas to the west of the airfield. These channels facilitate the flow of stormwater from the installation into Clark County Regional Flood Control District channels, which in turn divert stormwater from Nellis AFB into the Las Vegas Wash.

Municipal waste water from Nellis AFB is treated by the Clark County Sanitation District and discharged into the Las Vegas Wash (Nellis AFB 2010). Several unnamed ephemeral streams and washes occur on Nellis AFB, including known washes that traverse the east side apron and LOLA construction activity areas (Figure 3-2, Photograph 3-1). Ephemeral streams and washes typically only contain water during storm events and most that occur on Nellis AFB drain into the Las Vegas Wash, and are potentially jurisdictional due to the connectivity between the Las Vegas Wash, Lake Mead, and Colorado River (Nellis AFB 2010a). Ephemeral streams and washes occurring within the construction activity areas on Nellis AFB would be considered jurisdictional if an ordinary high water mark is present and the ephemeral stream or wash can be shown to have a significant nexus with traditional navigable waters (USACE 2007). Field investigations within the project area showed that segments of an ephemeral wash consisting numerous braided channels flowing in a southwesterly direction on the east side of the airfield is located within the LOLA construction activity area (see Figure 3-1, Photograph 3-1). This ephemeral wash drains into a stormwater collection basin in the southern portion of the installation (see Figure 3-1). Water collected in this basin that is not lost to evaporation is drained by stormwater drainage channels into a tributary of the Las Vegas Wash that flows north to south along the west side of the airfield. The stormwater collection basin and network of stormwater drainage channels may constitute a significant nexus between the ephemeral wash that traverses part of the LOLA construction activity area and the Las Vegas Wash.

Photograph 3-1. Ephemeral wash located within the LOLA expansion area

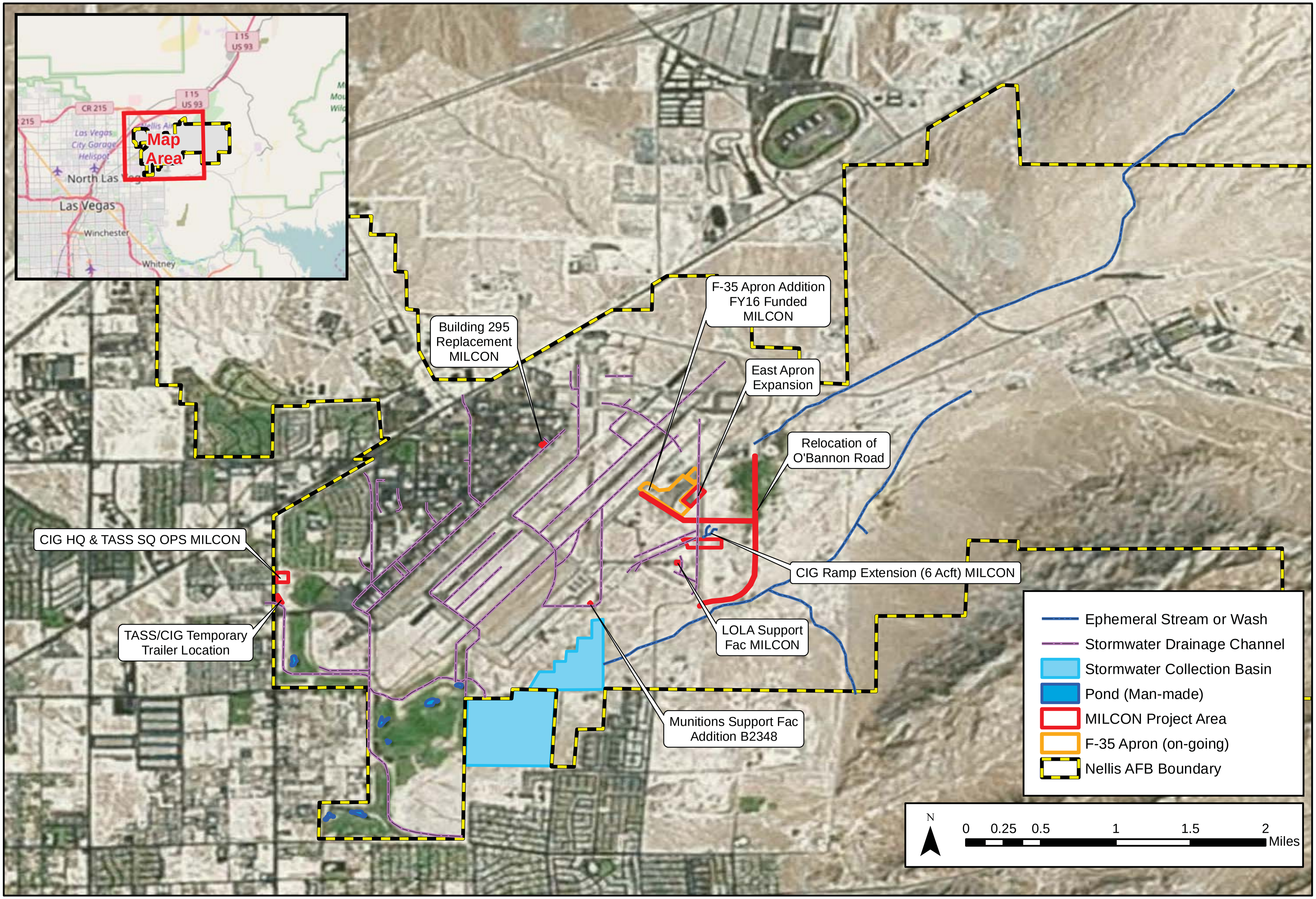


Figure 3-2. Surface Waters on Nellis AFB

March 2017

3.4.1.2 Floodplains

Nellis AFB lies within the Upper Colorado River Basin Hydrological Region of Nevada. The portion of this watershed in which Nellis AFB is located is characterized by few perennial streams and numerous ephemeral washes that are drained by the Las Vegas Wash, and is connected to the Colorado River by Lake Mead (Nellis AFB 2010a). The construction activity areas are not within a 100-year floodplain (Nevada Division of Water Resources 2013) as illustrated in Figure 3-3. An area used as a stormwater collection basin designated as Flood Risk Zone A lies approximately 1,700 feet to the southwest of the LOLA. Local rain storms can be severe enough to cause flash flooding within the vicinity of the project area, and development in the form of asphalt paving formerly porous surfaces may increase flash flood risk in the project area, and low-lying adjacent areas. Developed non-porous surfaces increase flood risk by increasing the volume and flow rate of stormwater in localized areas. Stormwater flows through ephemeral streams and washes often create small localized floodplains known as alluvial fans around the base of topographic features. In these areas soil tends to be more friable and erosion due to water movement is usually higher than in the surrounding area. Alluvial fans are potentially jurisdictional surface water features.

3.4.1.3 Wetlands

Although there are wetlands on Nellis AFB associated with the man-made ponds located on the golf course, Mr. Kevin Roukey of the USACE, Sacramento District, Nevada Office, indicated that these ponds are not subject to wetlands protection under the Clean Water Act because they were anthropogenically constructed and are fed by treated groundwater. The remainder of the installation is arid scrub or developed land that contains no wetlands (Nellis AFB 2010a).

3.4.1.4 Groundwater

The predominant source of drinking water at Nellis AFB is Lake Mead, which is supplied by the Southern Nevada Water Authority (SNWA) (Nellis AFB 2015). The SNWA supplements drinking water supplies to Nellis AFB with groundwater from the Las Vegas Valley Aquifer, and groundwater accounts for 29 percent of the drinking water at Nellis AFB (Nellis AFB 2015a). Within the Las Vegas Valley, bedrock is subdivided into four units as follows: 1) Precambrian metamorphic; 2) Precambrian and Paleozoic carbonate; 3) Permian, Triassic, and Jurassic clastic; and 4) Miocene igneous. This bedrock system transports groundwater from recharge areas in the Spring Mountains, located to the west of the installation, and the Sheep Range, located to the north of the installation, to valley-fill deposits within the Las Vegas Valley (Figure 3-4). This valley-fill reservoir constitutes the Las Vegas Valley Aquifer, and is characterized by heterogeneously deposited clastic sediments including coarse-grained materials (gravel and sand) and fine-grained materials (silt and clay). The Las Vegas Valley Aquifer ranges in depth from surface level to 5,000 feet. The segment of valley-fill reservoir underneath Nellis AFB is predominantly made up of extensive blue clay horizons ranging in depth from a few hundred to 1,000 feet (Plume 1989). Much of the Las Vegas Valley Aquifer produces water suitable for drinking and irrigation. Generally, groundwater within the segment of the Las Vegas Valley occupied by Nellis AFB has a low dissolved solids content, typically around 300 parts per million (ppm) (Loeltz 1963).

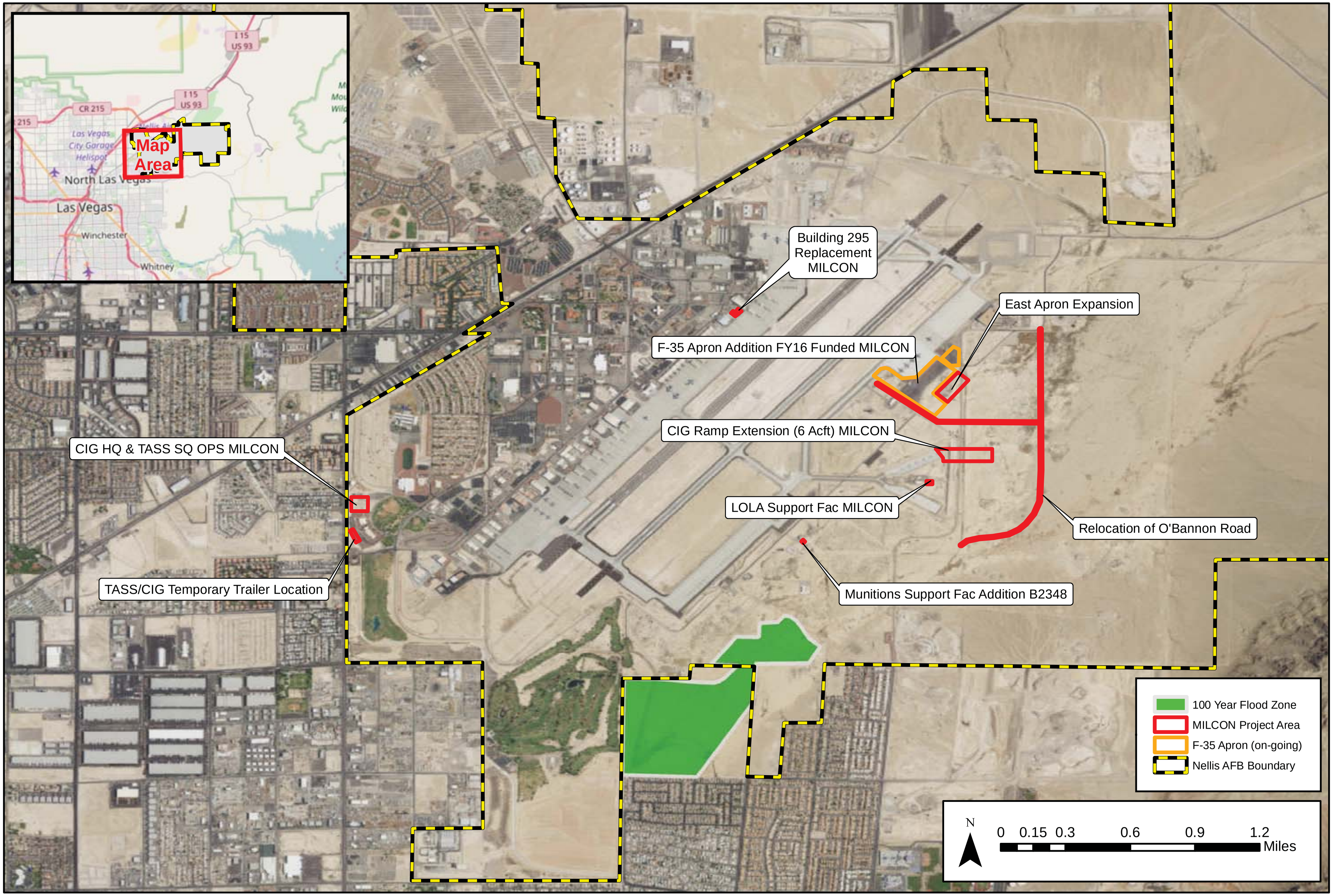


Figure 3-3. 100-year Floodplains on Nellis AFB

March 2017

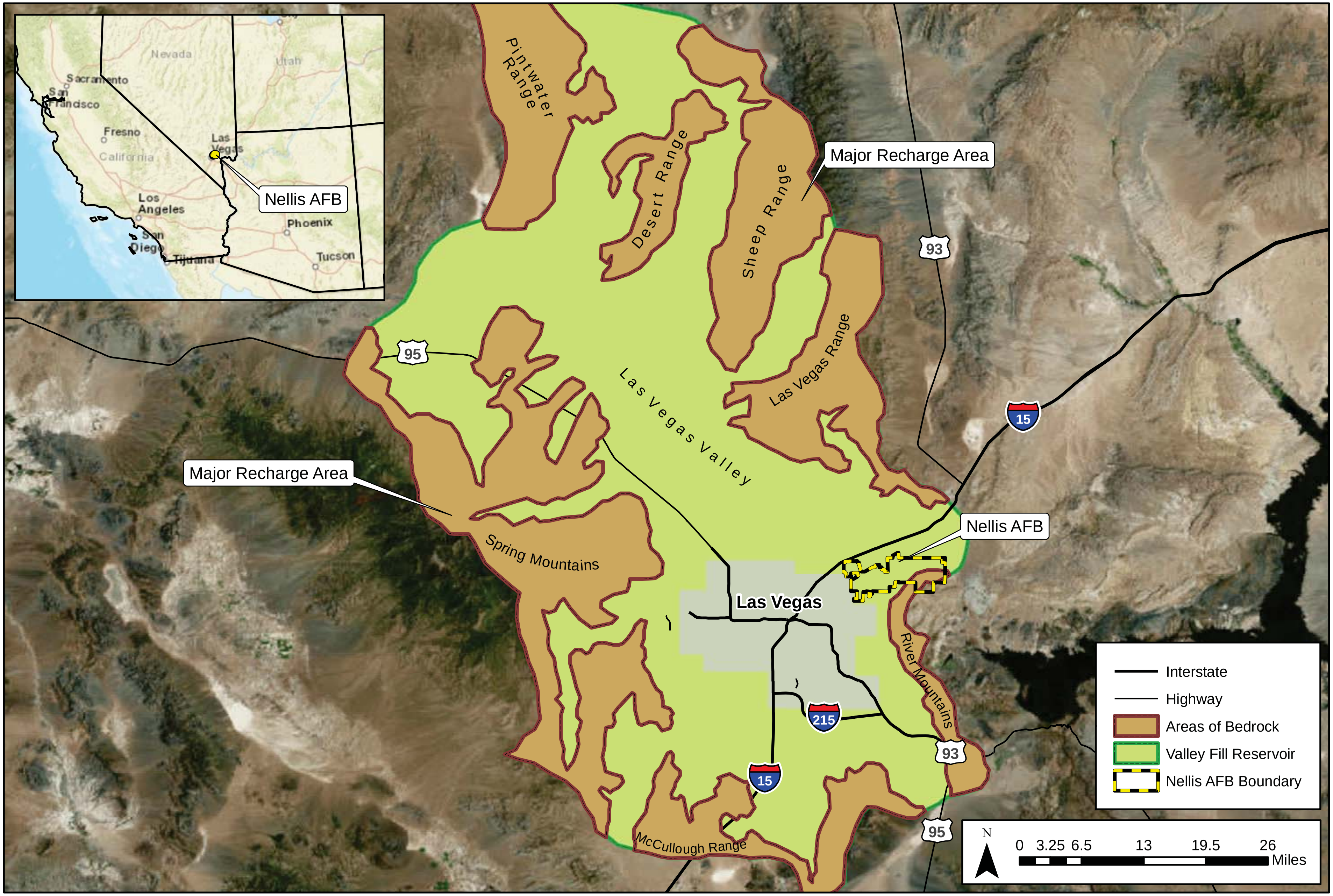


Figure 3-4. Groundwater Systems of the Las Vegas Valley

Dissolved solids refer to any minerals, salts, metals, cations (positively charged atoms), and anions (negatively charged atoms) dissolved in water. Dissolved solids typically are composed of salts such as calcium, magnesium, potassium, sodium, bicarbonates, chlorides, and sulfates, as well as small amounts organic material. The presence of these materials in groundwater effects water quality parameters such as corrosiveness, taste, and hardness (the quality of high mineral content in water that interferes with cleaning and solubility properties of municipal water). The state of Nevada has established a secondary drinking standard of 1,000 ppm for total dissolved solids in municipal water (NDEP 2013). By comparison, seawater has a total dissolved content of 350,000 ppm. Groundwater from production wells at Nellis AFB is analyzed monthly for nitrates, volatile organic compounds, and other contaminants, and remediation takes place in order to reduce contaminant loads in shallow groundwater (Nellis AFB 2010a and 2015a).

3.5 BIOLOGICAL RESOURCES

3.5.1 Affected Environment

3.5.1.1 Vegetation

The vegetation community at Nellis AFB can be described as Mojave Desert scrub (Chambers et al. 2013, Nellis AFB 2010a). This vegetation community occurs below 3,937 feet in elevation, and is characterized by thermophilic plant species (Chambers et al. 2013). The most common landforms within this ecosystem are bajadas, which Bajadas are broad slopes of alluvial sediment spread along the bases of mountains or foothills.

Bajadas within the Mojave Desert scrub ecosystem tend to be dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*), with sub-dominant species including desert thorn (*Lycium andersonii*), bladder sage (*Salazaria mexicana*), indigo bush (*Psorothamnus fremontii*), blackbrush (*Coleogyne ramosissima*), brittlebush (*Encelia farinosa*), and burro bush (*Hymenoclea salsola*). In lowland areas where groundwater is closer to the surface, dominant species include desert saltbush (*Atriplex polycarpa*), fourwing saltbush (*Atriplex canescens*), quail bush (*Atriplex lentiformis*), arrowweed (*Pluchea sericea*), creosotebush, burro bush, bebbia (*Bebbia juncea*), and sandpaper plant (*Petalonyx nitidus*). Dominant tree species within these communities are screwbean mesquite (*Prosopis pubescens*), honey mesquite (*Prosopis glandulosa*), and catclaw acacia (*Acacia greggi*). Sand dunes, areas of gypsum soils, rock outcrops, and steep slopes, also occur within the Mojave Desert scrub ecosystem. Field investigations were conducted by GSRC biologists on 21 September 2016. Vegetation communities and land for each survey area within the construction activities areas are summarized in subsections 3.4.2.1.1 through 3.4.2.1.4.

3.5.1.1.1 LOLA Extension

The LOLA extension area is located to the east of the airfield (see Figure 2-1). This area is bisected by O' Bannon Road, and an artificially constructed stormwater drainage ditch that runs parallel to O'Bannon Road. The stormwater conveyance ditch contains a mixture of substrates including broken rubble pavement and what appears to be native

Glencarb sandy loam soil (Photograph 3-2). The ditch is heavily vegetated, predominantly with desert saltbush. Other prevalent vegetation species within the stormwater conveyance ditch include creosote, rattlesnake weed (*Chamaesyce albomarginata*), hog potato (*Hoffmannseggia glauca*), desert mallow (*Sphaeralcea ambigua*), flatcrown buckwheat (*Eriogonum defelxum*), Mediterranean grass (*Schismus barbatus*), and coyote melon (*Cucubita palmata*).

The area to the east of O'Bannon Road and the stormwater conveyance ditch within the LOLA extension area is sparsely vegetated bajada that is intermittently disturbed by foot and four-wheel-drive vehicle traffic (Photograph 3-3). This area is eroded by stormwater and a segment of a relatively deep ephemeral wash traverses this area. The banks and bed of the ephemeral wash are more densely vegetated than the surrounding bajada and primarily contain desert saltbush (Photograph 3-4). The vegetation on the bajada outside of the ephemeral wash channel is almost entirely composed of creosote bush and desert saltbush, which is distributed sparsely throughout the survey area (Photograph 3-5).

The area to the west of O'Bannon Road within the LOLA extension area is completely disturbed and dominated by a large berm composed of gravelly fill material (Photograph 3-6). This area is sparsely vegetated, with less than 1 percent of vegetative ground cover. The only plant species observed in this area were Russian thistle (*Salsola tragus*), desert mallow, and Mediterranean grass.

Photograph 3-2. Substrate and vegetation community within the stormwater conveyance ditch bisecting the LOLA extension area.

Photograph 3-3. Bajada to the east of O'Bannon Road within the LOLA extension area.

Photograph 3-4. Ephemeral wash traversing the area to the east of O'Bannon Road within the LOLA extension area.

Photograph 3-5. Bajada vegetated with saltbush and creosote bush within the area east of O'Bannon Road and the airfield.

Photograph 3-6. Area dominated by berm composed of gravel fill to the west of O'Bannon Road within the LOLA extension area.

3.5.1.1.2 TASS Apron Addition

The TASS apron addition survey area is located on the east side of the existing airfield apron (see Figure 2-1). This area consists of heavily disturbed and predominantly paved landscape. In the western portion of this survey area there is a mowed runway buffer zone vegetated with a mixture of native and non-native plant species. Dominant vegetative ground cover in this area consists of dogweed (*Thymophylla pentachaeta*) (Photograph 3-7). Other plant species present include desert mallow, rattlesnake weed, flatcrown buckwheat, Russian thistle, and prostrate amaranth (*Amaranth blitoides*).

Photograph 3-7. Mowed runway buffer within the western portion of the F-35 apron addition survey area.

The western portion of the east-side apron addition survey area consists of a bajada landscape that is partially overburdened with gravel to create a vehicle and equipment storage lot (Photograph 3-8). The remainder of the area retains what appears to be native Glencarb soil substrate. The area is heavily disturbed by foot, four-wheel-drive vehicle, and equipment traffic (Photograph 3-9). Both the overburdened area and the area retaining natural soil substrate are sparsely vegetated, with creosote and saltbush being the dominant plant species. Other species present within the area are flatcrown buckwheat, hog potato, rattlesnake weed, and desert mallow. This area is bisected by a segment of the same stormwater conveyance ditch present in the LOLA extension area, and the substrate characteristics and vegetation community for this segment are the same as previously described.

Photograph 3-8. Bajada landscape overburdened by gravel fill in the eastern portion of the TASS east apron addition.

Photograph 3-9. Bajada landscape retaining native soil substrate in the eastern portion of the TASS apron addition.

3.5.1.1.3 TASS LOLA Support Facility

This area is adjacent to an existing facility and consists of a small, completely disturbed lot with less than 5 percent vegetation cover occurring throughout the site (Photograph 3-10). Plant species occurring in the area consist of sparsely distributed Russian thistle, rattlesnake weed, Mediterranean grass, and desert mallow.

Photograph 3-10. LOLA support facility area.

3.5.1.1.4 Munitions Support Facility Addition

The munitions support facility addition area is located to the southeast of the airfield (see Figure 2-1). This area is adjacent to an existing facility and is completely disturbed with no vegetative ground cover (Photograph 3-11).

3.5.1.1.5 TASS/CIG HQ Area

The TASS/CIG HQ survey area showed heavy signs of disturbance from foot and vehicle traffic, as well as previous construction activity. The area is bounded by a masonry wall, paved parking lot, and other disturbed landscape (Photograph 3-12). Total vegetative ground cover within the area is estimated to be less than 15 percent and is dominated by non-native plants including Russian thistle, Bermuda grass (*Cynodon dactylon*), and Mediterranean grass. Native plant species within the survey area include dogweed, desert mallow, rattlesnake weed, and flatcrown buckwheat.

Photograph 3-11. Munitions support facility addition area.

Photograph 3-12. TASS/CIG HQ survey area.

3.5.1.1.6 Building 295 Replacement Area

The existing Building 295 is proposed for demolition in order to construct the TASS Mx hanger/AMU. This area is completely surrounded by paved areas with a small area of landscaped plants immediately adjacent to the building, which contained one large

Joshua tree, a large mulberry tree (*Morus* sp.), a non-native pampas grass (*Cortadeira* sp.), a landscaped stand of prickly pear cactus (*Opuntia* sp.), and a small number of non-native ornamental shrubs.

3.5.1.2 Wildlife

Nellis AFB is located adjacent to the metropolitan area of Las Vegas and is generally an urban environment with some adjacent undeveloped lands. The installation is situated within the Mojave Desert scrub ecosystem, which is known to support a diversity of wildlife species, and some species of native wildlife that are tolerant of disturbance may be present on the installation.

Mammals typical of communities within the Mojave Desert scrub ecosystem that may be present on Nellis AFB include rodents such as Merriam's kangaroo rat (*Dipodomys merriami*), desert wood rat (*Neotoma lepida*), cactus mouse (*Peromyscus eremicus*), little pocket mouse (*Perognathus longimembris*), southern grasshopper mouse (*Onychomys torridus*), round-tailed ground squirrel (*Xerospermophilus tereticaudus*), black-tailed jackrabbit (*Lepus californicus*), and desert cottontail (*Sylvilagus audobonii*) (Rundel and Gibson 1996). Mustelids may also be present and include western spotted skunk (*Spilogale putorius*), striped skunk (*Mephitis mephitis*), and badger (*Taxidea taxus*). A number of bat species may be present, including pallid bat (*Antrozous pallidus*), western pipistrelle (*Pipistrellus hesperus*), Townsend's big-eared bat (*Corynorhinus townsendii*), Brazilian free-tailed bat (*Tadarida brasiliensis*), big brown bat (*Eptesicus fuscus*), and California myotis (*Myotis californicus*). Mammalian mesocarnivores such as coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), and bobcat (*Lynx rufus*), as well as large mammals such as mule deer (*Odoccoileus hemionus*) and desert bighorn sheep (*Ovis canadensis*), may also occasionally occur on Nellis AFB (Rundel and Gibson 1996).

Bird species with the potential to occur at Nellis AFB include species typically associated with Mojave Desert scrub ecosystems. Species present in bajada communities within Nellis AFB include common raven (*Corvus corax*), horned lark (*Eremophila alpestris*), loggerhead shrike (*Lanius ludovicianus*), mourning dove (*Zenaida macroura*), sage sparrow (*Amphispiza belli*), black-throated sparrow (*Amphispiza bilineata*), burrowing owl (*Athene cunicularia*), golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), greater roadrunner (*Geococcyx californianus*), lesser nighthawk (*Chordeiles acutipennis*), and Gambel's quail (*Callipepla gambelii*). In areas where Joshua trees, riparian vegetation, and cacti are present, bird species diversity increases, to include cactus wren (*Campylorhyncus brunneicapillus*), Scott's oriole (*Icterus spurius*), phainopepla (*Phainopepla nitens*), ash-throated flycatcher (*Myiarchus cinerascens*), and blacktailed gnatcatcher (*Polioptila melanura*) (Nellis AFB 2010a).

Most bird species that occur on Nellis AFB are protected under the Migratory Bird Treaty Act of 1918 (MBTA), which prohibits the intentional take of migratory birds or any part, nest, or egg thereof, without appropriate permits. In July 2000, the United States Court of Appeals for the District of Columbia Circuit ruled that the prohibitions in the

MBTA apply to Federal agencies and that a Federal agency's incidental taking and killing of migratory birds without a permit would violate the MBTA. Although Federal courts disagree on these issues, Congress responded by including a waiver for "military readiness activities" in the National Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314), section 315, and directed the Department of the Interior to promulgate regulations covering such activities. USFWS published its final rule in the Federal Register on 28 Feb 2007 at 72 FR 8931. 50 CFR Section 21.15 allows the Armed Forces to take migratory birds incidental to military readiness; if the Armed Forces determine that an activity may result in a significant adverse effect on a population of a migratory bird species, they must confer and cooperate with the USFWS to develop and implement appropriate conservation measures. PL 107-314, section 315(f) defines "military readiness activity" as training operations related to combat, and the testing of military systems for proper operation and suitability for combat use. The term does not include routine operation, construction, or demolition of facilities related to routine installation support functions or industrial activities. In addition to the MBTA, bald and golden eagles occurring on Nellis AFB are protected by the Bald and Golden Eagle Protection Act. Under 50 CFR Section 22.26, USFWS issues permits for incidental take of bald and golden eagles where it is not practicable to avoid an incidental take."

Common reptiles known to occur at Nellis AFB include side-blotched lizard (*Uta stansburiana*), western whiptail (*Cnemidophorous tigris*), zebra-tailed lizard (*Callisaurus draconoides*), yellow-backed spiny lizard (*Sceloporus uniformis*), desert night lizard (*Xantusia vigilis*), desert horned lizard (*Phyronosoma platyrhinos*), coachwhip (*Coluber flagellum*), western patch-nosed snake (*Salvadora hexalepis*), gopher snake (*Pituophis catenifer*), western shovel-nosed snake (*Chionactis occipitalis*), and Mojave rattlesnake (*Crotalus scultulatus*) (Nellis AFB 2010a). Amphibians are scarce within the installation. The most common species include Woodhouse's toad (*Anaxyrus woodhousii*), commonly found near man-made perennial water sources (e.g., golf course ponds), and red-spotted toad (*Anaxyrus punctatus*), which inhabit desert streams and canyons (Stebbins 2003).

The only native fish species known to occur on Nellis AFB is the tui chub (*Gila bicolor*), a minnow native to Nevada that inhabits perennial streams on the installation. Additionally, non-native koi (*Cyprinus* spp.) and carp (*Cyprinus carpio*) have been introduced to ponds on the golf course (Nellis AFB 2010a).

Numerous arthropods occur in the Mojave Desert, and arthropods can be abundant and diverse in urban landscapes such as Nellis AFB (McIntyre et al. 2001). Arthropods within the Mojave Desert are represented by insects including the orders Coleoptera (beetles); Lepidoptera (butterflies and moths); Diptera (flies); Orthoptera (grasshoppers and crickets); and Hymenoptera (bees, wasps, and ants); Arachnids including mites, spiders and tarantulas; Opiliones (harvestmen), Pseudoscorpions (pseudoscorpions), Scorpiones (true scorpions), Ricnulei (hooded tickspiders), and Thelyphonida (vinegarroons and tailed whip scorpions).

Few animals were observed during site reconnaissance conducted by GSRC biologists in September 2016, likely due to the amount of ground and vegetation disturbance within the survey areas and the high degree of noise disturbance from aircraft on the runway. Several round-tailed ground squirrels were observed within a network of burrows in the stormwater conveyance ditch that runs parallel to O'Bannon Road on the east side of the airfield (Photograph 3-13) and traverses LOLA extension and the east-side apron addition area (see Figure 2-1).

Photograph 3-13. Round-tailed ground squirrel burrows within the LOLA extension area.

Black-tailed jack rabbit was observed in the LOLA extension Area and the F-35 apron addition area. Desert cottontail was observed within the LOLA extension area and the TASS/CIG HQ area. Coyote scat and tracks were observed within the LOLA extension area. Building 265 was inspected for nesting birds and roosting bats, and none were observed. Bird species observed during surveys included black-throated sparrow, Say's phoebe (*Sayornis says*), and mourning dove within the east apron expansion area, as well as a red-tailed hawk (*Buteo jamaicensis*) flying over the survey areas to the east of the airfield.

Reptile species observed included side-blotched lizard and western whiptail, which were both observed within the east apron expansion area. No perennial waters occur in any of the survey areas; therefore, no amphibians or fish were observed. Several insects were observed, primarily in the east-side apron expansion area in the mowed runway buffer area, which was dominated by dogweed flowers. These insect species include migratory grasshopper (*Melanoplus sanguinipes*), Great Basin fritillary (*Speyeria egleis*), and Fernald's cuckoo bumble bee (*Bombus fernalde*).

3.5.1.3 Threatened and Endangered Species and Critical Habitat

The ESA requires that a discretionary Federal action not put into jeopardy the continued existence of a listed species, and not destroy or adversely modify their critical habitat. The USFWS maintains a list of species considered to be threatened with extinction or in danger of becoming extinct, as well as species' critical habitat designation.

Currently, no critical habitat for any Federally protected species is located on Nellis AFB. State-listed and Federally listed species known or thought to occur on Nellis AFB are summarized in Table 3-2. No Federally listed or state-listed species were observed within or near any of the survey areas during site reconnaissance conducted by GSRC biologists in September 2016. However, habitat is present within the F-35 Apron Addition Area and LOLA Extension Area that could potentially support western burrowing owl, particularly along the stormwater conveyance ditch to the east of the airfield. No evidence of western burrowing owl occupancy (i.e., fresh whitewash, pellets, feathers, or nest ornamentation) was observed in either of these areas. Potential habitat also exists in these areas for desert tortoise (*Gopherus agassizi*). No tortoises were observed during site reconnaissance, and no evidence of occupancy (i.e., suitable burrows, scat) was documented.

Table 3-2. Federally Listed and State-Listed Protected Species Known or Thought to Occur at Nellis AFB

Common Name	Scientific Name	Federal Status	BLM Status	State Status
Plants				
Las Vegas bearpoppy	*Arctomecon merriami*	Species of Concern	Special Status Species	Unlisted
Las Vegas buckwheat	*Eriogonum corymbosum* var. *nilesii*	Candidate	Special Status Species	Proposed Critically Endangered
Reptiles				
Common chuckwalla	*Sauromaulus ater*	Unlisted	Unlisted	Species of conservation priority
Short-horned lizard	*Phrynosoma douglasii*	Unlisted	Unlisted	Species of conservation priority
Gila monster	*Heloderma suspectum*	Species of Concern	Special Status Species	Protected
Desert tortoise	*Gopherus agassizi*	Threatened	Special status species	Threatened
Birds				
Western burrowing owl	*Athene cunicularia hypugaea*	Species of Concern	Special Status Species	Protected
Phainopepla	*Phainopepla nitens*	Unlisted	Special Status Species	Protected
Mammals				
Allen's big-eared bat	*Idionycteris phyllotis*	Species of Concern	Special Status Species	Protected

Table 3-2, continued

Common Name	Scientific Name	Federal Status	BLM Status	State Status
Big free-tailed bat	*Nyctinomops macrotis*	Species of Concern	Special Status Species	Species of Conservation Priority
Brazilian free-tailed bat	*Tadarida brasiliensis*	Unlisted	Special Status Species	Protected
California leaf-nosed bat	*Macrotus californicus*	Species of Concern	Special Status Species	Sensitive
Greater western mastiff bat	*Eumopsperotis californicus*	Species of Concern	Special Status Species	Sensitive
Hoary bat	*Lasiurus cinereus*	Unlisted	Special Status Species	Species of Conservation Priority
Mexican long-tongued bat	*Choeronycteris mexicana*	Species of Concern	Unlisted	Protected
Pale townsend's big-eared bat	*Corynorhinus townsendii pallescens*	Unlisted	Special Status Species	Sensitive
Pallid bat	*Antrozous pallidus*	Unlisted	Special Status Species	Protected
Silver-haired bat	*Lasionycteris noctiva-gans*	Unlisted	Special Status Species	Species of Conservation Priority
Spotted bat	*Euderma maculatum*	Species of Concern	Special Status Species	Threatened
Western red bat	*Lasiurus blossevillii*	Unlisted	Special Status Species	Sensitive
California myotis	*Myotis californicus*	Unlisted	Special Status Species	Species of Conservation Priority
Cave myotis	*Myotis velifer*	Species of Concern	Special Status Species	Species of Conservation Priority
Fringed myotis	*Myotis thysanodes*	Species of Concern	Special Status Species	Protected
Little brown myotis	*Myotis lucifugus*	Unlisted	Special Status Species	Species of Conservation Priority
Long-eared myotis	*Myotis evotis*	Species of Concern	Special Status Species	Species of Conservation Priority
Long-legged myotis	*Myotis volans*	Species of Concern	Special Status Species	Species of Conservation
Western small-footed myotis	*Myotis ciliolabrum*	Species of Concern	Special Status Species	Species of Conservation Priority
Yuma myotis	*Myotis yumanensis*	Species of Concern	Special Status Species	Species of Conservation Priority
Western pipistrelle	*Pipistrellus hesperus*	Unlisted	Special Status Species	Species of Conservation Priority

Table 3-2, continued

Common Name	Scientific Name	Federal Status	BLM Status	State Status
Pygmy Rabbit	*Brachylagus idahoensis*	Species of Concern	Special Status Species	Game Mammal, Species of Conservation
Dark kangaroo mouse	*Microdipodops megace-phalus*	Unlisted	Unlisted	Protected
Pale kangaroo mouse	*Microdipodops pallidus*	Unlisted	Unlisted	Protected
Desert bighorn sheep	*Ovis Canadensis nelisoni*	Unlisted	Unlisted	Big Game Mammal; Species of Conservation

Source: Nellis AFB 2010b, USFWS IPaC Trust Resources Report (Generated 4 October 2016), Nevada Natural Heritage Program (http://heritage.nv.gov/taxon_detail/14021 [accessed 4 October 2016])

3.6 EARTH RESOURCES

Ten native soil types and two artificial land cover types are mapped for the CIG-TASS construction activity areas (Figure 3-5). The descriptions and acreage per construction activity area are summarized in Table 3-3. None of the native soils mapped for the project area are classified as hydric or prime farmland soils. The Building 295 replacement area is located within previously disturbed urban land (see Figure 2-1) and no native soil types are mapped.

3.7 HAZARDOUS MATERIALS / WASTE

Hazardous and toxic substances used on Nellis AFB are tracked by the Hazardous Materials Pharmacy through the procurement, handling, storage, and dispensing of hazardous substances for construction and operations. Hazardous and toxic substances disposal procedures are identified in the Nellis AFB Hazardous Waste Management Plan and all wastes are disposed of in compliance with all Federal, state, and local regulations.

Prior releases of hazardous and toxic waste and substances to the environment on Nellis AFB are tracked and managed by the Nellis AFB Environmental Restoration Program (ERP). A review of the Nellis AFB ERP site summary found no active ERP sites located on any land proposed for use under the Proposed Action. Two old demolition debris landfills (LF-12 and LF-13) are located near proposed construction sites east of the runway, but they are closed, with no further action required.

3.8 CULTURAL RESOURCES

Cultural resources analyzed in this section include prehistoric and historic archaeological sites, buildings, structures, or objects that are more than 50 years old, as well as sacred locations with importance to a specific group or groups (i.e., Traditional Cultural Properties [TCPs]). Archaeological resources can be classed as either sites or isolated occurrences and may be either prehistoric or historic in nature. Isolated

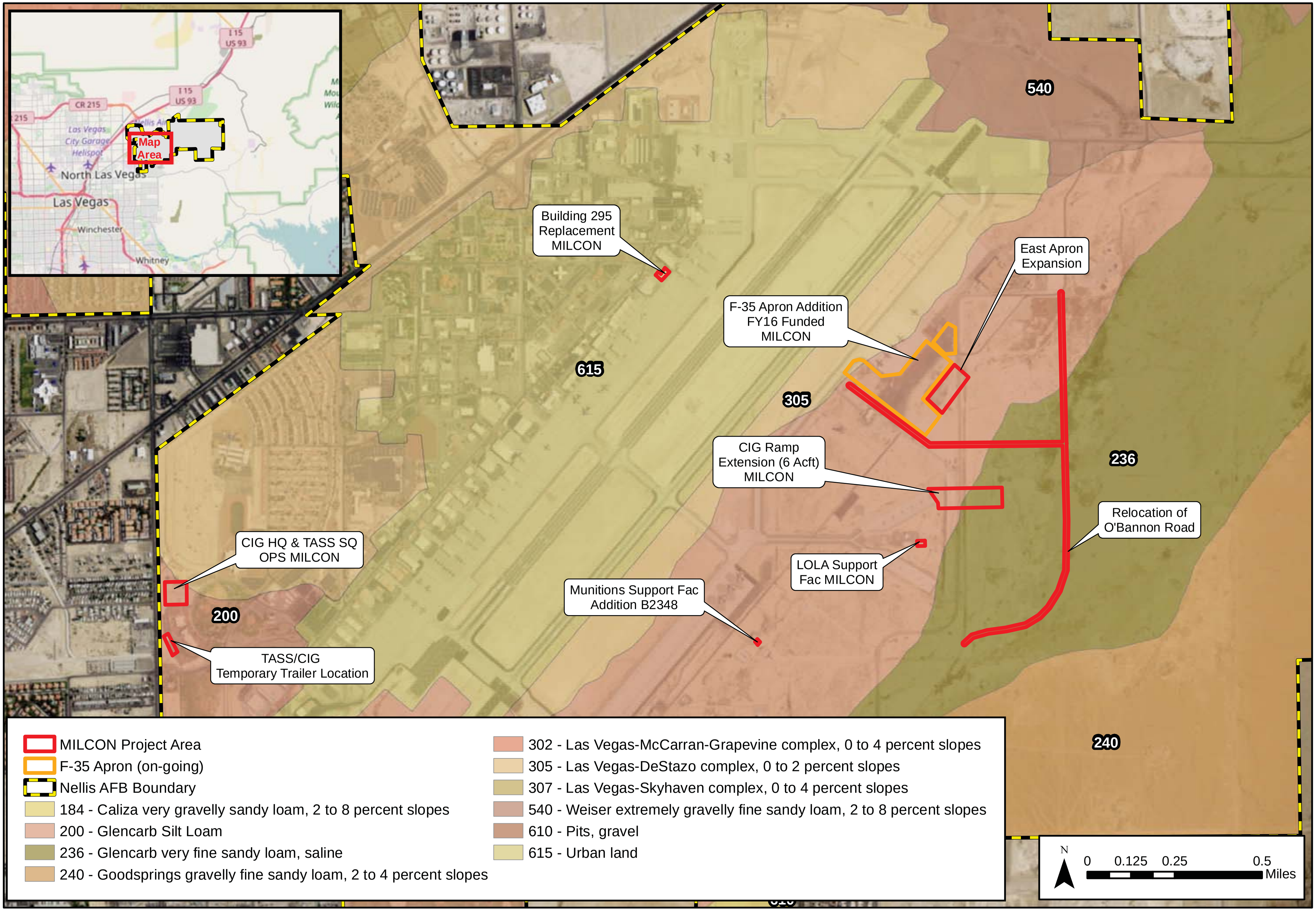


Figure 3-5. Soils Map of the Project Areas

March 2017

THIS PAGE LEFT INTENTIONALLY BLANK

Table 3-3. Soil Units Within or Surrounding the TASS Project Areas

Soil Type	Soil Unit Number	Description	Construction Activity Area and Acreage	Hydric Soil	Prime Farmland Soil
Caliza very gravelly sandy loam, 2 to 8 percent slopes	184	Soils in the Caliza series are classified as sandy-skeletal, mixed, thermic typic calciorthids. These soils are deep, well drained, moderately rapidly permeable soils formed in allucium and colluvium derived dominantly from rhyolitic tuff and lava. They are found on fan terraces and bajadas.	None of the construction activity areas occur within this soil type.	No	No
Glencarb silt loam	200	Soils in the Glencarb series consist of deep, well-drained soils that formed in mixed alluvium with a large component of calcareous materials. They are found on floodplains, low stream terraces, basin floors, and bajadas. Glencarb silt loam is the typical pedon and tends to be pale brown to yellowish brown when moist, very friable, and slightly to moderately sticky and plastic.	East apron addition: 11.5 acres; LOLA extension: 1 acre; TASS/CIG HQ and trailers: 3.2 acres; LOLA support facility: 0.22 acres; Munitions support facility: 0.08 acre	No	No
Glencarb very fine sandy loam, saline	236	Soils in the Glencarb series consist of deep, well-drained soils that formed in mixed alluvium with a large component of calcareous materials. They are found on floodplains, low stream terraces, basin floors, and bajadas. The very fine sandy loam pedon is characterized as yellowish brown in color when moist, massive, soft, very friable slightly sticky and plastic, and moderately alkaline.	O'Bannon Road relocations: 3 acres	No	No
Goodsprings gravelly fine sandy loam, 2 to 4 percent slopes	240	Soils in the Goodsprings series are deep, well-drained soils with very high runoff potential that are found on alluivial fan piedmonts and alluvial fan remnants. The gravelly fine sandy loam pedon is characterized as strong brown in color when moist, with a weak medium platy structure. It is slightly hard, very friable, and moderately alkaline.	O'Bannon Road relocations: 10 acres; LOLA extension: 1 acre	No	No
Las Vegas gravelly fine sandy loam, 0 to 2 percent slopes	300	The Las Vegas soil is shallow and well drained. It formed in alluvium derived dominantly from limestone, dolomite, and some lacustrine sediment that has high lime content.	None of the construction activity areas occur within this soil type.	No	No
Las Vegas-McCarran-Grapevine complex, 0 to 4 percent slopes	302	The Las Vegas soil is shallow and well-drained. It formed in alluvium derived dominantly from limestone, dolomite, and some lacustrine sediment that has high lime content. McCarran fine sandy loam is very deep, well-drained soil found on relict alluvial flats. It formed in alluvium derived from limestone and lacustrine sediment with high gypsum content.	None of the construction activity areas occur within this soil type.	No	No
Las Vegas-DeStazo complex, 0 to 2 percent	305	This soil unit is found on relict alluvial flats. This unit is 60 percent Las Vegas gravelly fine sandy loam, 0 to 2 percent slopes and 25 percent Destazo fine sandy loam, 0 to 2 percent slope. These soils are in a random pattern on a relict surface and are topographically indistinguishable. The Las Vegas soil is shallow and well drained. It formed in alluvium derived dominantly from limestone, dolomite, and some lacustrine sediment that has high lime content. The Destazo soil is very deep and well drained. It formed in alluvium derived dominantly from limestone, dolomite, and soil that has high lime content. Permeability is moderately low and available water capacity is moderate.	None of the construction activity areas occur within this soil type.	No	No
Las Vegas-Skyhaven complex, 0 to 4 percent	307	This soil unit is found on relict alluvial flats. This unit is 60 percent Las Vegas gravelly fine sandy loam, 0 to 2 percent slopes and 30 percent Skyhaven gravelly fine sandy loam, 0 to 4 percent slopes fine sandy loam, 0 to 2 percent slope. These soils are in a random pattern on a relict surface and are topographically indistinguishable. The Las Vegas soil is shallow and well drained. It formed in alluvium derived dominantly from limestone, dolomite, and some lacustrine sediment that has high lime content. The Skyhaven soil is moderately deep and well drained. It formed in alluvium and derived from limestone, dolomite, and other rock with high lime content. Typically, about 20 percent of the surface is covered with desert pavement of pebbles and hardpan fragments. Permeability is moderately to slow above the hardpan and available water capacity is moderate.	None of the construction activity areas occur within this soil type.	No	No
Weiser extremely gravelly fine sandy loam, 2 to 8 percent slopes	540	Weiser soils are gently sloping or moderately sloping, very deep, and well-drained. These soils are extremely gravelly and loamy throughout.	None of the construction activity areas occur within this soil type.	No	No
Weiser-Goodsprings complex, 2 to 4 percent slopes	545	Weiser soils are gently sloping or moderately sloping, very deep, and well-drained. These soils are extremely gravelly and loamy throughout. Soils in the Goodsprings series are deep, well-drained soils with very high runoff potential that are found on alluivial fan piedmonts and alluvial fan remnants. The gravelly fine sandy loam pedon is characterized as strong brown in color when moist, with a weak medium platy structure. It is slightly hard, very friable, and moderately alkaline.	None of the construction activity areas occur within this soil type.	No	No

Source: NRCS 2006; Speck 1982

THIS PAGE LEFT INTENTIONALLY BLANK

occurrences can consist of a single feature with no associated cultural materials, or one or two artifacts. Archaeological sites typically contain one or more features associated with artifacts, or a larger number of artifacts signifying a locus of a sustained human activity. Architectural resources are standing buildings, dams, canals, bridges, and other structures. TCPs may include archaeological resources, locations of historic events, sacred areas, sources of raw materials, sacred objects, or traditional hunting and gathering areas, and provide a link to a community's past that help to maintain cultural identity. A cultural resources inventory and evaluation of historic structures has been conducted for the proposed project areas. Cultural resources and locations are recorded and evaluated by archaeologists and historians that meet or exceed the Secretary of the Interior's standards for Archaeology and Architectural History.

3.8.1 Regulatory Requirements

Resources that meet one or more criteria under 36 CFR §60.4 are determined eligible for nomination to the National Register of Historic Places (NRHP) by USAF in consultation with the Nevada SHPO. If the Federal action has the potential to cause adverse effects on NRHP-eligible sites, USAF makes a determination of adverse effect; if no eligible properties are present, the determination is either no historic properties present or no adverse effects. An Area of Potential Effect (APE) includes eligible properties that could be indirectly affected by the action. The APE for this action is defined as the geographic area or areas within which an action may cause changes in the character or use of any historic properties. In some cases this could exceed the project boundaries. The affected environment for cultural resources includes several parcels of Air Force-managed land within the boundaries of Nellis AFB where proposed construction or renovation under the Proposed Action could have an adverse effect on cultural materials. Under this Proposed Action there would not be any adverse effects on any properties outside the geographical limits of the proposed construction and renovation. Therefore, the APE for the Proposed Action would be restricted to within the geographical limits outlined in red, as depicted on Figure 2-2.

Section 106 of the NHPA of 1966, as amended, requires that Federal agencies take into account the effects of their undertakings on historic properties, which are locations, features, and objects older than 50 years and determined eligible for nomination to the NRHP. Section 110 (a)(2) of the NHPA requires that Federal agencies establish a preservation program, in consultation with the Secretary of the Interior, for the identification, evaluation, and nomination to the NRHP. Methods for the inventory and evaluation are described in Chapter 3 of the 2012 Integrated Cultural Resources Management Plan (ICRMP) (USAF 2012). Efforts to identify and evaluate cultural resources at the installation were initiated in 1978 and continue to the present. Nellis AFB initiated a Native American Program in 1996 as a foundation for government-to-government consultation. Activities have included annual meetings, NTTR field trips, and participation in professional meetings. In 1999, the Consolidated Group of Tribes and Organizations elected five members to a Document Review Committee (DRC). This Group interacts with and is an integral part of the Nellis AFB Native American Program. The DRC reads and comments on a number of different types of documents, which include cultural resources reports and USEPA documents prior to SHPO reviews.

3.8.2 Cultural Context

A comprehensive discussion of the prehistoric and historic record for Nellis AFB is well beyond the scope of the current investigation. The following discussion is intended to be general in nature and does not discuss or debate the divergent opinions and interpretations of other specialists. The major trends in regional cultural history derived from the 2012 ICRMP are outlined briefly below; a more detailed discussion can be found in the 2012 ICRMP (USAF 2012).

Lake Mojave Period (10,000 to 7000 Before Present [BP])

Uncontested evidence of human occupation in southern Nevada and Arizona begins at the end of the late Pleistocene glaciations with the Lake Mojave Period circa 10,000 BP. The archaeological data from this period is sparse, but implies that subsistence relied heavily upon hunting with an emphasis on megafauna, though small game animals and wild plants were undoubtedly exploited on a regular basis. Populations likely lived in small, highly mobile groups that moved across the landscape on a seasonal basis depending on plant and animal availability. Early artifacts and archaeological sites are often located on the remnant shorelines of Pleistocene lakes, though marshes, riparian corridors, and grassland environments were exploited as well.

Pinto Period (7000 to 4000 BP)

A climatic shift brought about warmer and drier conditions in southern Nevada that resulted in essentially modern conditions by 7000 BP. The Pleistocene lakes throughout the region largely dried up, and were only occasionally inundated on a seasonal basis. Populations remained mostly nomadic throughout the landscape, with temporary or seasonal habitations shifting to streams, springs, rockshelters, and lithic sources or tool stone quarries. With the extinction of Pleistocene megafauna, hunting was focused on deer, antelope, bighorn sheep, rabbits, tortoises, and lizards (Warren and Crabtree 1986). Changing subsistence is also reflected in projectile point morphology, along with the introduction of milling stones and handstones reflecting increased reliance on plant resources (Warren 1991). Oval house pits outlined with postholes also appear in this period and suggest longer duration habitation at some locations.

Gypsum Period (4000 to 1500 BP)

The Gypsum Period exhibits greater diversity in the cultural assemblage due to the influence and movement of neighboring cultural groups into the southern Great Basin and Mojave Desert as a result of increased regional winter precipitation during this period. Habitation sites with large middens indicate greater and more sustained occupation. Habitation sites were often located near mesquite groves and in rockshelters. Evidence of ceremonial sites located in caves also occurs during this period. Projectile points also exhibit greater variability in style and material type than was seen in earlier periods. Hunting of wild game continued to be a prominent subsistence activity, but the introduction of the mortar and pestle along with increased use of groundstone implements and handstones suggests even greater reliance upon seeds and other plant resources (Warren and Crabtree 1986). Fibers from plants were woven into baskets, sandals, and cordage. Split-twig figurines of quadrupeds also appear, and the introduction of the bow and arrow occurs towards the end of the Gypsum period.

Saratoga Springs Period (1500 to 800 BP)

The pattern of seasonal transhumance from earlier periods continued throughout the Saratoga Springs Period, yet the fluorescence of distinct ancestral cultural traditions has its antecedents in this period (Warren and Crabtree 1986). Large-scale settlements, or villages, were located along the major watersheds, while short-term temporary habitation sites occur throughout the region. Projectile points are smaller than in earlier periods, reflecting greater reliance upon the bow and arrow for hunting large and small game such as deer, antelope, bighorn sheep, rabbits, and tortoises, as well as birds (Shutler 1961; Warren and Crabtree 1986). The greatest change in subsistence is the introduction of agriculture/horticulture from neighboring cultural areas (e.g., Patayan, Hohokam, and Ancestral Puebloan) to the east and south. Slab-lined pits were introduced and presumably used for storing grains, seeds, and other perishable items. Ceramics were also introduced in the form of Moapa graywares and Patayan gray, buff, and brownwares (Hughes and Bennyhoff 1986; Lyneis 1992). The groundstone assemblages also reveal greater diversity in function and can be attributed to increasingly complex subsistence systems (Fowler and Madsen 1986; Lyneis et al. 1989; Myhrer and Lyneis 1985). Additional trade items such as shell and shell ornaments from the California coast and Gulf of California appear during this period, providing further evidence of extensive trade networks. Turquoise was also mined and traded throughout the region and in neighboring areas.

Numic Period (800 to 150 BP)

There is some disagreement over the term Numic and its connotations between descendent communities and archaeologists. It does appear that the Ancestral Puebloan, the Virgin Anasazi in particular, influence in the region declines in this period, whereas Patayan influence in the form of ancestral Yuman-speaking groups of the Lower Colorado River and adjacent areas remains strong as evidenced by brown and buffware ceramics, as well as the occurrence of red-on-buff ceramics (Warren and Crabtree 1986). Material culture also included Desert Side-notched projectile points and twined and coiled basketry. Limited horticulture continued to be practiced alongside the hunter/collector strategy seen in earlier periods. Populations remained semi-nomadic, seasonally exploiting available plant and animal resources in different environmental zones. Groups would likely aggregate and disperse periodically throughout the year depending on the abundance of seasonally available resources. The end of the period is marked by Euro-American settlement in the region and the displacement of Native American populations to reservations.

Spanish/Mexican Exploration (400 to 150 BP)

The Spanish were the first Europeans to explore the western United States, and established missions throughout much of the American Southwest. A Franciscan priest, Francisco Garcés, is considered to be the first European in what is now southern Nevada. Garcés intended to establish a road from Yuma, Arizona, to the missions along the California coast, but was later killed during the Quechan uprising of 1781

(Lawton 1976). Another attempt to establish a travel route from coastal California to Santa Fe, New Mexico, was undertaken in 1829 by a Spanish citizen, Antonio Armijo. A portion of the Armijo and company would become a variant of the Old Spanish Trail, which passed through the Las Vegas Valley. The Old Spanish Trail would become a regular route of Mexican traders from 1830 to 1848. Ultimately, a portion of the Old Spanish Trail became Las Vegas Boulevard North, adjacent to the western boundary of Nellis AFB.

Euro-American Exploration (175 to 100 BP)

The earliest Euro-American exploration of the area was related to fur traders seeking to expand their territories, though records are sparse and often conflicting. Jebediah S. Smith's second expedition into the region in 1828 followed a route along the lower Colorado River and portions of the Old Spanish Trail (Fletcher 1920). Other expeditions were made by other companies throughout portions of the Great Basin and the Mojave Desert. Publicity of the trappers' exploits would ultimately lure pioneers and emigrants to California, often passing through portions of Nevada on the way. Early settlers in turn sparked the interest of the United States government, as well as private interests. In the mid-1840s, Lt. John Charles Frémont of the Army Topographical Corps led expeditions in the west, one of which followed a portion of the Old Spanish Trail on its return journey from the Sacramento Valley in California. The expedition passed through the Las Vegas Valley before returning to Missouri in the east.

Euro-American Settlement (100 to 30 BP)

The Treaty of Guadalupe Hidalgo between the United States and Mexico and the discovery of gold in California in 1848 would lead to increased Euro-American settlement of the west. Led by Brigham Young, Mormons settled Salt Lake City, Utah and eventually expanded throughout the west, often capitalizing on trade with travelers en route to California. A company of Mormons, or Latter-Day Saints, established a mission in the Las Vegas Valley in 1855, where they constructed the Las Vegas fort, approximately 12 miles southeast of what is now Nellis AFB. Many of the missionaries returned to Salt Lake City in 1856 after hostilities with the Southern Paiute (Jensen 1926; Myhrer et al. 1990). However, a lead ore source at Potosi Mountain was discovered 20 miles south of Las Vegas, which led to the Las Vegas Mission operating a lead smelter (Jensen 1926). Elsewhere in Nevada, the discoveries of silver, and to a lesser extent gold, resulted in numerous boom towns being established in areas such as Carson City and Silver City. The influx of people led to Nevada being established as a separate territory in 1861 and a state in 1864. Population influx and growth in southern Nevada remained limited in comparison with northern Nevada. The Las Vegas settlement was abandoned by Mormons in the early 1860s, but was appropriated by Octavius Decatur Gass and two partners who rebuilt the settlement and opened a supply store to service travelers. The Gass' Las Vegas Rancho property, formerly the Las Vegas Mission, was acquired by the Stewart family in 1881. Las Vegas continued to grow through the late 1800s, though the mining boom went into decline during the 1880s and 1890s. The construction of the railroad through the Las Vegas Valley in the early 1900s and the auctioning of land adjacent to the railroad resulted in establishment of the town of Las Vegas. Completion of the railroad in 1909, coupled with increased population growth, resulted in the establishment of Clark County. The increased settlement in southern Nevada and the Las Vegas Valley had profound impacts on the Native American populations living in the region at the time. The Western Shoshone and Southern Paiute/Chemehuevi were largely displaced to reservations.

Southern Nevada Infrastructure Development (30 BP to Present [i.e., 1950])

With the advent of motorized automobiles, Nevada began constructing improved roads to connect the numerous towns and cities throughout the state between 1911 and 1930. Additional reservations were created as part the Indian Reorganization Act of 1934, which affected several of the descendant communities with ties to Nellis AFB and the NTTR. While the Great Depression had significant effects on the economy, Nevada's economy and population continued to increase as a result of government projects, such as the construction of Hoover Dam. Many former speakeasies became clubs after prohibition, and the legalization of gambling in 1931 further contributed to the growth of Las Vegas and the development of the resort hotel industry (Dunar and McBride 1993). A short economic slump affected Las Vegas due to high unemployment after completion of the Hoover Dam, but the onset of World War II brought additional jobs to the region as national defense brought new demands for resources and personnel. In 1941, Las Vegas purchased the Western Air Express Field with Federal funds and renamed it McCarran Field (LaPoint 1987; Wright 1993). The U.S. Army leased a portion of the airfield from the City of Las Vegas, sharing it with commercial flights. Upon the conclusion of World War II, the Las Vegas Army Air Field ceased its mission and became temporarily inactive. After the USAF was created as a separate military department, the Las Vegas AFB was created in the late 1940s and commercial flights were moved to the new McCarran Field in south Las Vegas Valley. The Las Vegas AFB was renamed Nellis AFB in 1950, after First Lieutenant William H. Nellis of Searchlight, Nevada. Nellis AFB would continue to grow and expand in the last half of the twentieth century and to the present day.

3.8.3 Background Research and Records Review

Archival background research and a review of existing records from the General Land Office (GLO), the Nevada Cultural Resources Information System (NVCRIS), and records housed internally at Nellis AFB yielded information on previous investigations and recorded archaeological sites and structures. The *Federal Register* was also reviewed to verify eligible or listed NRHP properties within Nellis AFB.

A review of existing records from NVCRIS and Nellis AFB resulted in the identification of 19 previous investigations within a 1-mile radius of the project areas. The previous investigations range from evaluations of historic buildings on Nellis AFB and archaeological surveys of the main cantonment to investigations on adjacent BLM lands. Previous investigations within a 1-mile radius of the project areas yielded 20 recorded archaeological sites. Five of the sites represent Historic period trash scatters deposited between 1910 and the mid-1950s. The remaining sites are prehistoric in nature, of which three are Archaic or have Archaic period components. One of the prehistoric sites has a Ceramic component, while most of the sites are of unknown prehistoric affiliation and consist of short-term occupation or temporary campsites.

These sites typically exhibit lithic debitage and fire-affected rock concentrations. Several of the sites contain ground stone tools and considerable concentrations of fire-affected rock suggesting longer duration occupations or campsites. None of the previously recorded sites are located within the proposed project areas, and will not be affected by proposed construction and improvement activities.

TCPs may include traditionally used plants and animals, trails, and certain geographic areas. Types of resources that have been specifically identified in recent studies include, but are not limited to, rock art sites; “power” rocks and locations; medicine areas; and landscape features such as specific peaks or ranges, hot springs, meadows, valleys, and caves. No TCPs, sacred areas, or traditional-use areas have been identified on Nellis AFB proper. Nellis AFB continues to consult with Tribal Historic Preservation Officers and tribal leaders.

Building 295 was evaluated to determine its eligibility for listing on the NRHP. Building 295 not yet 50 years old, but it was constructed (in 1970) during the Cold War Era. The building does retain some of its integrity of location, materials, workmanship, feeling and association. However some aspects have been compromised by additions, modifications, and other construction that demolition projects in the area. In addition, a static display and a monument were placed in front of Building 295 in 2011. Demolition of Building 295 would require removal and relocation of the monument and static display. The evaluation determined that Building 295, monument, and that static display are not eligible for listing; consultation with the Nevada SHPO is ongoing.

3.9 LAND USE

The Proposed Action would occur entirely on existing Nellis AFB military lands. All areas that would be affected by the Proposed Action are within the current perimeter fence boundaries of Nellis AFB. Nellis AFB has a mix of land use categories. Nellis AFB is divided into three areas: Area I, the Main Base; Area II; and Area III. The Proposed Action would occur entirely within Area I. Area I is located east of Las Vegas Boulevard and contains 30 percent of the total base land area. Area I contains the greatest variety of land use activities including runways, industrial facilities, housing areas, and most of the base's administrative, training, and support facilities. There are more than 2,000 buildings that include family housing units (enlisted and officers), dormitories, and billeting facilities. Industrial and open space accounts for about 39 and 36 percent of all Nellis AFB land, respectively. Most of the area designated as industrial is mandatory open space to provide safety zones around munitions storage or similar facilities. The proposed beddown facilities are located on previously disturbed land adjacent to existing buildings and infrastructure on Nellis AFB grounds in Area I. The Proposed Action requires temporary facilities for maintenance and operations to bridge the gap until new facilities are complete. These temporary facilities will be placed on a previously developed lot adjacent to existing JTAC HQ buildings and parking facilities. These temporary facilities will eventually be removed when the MILCON facilities are completed. The location of the proposed TASS/CIG HQ is on currently disturbed, undeveloped land that lies between the Red Flag and existing JTAC HQ buildings. The adjacent land use includes Freedom Park and military housing. The location of the proposed TASS Mx Hanger/AMU is currently occupied by an existing structure and paved lots. The adjacent land use is developed and includes a mix of additional buildings, support structures, and paved areas. The location of the LOLA extension lies on previously disturbed paved and disturbed developed and undeveloped lands immediately adjacent to an existing ramp structure. Land use in the adjacent areas includes developed and undeveloped disturbed lands. The location of the proposed east-side apron additions are on disturbed developed and disturbed undeveloped lands. The adjacent land use includes existing apron facilities and disturbed undeveloped lands. The location of the LOLA and Munitions Support facilities are on previously disturbed developed lands. Land use in the adjacent areas includes additional Munitions and LOLA support structures and disturbed developed lands.

3.10 INFRASTRUCTURE / UTILITIES

This section describes the roadways and highways in the vicinity of the project alternatives that could have an impact on the Proposed Action or that could be impacted by construction or operation of the new TASS facilities. It does not cover air or rail transportation, as neither air nor rail transportation would be expected to impact or be impacted by any of the alternatives. Utilities that could be affected are also discussed.

3.10.1 Transportation

Major transportation arteries in the area around Nellis AFB are shown in Figure 3-6. Las Vegas Boulevard North runs northeast-southwest through Nellis AFB and separates Area I from Area III. It is a major regional artery connecting the base area with downtown Las Vegas. The Range Road Gate on Las Vegas Boulevard North provides access to Area III. East Craig Road intersects Las Vegas Boulevard North at the Nellis AFB Craig Road Gate (main base gate). It also is a major artery that funnels traffic from Interstate 15 north of the base to Las Vegas Boulevard North. The main gate to the Area III on-base housing is on East Craig Road. Area I of Nellis AFB is bounded on the west by North Nellis Boulevard, which is a major north-south road that connects south Las Vegas with the City of North Las Vegas and Nellis AFB. The Tyndall Avenue Gate provides access from North Nellis Boulevard to Area I.

Daily traffic on East Craig Road, Las Vegas Boulevard North, and North Nellis Boulevard is relatively heavy on weekdays, particularly during morning and evening commute times for base personnel. Average Daily Traffic counts for these streets are 13,000 for Las Vegas Boulevard North at the Range Road Gate, 21,500 for East Craig Road at the Salmon Drive Gate, and 19,500 for North Nellis Boulevard at the Tyndall Gate (Nevada Department of Transportation 2013).

Nellis AFB has five restricted access control points (gates) to maintain security. Traffic measured at each Nellis AFB gate in 2011 is shown in Table 3-4.

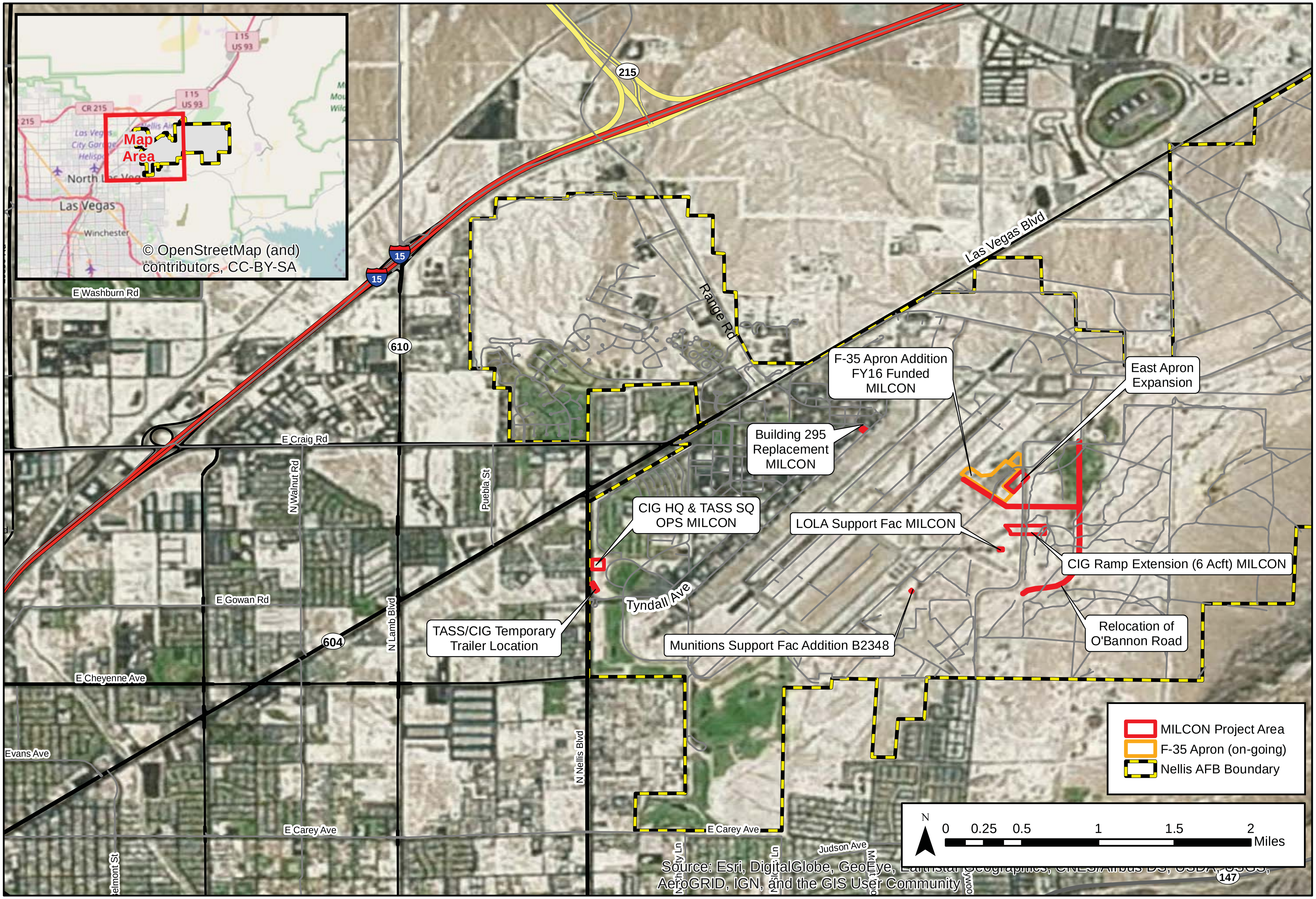


Figure 3-6. Major Transportation Routes Surrounding Nellis AFB

March 2017

Table 3-4. 2011 Traffic Counts at Nellis AFB Gates

Gate Location	Vehicles per Week
Main Gate (Craig Road)	53,314
Tyndall Avenue	21,095
Beale Avenue	14,875
Salmon Drive (Area III housing)	11,727
Interstate 215 (north Area III gate)	5,079
Range Road (south Area III gate)	29,221
Minot Avenue	5,090

Nellis AFB 2011

Nellis AFB has approximately 147 miles of paved roads. Intersections are controlled by stop signs (there are no traffic lights on-base), which can cause minor traffic delays at these intersections. Traffic circles to facilitate vehicle flow have been planned and two have been constructed thus far, one at the intersection of Ellsworth Avenue and Fitzgerald Boulevard and the other at Ellsworth and Beale Avenues. Unpaved roads are located in Areas II and III, with the majority located along the perimeter of the base. They are minimally used for fence maintenance and security. Roadway pavements were given an “adequate” rating by the 2011 HQ ACC Infrastructure Assessment (USAF 2011b); (Nellis AFB 2013).

3.10.2 Sanitary Sewer

The Clark County Water Reclamation District currently takes in approximately 1.5 million gallons per day from Nellis AFB. In 2009, Nellis AFB rented out land to the City of North Las Vegas for a water reclamation facility. Septic systems are in place for areas that have remote access or no access to pipes. The Clark County Water Reclamation district is a member of the SNWA and governs the Clark County section of SNWA. The district services all areas in Clark County and collects and reclaims approximately 83 million gallons of wastewater per day.

3.10.3 Water Supply

Nellis AFB’s drinking water is supplied by SNWA from Lake Mead (formed by Hoover Dam and fed by the Colorado River) and nine active wells (USAF 2015). Water treatment from Lake Mead water is conducted at Alfred Merritt Smith or River Mountains treatment facilities using a multistage filtration system (USAF 2015). Water collected by SNWA from wells is chlorinated by Civil Engineering Utilities (Air Force 2015). All water is certified as safe to drink in accordance with the USEPA (USAF 2015). SNWA predicts that water demand will increase over future years (SNWA 2015).

3.10.4 Electricity

The majority of electricity provided to Nellis AFB is provided by NV Energy. The remaining energy is provided by a large solar array stationed on Nellis AFB and owned by NV Energy, which was completed and became fully operational in 2015. The system encompasses around 140 acres and contains approximately 70,000 solar panels. In 2014, the production of the solar array equaled 31.202 gigawatts per hour (Energy Information Administration 2016).

3.10.5 Solid Waste

The majority of solid waste is taken to an approved landfill by Republic Services. In 1991, Nevada legislature set a recycling goal of 25 percent. In 2012 and 2013, Clark County recycling rates were 27.5 and 22.0 percent, respectively (NDEP 2015).

3.10.6 Natural Gas

The distributor of natural gas to heat the base is the Southwest Gas Company through approximately 200,000 linear feet (40 miles) of polyethylene pipes. The base hosts three 1,000-cubic-foot tanks for natural gas storage to be used for equipment.

3.10.7 Fuel

Jet fuel, diesel, and gasoline are delivered to Nellis AFB by the CALNEV Pipeline (owned and operated by Kinder Morgan) (Clark County Planning Commission 2006). The CALNEV Pipeline moves fuel from California to Nellis AFB and McCarran International Airport via a 550-mile two-line pipe system. It provides Clark County with approximately 130,000 barrels of fuel per day (Clark County Planning Commission 2006).

3.11 SAFETY AND OCCUPATIONAL HEALTH

The safety of the public with respect to aircraft operations at Nellis AFB is a primary concern for the USAF. The areas surrounding Nellis AFB have Air Installation Compatibility Use Zone (AICUZ) guidelines established to define those areas with the highest potential for aircraft accidents and aircraft noise impacts, and to establish flight rules and flight patterns that will have the least impacts on the civilian population of Las Vegas and North Las Vegas with regard to safety and noise effects. With regard to potential aircraft accidents, Clear Zones and Accident Potential Zones (APZs) have been established to identify the areas with the greatest risk for aircraft accidents and to guide off-base development away from these higher risk areas. Clear Zones extend approximately 3,000 feet from the end of each runway and are totally contained within Nellis AFB. APZ I is an extension of the Clear Zone; it is about 4,000 feet wide and 5,000 feet long (i.e., extends 8,000 feet from the end of the runway). APZ II retains the width of 4,000 feet, but extends another 7,000 feet from the end of APZ I. The greatest potential for aircraft accidents occur within the Clear Zone; risks are reduced as distances from the runway increase. Thus, aircraft accidents are lower in APZ II. While aircraft accident potential within APZ I and APZ II, which are mostly located off-base, does not warrant land acquisition by the USAF, land use planning and controls are strongly encouraged in these areas for the protection of the public (Nellis AFB 2004).

The USAF identifies categories of aircraft mishaps. Class A mishaps are those that result in a human fatality or permanent total disability, the destruction of an aircraft, or a total cost in excess of $2 million ($1 million for mishaps occurring before FY 10) for injury, occupational illness, or destruction of an aircraft. Class B mishaps are those that result in a permanent partial disability, inpatient hospitalization of three or more personnel, or a total cost in excess of $200,000 but less than $1 million for injury, occupational illness, or property damage. Class C mishaps are those that result in total damage in excess of $20,000 but less than $200,000; an injury resulting in a lost workday (i.e., duration of absence is at least 8 hours beyond the day or shift during which the mishap occurred); or occupational illness that causes loss of time from work at any time.

While Nellis AFB has not experienced an individual Class A mishap, the mishap rates for all aircraft are calculated based on worldwide deployment of the aircraft type. The mishap rates are based on the number of mishaps per 100,000 flying hours for each type of aircraft. The mishap rate is dependent on the number of each aircraft type deployed, the time elapsed since the aircraft type has been in operation, the number of hours flown for each type, and the location of the operations. The mishap rates can then be converted to a risk factor for each aircraft type based on the number of hours flown by aircraft type. The F16 has been in operation for 40 years and for the past 10 years, the average annual hours flown by F16s worldwide has been 244,8903, with an average Class A mishap rate of 2.08 (USAF Safety Office 2016).

3.12 SOCIOECONOMIC RESOURCES

This socioeconomics section outlines the basic attributes of population and economic activity within the ROI for Nellis AFB and vicinity. The ROI is Clark County, which is also the county that makes up the Las Vegas/Henderson/Paradise Metropolitan Statistical Area.

3.12.1 Affected Environment

3.12.1.1 Population Demographics

Clark County has grown dramatically since 2000 (Table 3-5), experiencing growth rates that have far outpaced the average population growth rates for the Nation. Clark County grew approximately 54 percent from 2000 to 2015, compared to 45 percent for Nevada and 14 percent for the U.S. In 2015, Clark County had a population of approximately 2.1 million (U.S. Census Bureau 2016a). Of the total population of Nevada, 73 percent lives in Clark County. Clark County's population is approximately 53.5 percent minority (U.S. Census Bureau 2015b).

Table 3-5. Population

Geographic Area	2000	2010	Average Annual Growth Rate 2000 to 2010 (Percent)	2015	Average Annual Growth Rate 2010 to 2015 (Percent)	Total Growth 2000 to 2015 (Percent)
Clark County	1,375,765	1,951,269	4.2	2,114,801	1.7	54
City of Las Vegas	478,434	583,756	2.2	623,769	1.4	30
Nevada	1,998,257	2,700,551	3.5	2,890,845	1.4	45
United States	281,421,906	308,745,538	1.0	321,418,821	0.8	14

Source: U.S. Census Bureau 2000, 2010, 2016a, and 2016b

More than 36,600 active duty military, dependents, Reserve/Air National Guard, and civilian and contract employees are associated with Nellis AFB, Creech AFB, and the NTTR (Table 3-6), and annual payroll exceeds $800 million. Approximately 17 percent of active duty military and their dependents live on-base, with the remaining 83 percent living in the region (Nellis AFB 2015b).

Table 3-6. Personnel at Nellis AFB, Creech AFB, and the Nevada Test and Training Range 2015

	Living On-Base	Living Off-Base	Total
Active-Duty Military	1,819	7,284	9,103
Military Dependents	3,638	19,760	23,398
Reserve/Air National Guard		620	620
Civilian and Contract Employees		3,548	3,548
Total	**5,457**	**31,212**	**36,669**

Source: Nellis AFB 2015b

3.12.1.2 Housing

U.S. Census estimates show that housing vacancy rates in Clark County for both homeowner and rental housing for the 2010-to-2015 time period were well above the national average (Table 3-7). There are more than 132,000 vacant units in Clark County, with approximately 26 percent of these units located within the City of Las Vegas. The percentage of homes that are owner-occupied for Clark County (52.5), the City of Las Vegas (52.0), and Nevada (55.1) is well below the U.S. average of 63.9 percent. Almost 16 percent of the housing units in Clark County are vacant, well above the national average of 12.3 percent.

Table 3-7. Housing

	Clark County	City of Las Vegas	Nevada	U.S.
Total Units	857,131	250,279	1,192,083	133,351,840
Owner-occupied	52.5%	52.0	55.1%	63.9%
Renter-occupied	47.5%	48.0	44.9%	36.1%
Vacant Units	132,685	34,665	175,324	16,425,535
Homeowner Vacancy Rate* (Percent)	2.8	2.3	2.5	1.9
Rental Vacancy Rate** (Percent)	10.4	9.1	9.7	6.4
Median Value***	$170,400	$168,800	$173,700	$178,600

Source: U.S. Census Bureau 2016c
*Homeowner vacancy rate is the proportion of the homeowner inventory that is vacant "for sale."
** Rental vacancy rate is the proportion of the rental inventory that is vacant "for rent."
***Media value of owner-occupied units

3.12.1.3 Employment

The annual average labor force in 2015 in Clark County was 1,047,528. The 2015 average unemployment rate of 6.8 percent in Clark County was equal to the highest state unemployment rate in the U.S. It was slightly greater than the average unemployment rate for Nevada (6.7 percent), and both were well above the 5.3 percent national average unemployment rate (U.S. Bureau of Labor Statistics [BLS] 2016a and 2016b).

U.S. Bureau of Economic Analysis (BEA) data and information on the region's largest employers show that employment in the area is dominated by the Accommodation and Food Services sectors, which is a reflection of the importance of the hotel/casino industry in the region. The Accommodation and Food Services sector accounts for 23 percent of employment in Clark County and 20 percent of employment in the State of Nevada, compared to only 7 percent for the Nation (BEA 2015a).

The largest employer in Clark County is MGM Resorts International, which is reported to have more than 56,000 employees, followed by Clark County School District, which is reported to have more than 35,000 employees and Caesar's Entertainment with over 26,600 employees. Nellis AFB/Creech AFB/NTTR together represent the fourth largest employer in the region, with approximately 13,300 employees in 2015. Wynn Resorts and Stations Casinos have approximately 11,000 and 10,000 employees, respectively (Las Vegas Global Economic Alliance 2016).

3.12.1.4 Income and Poverty

Per capita personal income for Clark County in 2015 ($39,533) was 86 percent of the U.S. per capita personal income of $46,049 (BEA 2015b) as indicated in Table 3-8. The relatively high unemployment rate and the predominance of the Accommodation and Food Services industry, a sector that typically relies heavily on low-wage jobs, combine to cause the relatively low per capita income in the region. Median household income for Clark County ($52,070) is slightly below the median household income for the state ($52,205) and the U.S. ($53,482) (U.S. Census Bureau 2015b), which indicates that in spite of a relatively large number of unemployed and low-wage workers, the region includes substantial wealth.

Table 3-8. Income and Poverty 2015

	Clark County	City of Las Vegas	Nevada	U.S.
Per Capita Personal Income	$39,533	NA	$40,742	$46,049
Per Capita Personal Income – Percent of U.S.	86	NA	88	100
Median Household Income	$51,575	$50,202	$51,847	$53,889
Percent of the Population Below Poverty Level	15.7	17.5	15.5	15.5

Source: BEA 2015b and U.S. Census Bureau 2016d
NA – Not available

3.12.1.5 Environmental Justice and Protection of Children

Environmental justice addresses the disproportionate effect a Federal action may have on low-income or minority populations. EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, ensures the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The existence of disproportionately high and adverse impacts depends on the nature and magnitude of the effects identified for each of the individual resources. DoD has directed that NEPA will be used to implement the provisions of the EO.

EO 12898 does not provide guidelines as to how to determine concentrations of minority or low-income populations. However, analysis of demographic data on race and ethnicity and poverty provides information on minority and low-income populations that could be affected by the proposed actions at Nellis AFB. Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, Pacific Islander, or Other. Poverty status is used to define low-income. Poverty is defined as the number of people with income below poverty level, which was $24,257 for a family of four in 2015, according to the U.S. Census Bureau (U.S. Census 2015d). A potential disproportionate impact may occur when the percentages of minority or low-income populations in the study area exceed 50 percent or when the percentages of minority or low-income in the study area are greater than those in the community of comparison (COC) (U.S. Air Force 1997).

Clark County, which is the smallest governmental or geopolitical unit that encompasses the impact footprint, is the COC for the environmental justice analysis. Table 3-9 presents data on minority and low-income populations for Clark County and for the 35 census tracts within or partially within the 65 dBA DNL noise contour for Nellis AFB.

Table 3-9. Minority and Low-Income

Geographic Unit	Percent Minority	Percent Low-Income
U.S.	37.2	15.5
Nevada	47.3	15.5
Clark County (COC)	53.5	15.7
City of Las Vegas	53.7	17.5
Census Tracts Within 65 dBA DNL Noise Contour		
3615	69.5	16.0
3625	58.2	16.9
3626	60.3	13.6
3628	72.0	17.1
3638	76.5	24.8
3639	68.8	13.0
3640	70.4	6.9
3641	79.5	12.0
3642	77.8	10.8
4200	88.0	33.7
4301	96.1	57.5
4401	87.0	41.9
4500	92.1	27.3
4601	92.7	41.7
4602	90.3	34.5

Table 3-9, continued

Geographic Unit	Percent Minority	Percent Low-Income
4703	83.8	26.9
4707	87.7	32.9
4709	94.2	37.0
4710	91.2	42.0
4712	68.4	46.7
4713	85.0	43.7
4714	85.1	26.2
4715	71.2	31.0
4716	83.9	24.4
4717	79.1	16.9
4916	77.0	21.8
4917	65.4	14.1
5902	35.0	12.4
6001	64.5	24.6
6201	68.3	36.3
6202	70.0	27.3
6203	62.8	24.1
6204	67.6	20.2
7100	78.2	37.9
7800	33.7	38.5

Sources: U.S. Census Bureau 2016b and 2016d

In 1997, EO 13045, Protection of Children from Environmental Health Risks and Safety Risks (Protection of Children), was issued to ensure the protection of children. This EO was prompted by the recognition that children, still undergoing physiological growth and development, are more sensitive to adverse environmental health and safety risks than adults. The potential for impacts on the health and safety of children is greater where projects are located near residential areas. There are no residential areas in the vicinity of the Preferred Alternative. There are approximately 25 schools located within the 65 dBA DNL noise contour.

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 4.0
ENVIRONMENTAL CONSEQUENCES

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This section addresses potential impacts on environmental resources within or near the proposed project sites. An impact (consequence or effect) is defined as a modification of the human or natural environment that would result from the implementation of an action. The impacts can be either beneficial or adverse and can be either directly related to the action or indirectly caused by the action. Direct impacts are those effects that are caused by the action and occur at the same time and place (40 CFR §1508.8[a]). Indirect impacts are those effects that are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable (40 CFR §1508.8[b]). The effects can be temporary, short in duration (short-term), long lasting (long-term), or permanent. For purposes of this EA, temporary effects are defined as those that would last for the duration of the construction period; short-term impacts would last from the completion of construction to 3 years. Long-term impacts are defined as those impacts that would occur from 3 to 10 years after construction, while permanent impacts indicate an irretrievable loss or alteration.

Impacts can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. Significant impacts are those effects that would result in substantial changes to the environment (40 CFR §1508.27) and should receive the greatest attention in the decision-making process. The significance of the impacts presented in this EA is based upon existing regulatory standards, scientific and environmental knowledge, and best professional opinions. For the purpose of this analysis, the intensity of impacts would be classified as negligible, minor, moderate, or major. The intensity thresholds are defined as follows:

- Negligible: A resource would not be affected or the impacts would be at or below the level of detection, and changes would not be of any measurable or perceptible consequence.
- Minor: Impacts on a resource would be detectable, although the impacts would be localized, small, and of little consequence to the sustainability of the resource. Mitigation measures, if needed to offset adverse impacts, would be simple and achievable.
- Moderate: Impacts on a resource would be readily detectable, long-term, localized, and measurable. Mitigation measures, if needed to offset adverse impacts, would be extensive and likely achievable.
- Major: Impacts on a resource would be obvious and long-term, and would have substantial consequences on a regional scale. Mitigation measures to offset the adverse impacts would be required and extensive, and success of the mitigation measures would not be guaranteed.

Table 4-1 describes the significance threshold for each of the resources discussed in this section. Each resource is presented in the same sequential order as it was in Chapter 3 of this EA.

Table 4-1. Significance Criteria

Resource	Significance Threshold
Noise	• a noise increase in adjacent areas of 5 dBA DNL
Air Quality	• violation of NAAQS or Nevada SIP
Water Resources	• violate water quality standards or discharge requirements, • substantial alteration of drainage patterns that would result in substantial erosion and sedimentation on or off-site • substantial increase in stormwater runoff in a manner that would create flooding on- or off-site • stormwater runoff that would exceed the capacity of stormwater drainages or substantially add to pollutants, or • otherwise substantial degradation of water quality
Biological Resources	• substantial adverse effect on any riparian habitat (e.g., mulefat scrub, southern willow scrub) or other sensitive natural community • adverse effect (direct of through habitat modification) on any species identified as a candidate, sensitive, special-status or proposed species in local, regional, state or Federal plans and regulations
Earth Resources	• substantial losses to prime farmlands soils or farmland soils of statewide importance • substantial increase in erosion
Hazardous Materials	• creation of a potential public health hazard
Cultural Resources	• substantial change to an historic resource
Land Use	• substantial change in land use not previously identified in land use planning or master plan documents
Infrastructure/Utilities	• substantial increase in demand on utilities, police, schools, and other resources • substantial decrease in level of service on public roads
Safety and Occupational Health	• Creation of a potential public health hazard
Socioeconomic Resources	• displacement of business or residences • substantial new demand for public service • disproportionate adverse effects on low-income and minority populations

4.2 NOISE / ACOUSTIC ENVIRONMENT

4.2.1 Preferred Alternative

No significant impacts on ambient noise levels have been identified that would result from implementation of the Preferred Alternative. All MILCON projects are located partially within the Nellis 70 dBA DNL noise contour, as shown previously in Figure 3-1. Sensitive noise receptors near the project site may experience irritation due to the construction noise despite the fact that they are presently exposed to louder intermittent noise levels produced by aircraft operating out of Nellis AFB.

Common construction equipment would be required to prepare the ground surface and construct the new ramps and buildings. Excavators, dump trucks, cranes, backhoes, and front-end loaders would be used to grade land. Delivery trucks, concrete trucks, and construction erection equipment would be also used during the construction. Noise levels from common construction equipment were modeled and are described in Table 4-2.

Table 4-2. A-Weighted (dBA) Sound Levels of Construction Equipment and Modeled Attenuation at Various Distances[1]

Noise Source	50 feet	100 feet	200 feet	500 feet	1,000 feet
Dump truck	76	70	64	56	50
Excavator	82	76	70	62	56
Front-end loader	79	73	67	59	53
Concrete mixer truck	79	73	67	59	53
Pneumatic tools	81	75	69	61	55
Backhoe	78	72	66	58	52
Generator	81	75	69	61	55

Source: Federal Highway Administration (FHWA) 2016 and GSRC
1. The dBA at 50 feet is a measured noise emission (FHWA 2016).
The 100- to1,000-foot results are GSRC modeled estimates.

The construction activities on the east side of the airfield (e.g., ramp and LOLA expansion) and the demolition/construction at Building 295, would be approximately 0.75 to 1.25 miles from any residential or other noise-sensitive areas, so there would be no effect on ambient noise levels at these construction sites. The proposed TASS/CIG HQ, however, is in proximity to off-base residential areas, with the closest residence approximately 300 feet from the construction site. Assuming a worst-case noise emission scenario (i.e., an excavator with an 82 dBA sound level at a distance of 50 feet), the noise levels of 82 dBA from a point source would have to travel 110 feet before the noise would attenuate to a level of 75 dBA. However, at 360 feet from the point source, noise from the excavator would be attenuated to a normally acceptable level of 65 dBA. Using GIS, the 60 dBA, 65 dBA, and 75 dBA noise contours were overlaid on a map of the proposed construction site for the TASS/CIG HQ and adjacent neighborhoods (Figure 4-1). As can be seen from this figure, no residential homes would be within the 65 to 70 dBA contours. Two churches are located along North Nellis Boulevard, but both are beyond the 60 dBA contour and, thus, would not be adversely affected by the construction noise. No parks, hospitals, schools, or other noise-sensitive receptors are located within the 60 dBA noise contour. Levels of noise exposure on residential homes would decrease as construction activity moves away from North Nellis Boulevard and as the construction progresses and fewer pieces of heavy equipment are used. These noise levels would occur only during the construction period. In addition, noise levels can be further mitigated by limiting construction to daylight hours only and ensuring that all construction equipment is properly maintained.

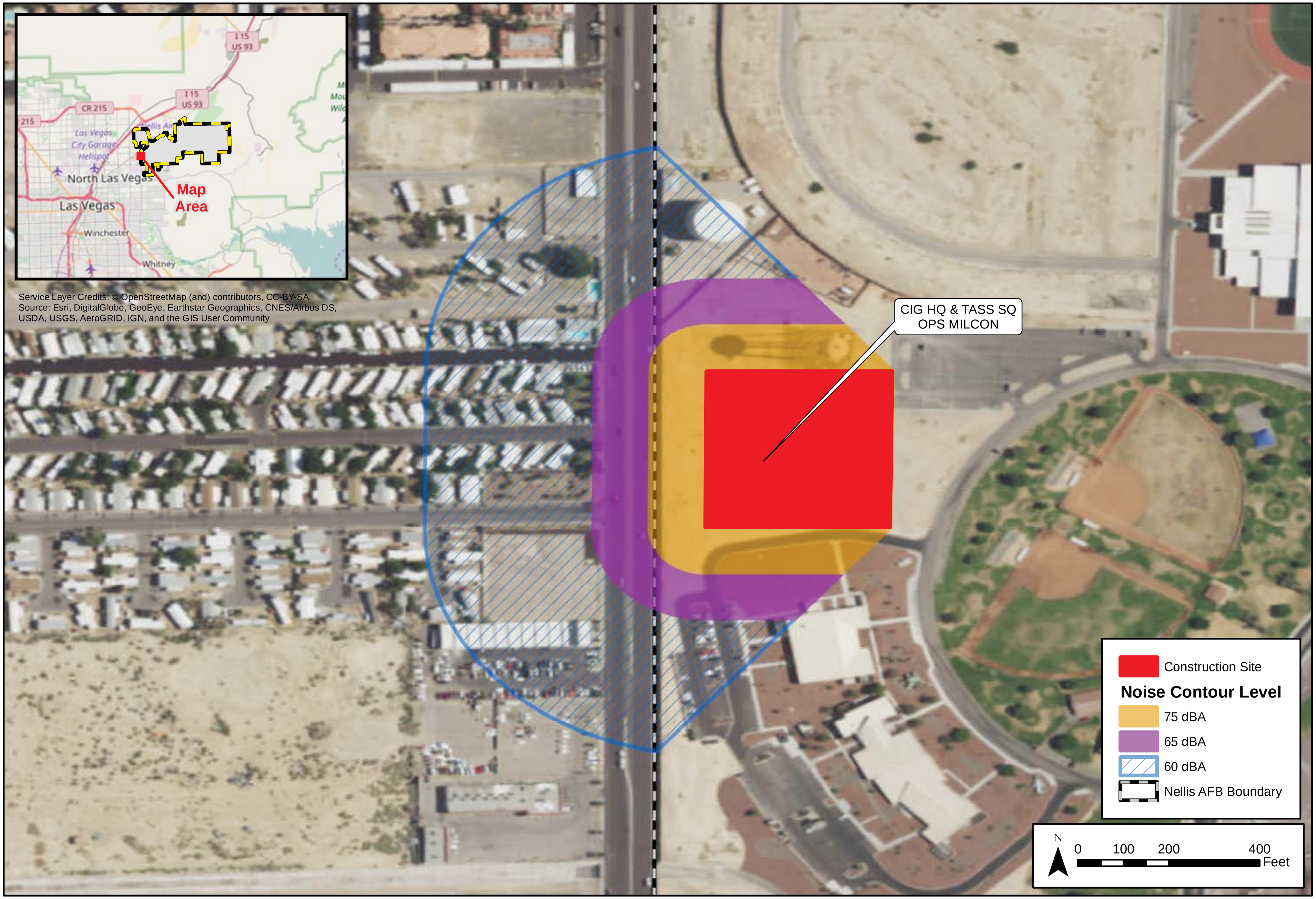


Figure 4-1. Noise Contours from CIG/TASS HQ Construction Site

The noise levels from aircraft sound are different than noise levels produced by construction equipment. Aircraft noise is loud but intermittent, whereas construction noise is typically quieter but more constant.

As mentioned previously, AFCEC recently updated the Nellis AFB AICUZ report and modeled the proposed TASS F16 aircraft operations as part of this update (Appendix B). The models indicate that the proposed TASS operations would not result in any perceptible change in the 65 to 75 dBA noise contours (Figure 4-2). The addition of the TASS operations would increase the area contained with the 65 dBA DNL and 70 dBA DNL contours by 400 acres and 233 acres, respectively. This equates to less than a 0.5 percent change to the 65 and 70 dBA DNL areas, as compared to the No Action Alternative. The largest expansion in contours occurs on the northwest corner and represents a linear expansion of about 550 meters, in mostly undeveloped lands. Most of the other corners expand by approximately 90 to120 meters northeast of the base and the developed areas along Interstate 15 to the west and southwest of the base.

4.2.2 No Action Alternative

Ambient noise levels would not be affected under the No Action Alternative. Aircraft operating noise would be slightly lower without the F-16s, but the difference would be imperceptible.

4.3 AIR QUALITY AND CLIMATE CHANGE

4.3.1 Preferred Alternative

No significant impacts on air quality and climate change have been identified that would result from implementation of the Preferred Alternative. The Proposed Action would include the stationing and operation of 16 new aircraft, construction of additional ramp and apron space on the east side of the runway, temporary operations out of existing facilities and modular buildings, and four MILCON projects to be constructed over two or more years. The USAF Air Conformity Applicability Model was used to assess potential air quality impacts associated with the Proposed Action and determine the need for General Conformity Rule compliance (40 CFR §93 Subpart B). The model assessed impacts from the new aircraft operations and the construction and operation of new and existing buildings at Nellis AFB. A copy of the Record of Conformity Analysis report is included in Appendix C. All new stationary sources would be added to the existing Nellis AFB permit. A Clark County Surface Disturbance Permit (dust permit) would be required in advance of construction.

In addressing the potential air impacts of the Preferred Alternative on the air quality of affected environment, it is important to note the difference between significance thresholds (i.e., *de minimis* levels) and significance indicators. A General Conformity determination is required for each criteria pollutant or precursor where the total of direct and indirect emissions from that criteria pollutant or precursors in a nonattainment or maintenance area caused by a Federal action would equal or exceed specified *de minimis* levels. For pollutant emissions that are not applicable to General Conformity, significance indicators are EPA thresholds that are partially applied or applied out of

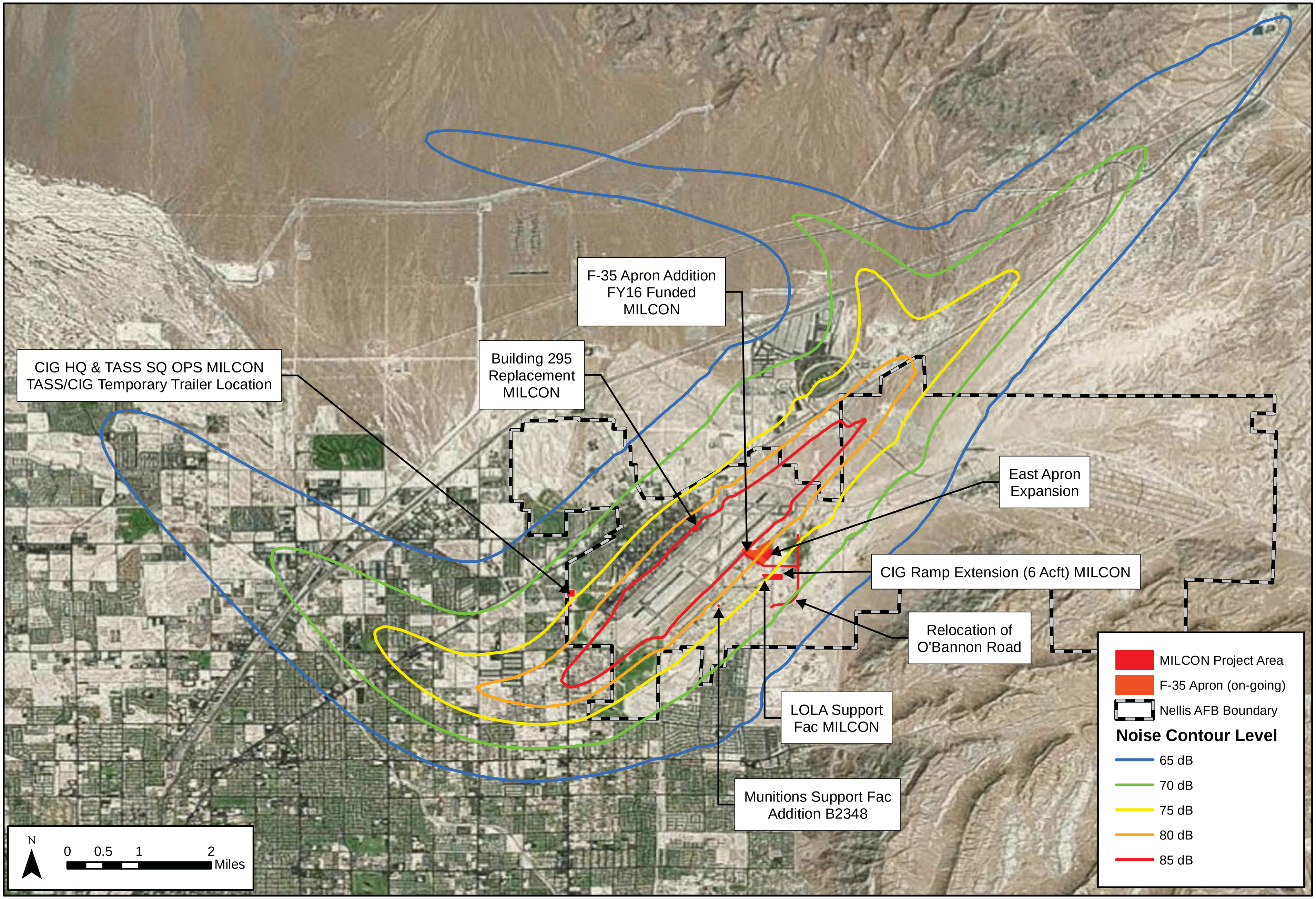


Figure 4-2. Noise Contours at Nellis AFB

March 2017

context to their intended use; however, they provide an indication of potential impacts or air quality significance. Therefore, indicators do not trigger a regulatory requirement; however, they provide a warning that the action is potentially approaching a threshold which would trigger regulatory requirement. It is important to note that while significance thresholds provide a definitive impact determination, significance indicators only provide a clue and evidence to the potential significance of emission's impacts to air quality and, in the case of GHGs, to climate change.

Nellis AFB is located in Clark County, Nevada. In some cases, Clark County is split into two airsheds, referred to as Las Vegas, Nevada and Clark County, Nevada. The Las Vegas area is designated as a maintenance area for the 1997 8-hour ozone standard and the 1971 CO standard. The Clark County area is designated as a maintenance area for PM-10. *De minimis* significance threshold, as specified in 40 CFR § 93.153(b)(2), for these pollutants is 100 tons/year. For all other criteria pollutants and GHGs, significance indicators are as follows:

1) Increase ambient air pollution concentrations above the NAAQS,
2) Contribute to an existing violation of the NAAQS,
3) Interfere with, or delay timely attainment of, the NAAQS,
4) Impair visibility within federally-mandated Prevention of Significant Deteriorations (PSD) Class I areas,
5) Result in the potential for any new stationary source to be considered a major source of emissions as defined in 40 CFR § 52.21 (total emissions of any pollutant subject to regulations under the CAA that is greater than 250 tons per year for attainment areas),
6) For mobile source emissions, the increase in emissions to exceed 250 tons per year for any criteria pollutant, or
7) For stationary GHG emissions, exceed 75,000 tons of direct CO_2-e emissions on an annual basis.

The 75,000-ton significance indicator for stationary GHG is based on guidance provided in the USAF Air Quality EIAP Guide – Fundamentals. On 3 October 2016, EPA proposed establishing a *de minimis* value of GHGs or "Significant Emissions Rate" (SER) of 75,000 tons per year CO_2-e from stationary sources as a basis for requiring sources to obtain a Title V permit, if the sources were not otherwise required to obtain a Title V permit. As a result of this rule proposal, the 75,000 tons per year CO_2-e can be used as an indicator of *de minimis* significance; per USAF guidance, actions resulting in less than 75,000 tons per year CO_2-e of GHG emissions are considered *de minimis* (too trivial or minor to merit consideration) and not significant enough to warrant further NEPA analysis.

Potential emissions for all criteria pollutants and CO_2-e were estimated using the USAF's Air Conformity Analysis Model (ACAM). The ACAM Record of Conformity Analysis is provided in Appendix C. For all proposed construction actions and aircraft operations over the multi-year life of the project in all areas affected, the model found that none of the criteria pollutants emitted exceeded the applicable *de minimis* thresholds, nor any of the significance indicators, for any year during the life of the project. Therefore, potential criteria pollutant and GHG emissions resulting from the Proposed Action are deemed to have an insignificant impact on the environment and on climate change.

As prior stated, CEQ requires GHG emissions to be evaluated for both their impact on the environment and climate change, and also for the effects of climate change on the proposed action. The proposed GHG emissions fall well below the 75,000-ton *de minimis* significance indicator. In using the “rule of reason” suggested by CEQ, the preferred alternative does hold a higher relative significance than the other alternatives, but only because the only alternative presented was the No Action Alternative. However, in light of the “concept of proportionality”, the proposed GHG emissions are well below significance indicators are not anticipated to have only minor impacts on the environment and climate change.

Impacts of climate change on the proposed action are examined in four steps, identified below.

Step 1 – Identify State-Specific Potential Impacts. Specific climate change impacts, as identified by EPA in fact sheet (https://www3.epa.gov/climatechange/impacts/state-impact-factsheets.html) on proposed actions in Nevada include:

- Declining snowpack
- Water availability
- Agriculture
- Wildfires and Changing Landscapes
- Pests
- Human Health

Step 2 – Identify Location-Specific Potential Impacts. Specific climate change impacts on proposed actions at Nellis AFB are anticipated to include:

- Water availability
- Wildfires and Changing Landscapes
- Pests
- Human Health

Step 3 – Address Location-Specific Potential Impacts.

- Water availability. The changing climate is likely to increase the need for water but reduce the supply. Higher temperatures increase the rate at which water evaporates (or transpires) into the air from soils, plants, and surface waters. Irrigated farmland would thus need more water. But less water is likely to be available, because precipitation is unlikely to increase enough to make up for the additional water lost to evaporation. These climate change impacts are likely to have negligible impact on the proposed action. The USAF and Nellis AFB continue to be leaders in national conservation of energy and water, and have mandated reductions in energy and water intensity. While water availability will continue to be a challenge throughout the state of Nevada, including at Nellis AFB, increased water demand associated with the proposed action is negligible (washing 16 aircraft and associated water/sewer usage associated with an increase of 279 personnel) and therefore the diminished water availability is not likely to have an impact on the proposed action.

- Wildfires and Changing Landscapes. Higher temperatures and drought are likely to increase the severity, frequency, and extent of wildfires in Nevada, which could harm property, livelihoods, and human health. The combination of more fires and drier conditions may change parts of Nevada's landscape. Many plants and animals living in arid lands are already near the limits of what they can tolerate. In some cases, native vegetation may persist as the climate changes. But when drought, grazing, or fire destroy the natural cover, native plants may be replaced by non-native grasses. These climate change impacts are likely to have no impact on the proposed action. The vegetative community at Nellis AFB is described as Mojave Desert scrub. Although higher temperature, arid climate, and drought conditions increase the likelihood of wildfires, the sparse vegetation and lack of fuel associated with this vegetative community makes it unlikely that wildfires would spread and change local landscapes. Additionally, much of the proposed action is anticipated to occur on previously-developed land and therefore landscape changes are not expected to impact the proposed action.
- Pests. Warmer and drier conditions also make forests more susceptible to pests. Droughts reduce the ability of trees to mount a defense against attacks from pests such as bark beetles, which infested 28,000 acres of Nevada's forests in 2014. Temperature controls the life cycle and winter mortality rates of many pests. With higher winter temperatures, some pests can persist year-round, and new pests and diseases may become established. These climate change impacts are likely to have no impact on the proposed action. The vegetative community at Nellis AFB is Mojave Desert scrub and much of the proposed action is on previously-developed land. Pest infestation is not expected to have impact on the land proposed for the action.
- Human Health. Hot days can be unhealthy—even dangerous. Certain people are especially vulnerable, including children, the elderly, the sick, and the poor. High temperatures can cause dehydration and heat stroke, and affect people's cardiovascular, respiratory, and nervous systems. Higher temperatures are amplified in urban settings where paved and other surfaces tend to store heat. Rising temperatures can also increase the formation of ground- level ozone, a key component of smog. Ozone has a variety of health effects, aggravates lung diseases such as asthma, and increases the risk of premature death from heart or lung disease. EPA and the Nevada DEP have been working to reduce ozone concentrations. As the climate changes, continued progress toward clean air will become more difficult. These climate change impacts may have minor impacts on the proposed action. During construction, crews may have to increasingly operate on altered time schedules to avoid the heat of the day. During steady

state, USAF can mitigate climate change impacts to human health by diligently monitoring heat advisories and ozone warnings to mitigate human exposure and by providing awareness training to employees and contractors.

Step 4 – Assess Location-Specific Exacerbating Impacts. Of the impacts of climate change on the proposed action, only the impact of human health is anticipated to be worsened, albeit minimally.

- Human Health. Construction and steady state operations associated with the proposed action result in minor increases of select air pollutants, including CO and GHGs. In proportion to the baseline air quality, the degradation of ambient air is minor resulting from the proposed action. Rising temperatures and increased pavement (storage of heat) can lead to temporary trapping of ground-level ozone and particulates, which could cause impacts to human health, regardless of whether the proposed action or no actions alternative is chosen. The USAF can take action to mitigate these climate change impacts through initiatives such as transportation and transit improvement plans to reduce localized commuter emissions. During construction, crews may have to increasingly operate on altered time schedules to avoid the heat of the day. During steady state, USAF can mitigate climate change impacts to human health by diligently monitoring heat advisories and ozone warnings to mitigate human exposure and by providing awareness training to employees and contractors.

4.3.2 No Action Alternative

No new construction activities and no new aircraft operations would occur under the No Action Alternative; therefore, there would be no impacts on air quality.

4.4 WATER RESOURCES

4.4.1 Preferred Alternative

No significant impacts on water resources have been identified that would result from implementation of the Preferred Alternative. Under the Preferred Alternative there would be minor to negligible impacts on surface waters. Construction and demolition activities in the F-35 apron addition and LOLA extension areas are the most likely to affect surface waters. The taxiway apron on the east side of the airfield would be expanded to provide space for displaced aircraft and an addition to the LOLA. The addition to the LOLA would involve extending the ramp enough to accommodate six additional aircraft spaces and associated support facilities. Ground-disturbing activities such as excavation, grubbing, or vegetation removal that may increase soil erosion or produce fill material that requires deposition and may lead to filling of potentially jurisdictional ephemeral streams or washes. Increased susceptibility to erosion may lead to some long-term and/or recurring impacts on surface waters that receive increased sedimentation during rain or high wind events that occur after the implementation of the Preferred Alternative. Additionally, expansion of the apron and extension of the LOLA ramp may require segments of the ephemeral wash that traverses portions of the LOLA extension area and the stormwater conveyance ditch that traverses portions of the LOLA extension and the F-35 apron addition to be permanently paved or to receive native or external fill material. Filling and other impacts on potentially jurisdictional surface water features would likely require coordination with the USACE. Rain events that occur during site preparation or construction activities would be contained in the stormwater collection basin to the southeast of the airfield. Nellis AFB would be required to obtain a stormwater construction permit from the NDEP prior to construction since some of the construction footprints would be greater than 1 acre. A Stormwater Pollution Prevention Plan (SWPPP) would be developed as part of that permit process. The SWPPP would incorporate an analysis of the projected stormwater runoff for the CIG and TASS construction sites, and the stormwater collection basin would be modified to accommodate the increased hard surface runoff volume resulting from the over-pavement and/or fill of the LOLA extension and east side apron expansion.

The construction activity areas do not lie within a major floodplain. Minor to negligible impacts on small, localized floodplains and alluvial fans created by networks of ephemeral streams and washes may occur under the Preferred Alternative. Paving formerly porous surfaces in order to expand the apron and extend the LOLA ramp may slightly increase flash flood risk in the project area, and in adjacent areas of lower elevation. These impacts would be long-term and would persist as long as the increased surface area of asphalt is in place, or until measures to divert flood water away from the area are implemented.

There would be no impacts on wetlands under the Preferred Alternative because no wetlands occur within or in the vicinity of the proposed construction sites.

Impacts on groundwater under the Preferred Alternative would be negligible. Shallow groundwater occurs at depths of a few hundred feet at Nellis AFB and production wells are monitored for contaminants on a monthly basis. It is unlikely that demolition or construction activities within the TASS/CIG HQ and TASS areas, north-side apron, east-side apron, or LOLA areas would introduce new sources of groundwater contamination. Monitoring for leaks and spills, secondary containment, and other BMPs will be implemented to prevent or reduce any contamination of groundwater from fuel or munitions that would be stored in these areas. The impacts of any contamination reaching groundwater from sources associated with these areas would be short-term, as contaminant strength would be diluted within the larger groundwater system and its effects would attenuate over a short period of time.

4.4.2 No Action Alternative

Under the No Action Alternative there would be no impacts on surface waters, floodplains, wetlands, or groundwater, as no TASS beddown would occur at Nellis AFB and no on-base construction, demolition, or personnel increases would be implemented.

4.5 BIOLOGICAL / NATURAL RESOURCES

No significant impacts on biological/natural resources have been identified that would result from implementation of the Preferred Alternative.

4.5.1 Vegetation

4.5.1.1 Preferred Alternative

Approximately 7 acres of an area vegetated with mostly native plant species within the LOLA extension area would be permanently disturbed or cleared of vegetation as part of site preparation activities associated with the extension of the runway ramp northeastward into the surrounding Mojave Desert scrub landscape. Most of this area would be paved and revegetation would not occur.

Approximately 11.5 acres of an area vegetated with mostly native plant species within the TASS east apron extension area would be permanently disturbed and/or be cleared of vegetation as part of site preparation activities associated with expanding the taxiway apron and runway buffer zone. This area would be filled with gravel material or over-paved and revegetation would not occur.

The LOLA support facility area and munitions support facility area do not contain any native vegetation. Vegetation within the Building 295 replacement area consists entirely of landscaped plants. The TASS/CIG HQ area is dominated almost entirely by non-native plant species. Effects on native vegetation within these areas resulting from the Preferred Alternative would be negligible.

Site preparation activities such as clearing, grubbing, and leveling could also spread invasive plant species, such as Russian thistle and Mediterranean grass, that may out-compete and exclude native vegetation in areas within the LOLA extension footprint that would be allowed to revegetate, as well as areas outside of the LOLA extension footprint. The spread of non-native invasives could result either from soil disturbance, which would exacerbate wind dispersal of invasive plants that have already colonized the area, or by importing fill material into the area that contains seeds or vegetative parts of invasive species. The 99th Civil Engineering Squadron has developed a pest management plan for Nellis AFB (Nellis AFB 2010a), which directs the prevention and control of invasive plants on the installation. Guidance from the Nellis AFB Pest Management Plan would be utilized to help prevent the spread of invasive plants within the CIG. Included in this guidance are procedures to identify and map populations of invasive plants, minimize off-road vehicle use whenever possible to decrease the spread of invasive plants, minimize road shoulder maintenance to prevent and decrease spread of invasive plants, and to thoroughly clean excavation and construction equipment before travelling from area to area on the Nellis AFB (Nellis AFB 2010a). Any additional soil needed for site preparation would come from approved sources. Impacts from spread of invasive species could be long-term and could require recurring implementation of control and management measures.

4.5.1.2 No Action Alternative

Under the No Action Alternative, no impacts on vegetation would occur. No TASS beddown would occur at Nellis AFB and no on-base construction or personnel increases would be implemented.

4.5.2 Wildlife

4.5.2.1 Preferred Alternative

Direct, short-term impacts resulting from the implementation of the Preferred Alternative could include some loss of common individual wildlife specimens such as round-tailed ground squirrel, desert cottontail rabbit, and black-tailed jackrabbit, various reptiles, and various invertebrates during site preparation activities such as clearing, grubbing, and leveling of the construction activity sites within the LOLA extension and TASS East Apron Expansion footprints. However, the small number of individuals expected to be lost would not appreciably reduce the overall population of species found within the area surrounding Nellis AFB. It would be expected that species utilizing this habitat would move to adjacent similar habitat. The displacement would minimally reduce the population size within the project area, but would have a negligible effect on the overall population viability. No evidence of western burrowing owl occupancy (i.e., fresh whitewash, pellets, feathers, or nest ornamentation) was observed in either of these areas and the extent of potential habitat within the construction activity areas is limited.

There could be some loss of or disturbance to ground or low scrub dwelling/nesting birds that are protected under the MBTA such as sage thrasher, horned lark, greater roadrunner, common nighthawk, and sage sparrow, either through destruction of nest, eggs, or nestlings or mortality to individuals that would result directly from the implementation of the Preferred Alternative. Nellis AFB avoids or minimizes negative impacts on migratory birds and takes steps to protect these species and restore or enhance their habitat wherever possible. These actions include preventing or evading pollution or detrimental alteration of the environment, as practicable within the constraints of the military mission. The USFWS would be notified if unintentional take of any species protected under the MBTA and/or the BGEPA occur. Nellis AFB also utilizes guidance within the *Nevada Partners in Flight Bird Conservation Plan* and the International Partners in Flight's *Bird Conservation Plan* to avoid or minimize impacts on migratory birds (Nellis AFB 2010a). Impacts on migratory birds and raptors would be short term, only lasting the duration of the scheduled construction and demolition activities, and the effects on populations of these species would be negligible.

The implementation of the Preferred Alternative would not be expected to result in any additional habitat fragmentation that could affect wildlife migration or population viability. All of the construction sites are adjacent to or are expansions of existing infrastructure, and the existing runway is the primary barrier to migration across Nellis AFB.

4.5.2.2 No Action Alternative

Under the No Action Alternative, no impacts on wildlife would occur. No TASS beddown would occur at Nellis AFB and no on-base construction or personnel increases would be implemented.

4.5.3 Threatened and Endangered Species and Critical Habitat

4.5.3.1 Preferred Alternative

No threatened or endangered species were observed during site reconnaissance in any of the proposed construction activity areas. Potential habitat for western burrowing owl exists in the northeastern corners LOLA Extension Area and TASS Apron Extension Area footprints. This potential habitat would likely be filled or paved and prey animals (e.g., round-tailed ground squirrel) of the western burrowing owl would be permanently lost or displaced due to site preparation activities. Mortality of western burrowing owls occupying burrows could occur during site preparation activities, as well as filling or paving of the construction areas. However, as mentioned above, no evidence of western burrowing owls was noted within the construction footprints during the September 2016 surveys.

Potential habitat for the desert tortoise exists in the northeastern corners of the LOLA Extension Area and TASS Apron Area footprints. This potential habitat would likely be permanently filled or paved and suitable forage plants of the desert tortoise would be lost or displaced due to site preparation activities. Mortality of desert tortoises occupying burrows could occur during site preparation activities, as well as filling the construction areas.

Nellis AFB has developed and implemented management procedures for both the western burrowing owl and the desert tortoise (Nellis AFB 2010). Pre-construction surveys for both of these species would be conducted to ensure that no individuals are within the construction activity areas. Construction monitoring would be conducted during the implementation of site preparation and construction activities to ensure that appropriate BMPs for protection of these and other threatened or endangered species are implemented throughout the duration of the project.

Consultation with the USFWS under Section 7 of the ESA is ongoing and will be completed prior to proceeding with the Preferred Alternative.

4.5.3.2 No Action Alternative

Under the No Action Alternative, no impacts on threatened and endangered species would occur. No TASS beddown would occur at Nellis AFB and no on-base construction or personnel increases would be implemented.

4.6 EARTH RESOURCES

4.6.1 Preferred Alternative

No significant impacts on soils or other earth resources have been identified that would result from implementation of the Preferred Alternative. Site preparation and construction activities would disturb approximately 28 acres of native soils. All of the native soils found within the CIG and TASS project areas are highly friable. While erosion within desert environments tends to be low due to low levels of precipitation, any soil disturbance that would expose the soils to wind, rain, and stormwater runoff must be stabilized by some means. Nellis AFB would be required to obtain a

Stormwater Construction Permit from the NDEP prior to construction. A SWPPP would be developed as part of that permit process. The SWPPP would detail erosion prevention and control measures that would be implemented during site preparation and construction activities. No hydric or prime farmland soils would be disturbed or removed from the project area.

4.6.2 No Action Alternative

Under the No Action Alternative, no impacts on soils would occur. No TASS beddown would occur at Nellis AFB and no on-base construction or personnel increases would be implemented.

4.7 HAZARDOUS MATERIALS / WASTE

4.7.1 Preferred Alternative

No significant impacts relative to hazardous materials/waste have been identified that would result upon implementation of the Preferred Alternative. Construction of new facilities as part of the Proposed Action would not impact any existing or former ERP sites. Demolition or remodeling of existing buildings could potentially expose asbestos-containing materials (ACM) and lead-based paint (LBP). If ACM or LBP is encountered during demolition or remodeling, BMPs in compliance with Federal and state regulations for handling and disposing of ACM and LBP would be followed, thus minimizing any impacts from the release of these contaminants to the environment.

During construction and remodeling activities, the use of hazardous materials and petroleum products would be required. Impacts from the accidental release of hazardous materials or petroleum products (fuel and lubricants) would be minimized by following BMPs such as storing fuel tanks within bermed containment to prevent the accidental release of spilled fuel. Management of other hazardous materials in compliance with Hazardous Material Pharmacy requirements and disposal of hazardous wastes as directed by the Hazardous Waste Management Plan would minimize impacts from handling and disposal of hazardous substances. By following the procedures identified, impacts from hazardous and toxic substances due to the Proposed Action would be minor.

4.7.2 No Action Alternative

Under the No Action alternative, there would be no construction of additional facilities and no standup of new aircraft, so there would be no impacts from hazardous and toxic substances.

4.8 CULTURAL RESOURCES

4.8.1 Survey Methods and Results

No significant impacts on cultural resources have been identified that would result from implementation of the Preferred Alternative. A Class III, or Phase I intensive pedestrian, cultural resources survey was conducted by an archaeologist walking parallel transects spaced no more than 15 meters apart. When cultural material or an artifact is identified, its location is marked with a pin flag. The surrounding area is immediately checked for additional artifacts, which are also flagged. If no other cultural materials are observed, the location of the isolated occurrence (IO) is recorded using a handheld Trimble global positioning unit. The IO is photographed if diagnostic or otherwise unusual. The type and location of each IO, along with any additional descriptive information, are recorded on standardized forms. If additional artifacts or features are identified and the cultural materials meet the minimum definition of an archaeological site, the cultural materials are assigned a temporary field site number. The site is recorded on standardized forms (i.e., Intermountain Antiquities Computer System), mapped, and photographed. Tabulations of artifacts are achieved by placing pin flags on artifacts and artifact concentrations and manually counting individual artifacts and estimating totals within concentrations. Artifacts are further tabulated by type, sub-type, and morphology. Tabulations of artifacts are also cross-referenced with estimated densities across various portions of the site to ensure that the data is cohesive. Final tabulations for large numbers of specific types of artifacts are presented as a range to accommodate any miscalculations and estimates. The 1983 North American Datum is used for all Universal Transverse Mercator coordinates. Any site and IO location data are downloaded, differentially corrected, and imported into a Geographic Information System file via ArcMap to produce property and resource location maps.

The archaeological survey was completed on 19 and 20 September 2016. No archaeological sites were identified. Only three isolated occurrences of possible cultural material were identified and are discussed below.

The TASS/CIG HQ MILCON parcel and an adjacent area for temporary placement of trailers were surveyed for cultural resources. The area consists of a vacant lot just east of Las Vegas Boulevard North. The lot appears to have been graded, leveled, and otherwise modified in the past. Imported and scattered gravels from nearby construction and landscaping were present throughout the parcels. A single colorless glass bottle fragment with a blue and white painted label was identified (IO 1), but it could not be determined if the shard was historic or modern. Modern debris was common throughout the parcel in the form of scrap metal, plastic fragments, nails, screws, bolts, amber glass shards, colorless glass shards, concrete fragments, and sewer pipe fragments. A small ash and charcoal stain was identified on the edge of a recently excavated, small water catchment adjacent to a parking lot that was currently under construction. No prehistoric materials were identified and the ash/charcoal stain was determined to be modern.

The east-side Apron Additions were also surveyed. A large portion of this parcel consists of an existing, paved parking lot. Two recent water catchments were noted in the northwest portion of the parcel. The surrounding areas have been modified by grading and land levelling activities. A large area of imported gravel is located in the east portion of the parcel. The gravel area was formerly used in fire suppression and rescue training. The undeveloped portions of the parcel consist of creostebush and saltbush flats. Although undeveloped, these areas still exhibit the scars of landscape modification, or earth-moving activities in the form of blading and scraping associated with nearby infrastructure development. Imported small rocks and gravels are scattered throughout the undeveloped portions of the parcel, as are concrete fragments, modern trash (colorless, amber, and aqua glass fragments, nails, screws, unidentified metal scraps, wires, plastic, beverage cans, and PVC pipe fragments). The area has also been used for the wash-out of cement trucks. The only potential cultural material identified consists of 15 fragments of a porcelain insulator (IO 2).

No cultural resources were noted at the Munitions Support Facility Addition (Building 2348) or the LOLA Support Facility MILCON. Both small parcels were located adjacent to structures or developed infrastructure, and both parcels show evidence of previous earth-moving activities in the form of extensive leveling and grading. The LOLA Extension MILCON parcel has also been subject to significant earth-moving activities. The area immediately east of the ramp has been bladed and leveled, with abundant imported gravels. A large earthen berm (approximately 30 meters wide) is located between the end of the ramp and a paved road. The paved road and a deep drainage channel, also traverse the parcel from north to south. To the east of the earthen channel is undeveloped land that is heavily eroded and deeply dissected by intermittent washes, with the dominant vegetation consisting of sparse creosotebush. Although undeveloped, this portion of the parcel does exhibit signs of off-road vehicle use and limited earth-moving activities. The area immediately east of the wash appears to have been mechanically stripped of vegetation. No cultural resources were identified, with the exception of a modern USACE 1984 survey marker (IO 3).

The Air Force made slight modifications to the layout of proposed improvements after fieldwork was completed. The East Apron additions were expanded slightly to the southwest and northeast and the LOLA Support Facility was shifted to extend to the east, instead of the northeast. Each of these modifications was extremely minor and should not affect the results of the current cultural resources investigation. The relocation of O'Bannon Road approximately 0.15 mile to the east had not yet been proposed and was therefore not surveyed. However, each of the changes, including the relocation of O'Bannon Road are located in areas that have previously been surveyed prior to the current investigation and no cultural resources were documented. Based on results of previous investigations, current geological and geomorphological conditions as well as the results of the current survey, which effectively surveyed more than 80 percent of the proposed improvements, it is extremely unlikely that any additional, previously unknown cultural resources would be identified.

In addition, no historic structures are located within the APE. The Thunderbird Hangar (Building 292) and Building 805 are located adjacent to Building 295 and were previously recommended as eligible for listing in the NRHP. However, neither building has been nominated for or listed in the NRHP or the Nevada State Register. It is uncertain if either building has retained enough integrity to still be listed, but the setting and association of both buildings have been compromised by construction and demolition in the area.

4.8.1 Preferred Alternative

In the absence of archaeological sites or otherwise significant cultural materials, the proposed construction and related activities would have no effect on cultural resources. There would be no indirect effect on cultural resources within a 1-mile radius of the proposed project areas. Building 295 has been evaluated and determined to not be of historical significance. In addition, the sorties would not have any additional effect on cultural resources or historic structures under the airspace that would be used by the TASS. Coordination with the Nevada SHPO is ongoing; concurrence with the USAF's determination has been requested.

4.8.2 No Action Alternative

Under the No Action Alternative, no additional effects on historic properties would occur.

4.9 LAND USE

4.9.1 Preferred Alternative

No significant impacts on land use have been identified that would result from implementation of the Preferred Alternative. The Proposed Action requires temporary facilities for maintenance and operations to bridge the gap until new facilities are complete. These temporary facilities would be placed adjacent to existing facilities on approximately 0.62 acre with no changes to the land use status. These facilities would eventually be removed when the MILCON facilities are completed. Interim mitigation strategy for maintenance facilities would involve temporarily utilizing existing Green Flag and Red Flag maintenance facilities, which would cause no change in land use status under the Proposed Action. Under the Proposed Action, all lands would remain in the military use; however, the specific use would change approximately 28 acres of disturbed undeveloped land into developed land use. The TASS/CIG HQ would be a 24,000-square-foot building constructed adjacent to Freedom Park, in proximity to the Green Flag Operations Building and the JTAC Operations Building. There would be no change in status of land use for Freedom Park. Construction of the TASS/CIG HQ building would result in the change of land use status for 2.6 acres of disturbed undeveloped land into developed land. Construction of the Mx Hangar/AMU would require the demolition of Building 295 and result in no changes in the land use status of the site. Expansion of the apron on the east side of the airfield would impact about 11.5 acres, resulting in a change in the land use status from disturbed undeveloped to developed land. The proposed LOLA expansion would change 7 acres from disturbed undeveloped land to disturbed developed land use. Expansion of the LOLA and munitions support facility would result in less than 1 acre of disturbed developed land being impacted with no change in land use status.

4.9.2 No Action Alternative

Under the No Action Alternative there would be no CIG or TASS beddown occurring at Nellis AFB and no changes in land use designation would occur.

4.10 INFRASTRUCTURE / UTILITIES

4.10.1 Preferred Alternative

No significant impacts on infrastructure/utilities have been identified that would result from implementation of the Preferred Alternative. The Preferred Alternative, located in Area I of the base, includes construction and operations in an area around Tyndall Avenue at Fitzgerald Boulevard and in an area that is located east of North Nellis Boulevard in the vicinity of Freedom Circle. Most of the traffic associated with the 293 additional employees would be expected to be associated with these two facilities. Other MILCON projects, including an expansion of the airfield apron and expansion of the LOLA, would be located on the east of the airfield in the vicinity of O' Bannon Road.

Tyndall Avenue near its intersection with Fitzgerald Boulevard would be realigned from its current location to allow for construction of the new Mx Hangar/AMU and associated parking.

Beddown of the TASS would begin in 2017. Construction activities associated with standing up the TASS would take place over a 4-year period. During construction, there would be temporary, minor increases in construction-related traffic, as construction workers access the sites and construction materials and equipment are delivered.

Initially, while the new buildings are under construction, personnel would utilize temporary structures/trailers and share space in existing structures. The additional temporary structures would be located east of North Nellis Boulevard and north of East Gowan Road in the general vicinity of Freedom Circle. Upon completion of the CIG TASS/Operations Group facility, which would be located near the temporary facilities, and the Mx Hangar/AMU facility, located in the in the Tyndall Avenue/Fitzgerald Boulevard area, the additional traffic would be split between the two areas.

Assuming an additional 293 personnel expected to be associated with the TASS beddown entering and leaving though the Main Gate for 5 days each week, additional weekly traffic would be approximately 2,800 trips, for an estimated increase in traffic of approximately 5 percent. Impacts on traffic would be permanent and minor.

Implementation of the beddown of a TASS would not result in a significant increase in most utilities with the exception of fuel. The additional personnel that would be required on-base would not exceed the threshold of the capacity of Nellis AFB. A slight increase in electricity and natural gas would be seen due to the additional personnel; however, all utility companies have created plans to incorporate a growing population where the services are rendered The addition of the 16 F-16s would cause an increase in use of fuel that is supplied through the CALNEV pipeline. This is not expected to result in an adverse effect on the pipeline's capacity, since the same amount of fuel required by the F-16s will likely be the same as the F-15s that were removed from Nellis AFB's inventory in 2015.

4.10.2 No Action Alternative

Under the No Action Alternative, the CIG and TASS beddown at Nellis AFB would not take place. As a result, there would be no impacts on transportation and traffic.

Likewise, Nellis AFB would not experience any change in utility use under the No Action Alternative. The existing conditions and resources would remain the same as the current use.

4.11 SAFETY AND OCCUPATIONAL HEALTH

4.11.1 Preferred Alternative

No significant impacts on safety and occupational health have been identified that would result from implementation of the Preferred Alternative. During construction and demolition, all actions would be performed in accordance with Air Force Office of Safety and Health directives and Occupational Safety and Health Administration regulations. There are no specific aspects of construction or demolition projects that would create any unique or extraordinary safety issues. The handling, processing, storage, and disposal of hazardous by-products from these activities would be accomplished in accordance with all Federal, state, and local requirements, as well as applicable Nellis AFB plans. All current day-to-day operations have established safety guidelines and procedures that would continue to be observed. No adverse impact on safety would be anticipated under the Proposed Action.

Aircraft operations would continue to be managed in accordance with Nellis AFB directives and FAA regulations. The addition of the TASS F-16s to the normal operations at Nellis AFB would pose no measurable additional risk to public health and safety.

4.11.2 No Action Alternative

The TASS beddown would not occur under the No Action Alternative. Therefore, safety impacts resulting from the No Action Alternative would remain in their current conditions.

4.12 SOCIOECONOMIC RESOURCES

4.12.1 Preferred Alternative

No significant impacts on socioeconomic resources have been identified that would result from implementation of the Preferred Alternative. Under the Preferred Alternative, up to 16 F16 aircraft, including two backup aircraft, would be transferred to Nellis AFB. Personnel at Nellis AFB would increase by 293, and four MILCON facilities would be constructed on-base. Construction of the four MILCON facilities, which would be funded in FY19 and FY20, would result in additional investment of an estimated $81 million on Nellis AFB. Temporary modular facilities would be brought in to provide interim space for operations before the MILCON facilities are completed. Utilizing the temporary facilities, operations would be expected to begin at Nellis AFB in late 2017. When fully operational, the TASS would be expected to fly approximately 2,700 annual sorties as part of the CAS training mission, approximately 300 (11 percent) of which would be flown at night.

During construction, with BMPs in place, there would be minor, temporary noise, air quality, and traffic impacts in the construction areas on Nellis AFB; however, there would be no long-term or permanent adverse socioeconomic impacts associated with construction. Temporary, minor beneficial impacts in the form of jobs and income for area residents, revenues to local businesses, and sales and use taxes to counties, cities, and Nevada from locally purchased building materials could be realized if construction materials are purchased locally or local construction workers are hired to do the construction.

During operations, the 293 additional personnel would provide permanent minor, beneficial, direct and indirect socioeconomic benefits in the ROI from additional earnings that would be spent in the ROI, revenues to local businesses, and taxes paid to state, county, and local governments. Based on the average annual salary for active duty military personnel at Nellis AFB, the 293 additional personnel would add approximately $26 million in annual earnings for Clark County residents (Nellis AFB 2105b). Impacts on housing in the ROI would be negligible, as workers moving into the region would be easily absorbed into the existing housing market.

During operations, an estimated 2,700 sorties would be added to the approximately 87,000 sorties now flown annually at Nellis AFB, for an increase in annual sorties of approximately 4 percent. Aircraft noise-related impacts off-base are associated with the areas within the noise contours of 65 dBA DNL. The existing noise contours (Figure 3-1) would not perceptibly change as a result of the Preferred Alternative, and impacts within the 65 dBA DNL noise contour would continue whether or not the Preferred Alternative is implemented. Therefore, there would be no additional residences impacted by the Preferred Alternative. Adverse impacts on socioeconomics would be negligible.

Environmental Justice and Protection of Children

The Guide for Environmental Justice Analysis with the Environmental Impact Analysis Process (EIAP) (U.S. Air Force November 1997) outlines specific Air Force guidelines with respect to environmental justice. This guidance was developed in accordance with Executive Order 12898, discussed previously in Section 3.12.1.5.

The demolition, construction, and operation activities associated with the Proposed Action would occur within the confines of Nellis AFB and would be limited to the administrative, industrial, or operational areas of the base. Local air emissions and noise from construction activities would not approach any state or Federal thresholds for the protection of human health and safety (see Section 3.3, Air Quality). In addition, there are no residential areas and no schools in the vicinity of the Preferred Alternative, and access to the area by the general public is prohibited. There would be no disproportionately high adverse human health, economic, or social effects on minority or low-income populations on Nellis AFB.

Aircraft noise-related impacts off-base are associated with the areas within the noise contours of 65 dBA DNL. As mentioned previously, there are minority and low-income populations living in 34 of the 35 census tracts that are located within and 25 schools within or touching the current 65 dBA DNL noise contour. However, the noise modeling updating the Nellis AFB AICUZ, which includes an analysis of the proposed TASS F16 aircraft operations, shows that the proposed TASS operations would not result in any perceptible change in the noise contours, i.e., the area within the noise contours of 65 dBA DNL would be subject to the same noise levels as under the No Action alternative. Additional sorties could cause additional annoyance, but they would not result in a change in the noise levels already experienced by residents. Therefore, there would be no additional impacts on residences or schools as a result of the Proposed Action.

There would be no impacts caused by the Proposed Action, so there would be no disproportionately high adverse human health, economic, or social effects on minority or low-income populations.

Executive Order 13045 was issued to ensure the protection of children, who are still undergoing physiological growth and development and are more sensitive to some adverse environmental health and safety risks than adults, as discussed previously in Section 3.12.1.5. Under the Preferred Alternative, there no residential areas and no schools in the vicinity of any demolition, construction, or operation activities; access to the area by the general public prohibited; and procedures prevent children from visiting these areas on the base. In addition, demolition, construction, and operation activities associated with the Proposed Action would be limited to the administrative, industrial, or operational areas of the Nellis AFB, and local air emissions and noise from construction activities would not approach any state or Federal thresholds for the protection of human health and safety. Regarding noise levels off base associated with operations, there would be no change in the 65 dBA DNL noise contour as a result of the Preferred Alternative.

With no children living or allowed in the vicinity of the Preferred Alternative, and no change in the noise levels off-base as a result of the Preferred Alternative, there would be no environmental health or safety risks that may disproportionately affect children.

4.12.2 No Action Alternative

Under the No Action Alternative, the TASS beddown at Nellis AFB would not take place. As a result, there would be no socioeconomic impacts, and no disproportionately high adverse human health, economic, or social effects on minority or low-income populations or children.

4.13 OTHER NEPA CONSIDERATIONS

4.13.1 Unavoidable Adverse Effects

As indicated in the previous sections, the effects on all the resources would be negligible to minor and many effects would be temporary. Unavoidable effects would include long-term but negligible increases in air emissions; temporary and long-term negligible increases in noise from construction and aircraft operations, respectively; and the minor loss of soil and biological productivity within the MILCON construction footprints.

4.13.2 Relationship of Short-Term Uses and Long-Term Productivity

Benefits derived from the crucial and effective training of joint units in CAS and the adverse impacts associated with the construction and operation activities necessary to accomplish this training represent trade-offs between the local, short-term use and the long-term stability and productivity of society's environment. The Proposed Action would ensure that U.S. and allied nation units are trained and ready for worldwide deployment. The Proposed Action would require the conversion of up to 28 acres, most of which has been previously disturbed and does not provide suitable habitat for most wildlife populations. The long-term productivity of these lands would be lost over the life of the proposed project.

4.13.3 Irreversible and Irretrievable Commitment of Resources

NEPA requires that environmental analysis include identification of "…any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented." Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects this use could have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural resource).

Facilities construction and maintenance for support activities would require consumption of limited quantities of aggregate, steel, concrete, petroleum, oil, and lubricants. Construction would occur largely on previously disturbed areas or in areas lacking significant habitat or concentrations of wildlife, so no irreversible loss of habitat or wildlife would result. Construction would also avoid significant cultural resources. Any discoveries of cultural resources during construction or infrastructure upgrades would evoke an investigation and evaluation according to procedures in 36 CFR Part 60 and the Nellis AFB ICRMP to ensure preservation of the resources. While construction of new facilities on the base would incur some soil disturbance and loss, measures to localize and minimize soil loss would be implemented.

Personal vehicle use by the staff proposed to support the TASS activities, as well as the operation of the F-16s would consume fuel, oil, and lubricants and would be considered an irreversible effect.

4.14 CUMULATIVE EFFECTS

A cumulative impact is defined in 40 CFR §1508.7 as "the impact on the environment that 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." By Memorandum dated 24 June 2005, from the Chairman of the CEQ to the Heads of Federal agencies, entitled "Guidance on the Consideration of Past Actions in Cumulative Effects Analysis", CEQ made clear its interpretation that "generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions", and that the "CEQ regulations do not require agencies to catalogue or exhaustively list and analyze all individual past actions." Cumulative effects are most likely when there is a spatial or temporary relationship between the Proposed Action and other actions that overlap with or are in proximity to each other, or have schedules that coincide, where there is higher potential for cumulative effects.

Several projects have recently been constructed on Nellis AFB. The City of North Las Vegas completed construction of a Wastewater Recycling Facility (WRF) located at the southeast corner of Area I on Nellis AFB lands. A new gym and fitness center was recently completed in Area I south of Lomie Gray Heard School. The Lomie Gray Heard School is scheduled to be demolished in the near future to free up lands in Area I for more mission-related support activities; the school will be replaced with a new school to be constructed in Area III.

A solar photovoltaic system is currently under construction at the south end of Area I. A new fire station is planned for Area III. Numerous small repair, modification, and replacement projects are scheduled for Nellis AFB in general (Nellis AFB 2013). All capital improvement projects on Nellis AFB comply with NEPA requirements to minimize impacts on human and natural resources.

In 2011, ACC issued a Final EIS for the implementation of a Force Development Evaluation program and a Weapons School at Nellis AFB. This action is ongoing at Nellis AFB and would base 36 F-35s upon completion, which is expected in 2020. The F-35s would include an increase of 17,280 annual airfield operations at Nellis AFB. The infrastructure constructed to accommodate the new action would affect approximately 26 acres, some of which would be adjacent to the MILCON projects proposed for the TASS beddown.

The City of North Las Vegas is continually repairing and improving roads in the city, including some roads in the vicinity of Nellis AFB. The city is also planning to construct a pipeline within the Sloan Channel to convey treated water from the new WRF on Nellis AFB to the Las Vegas Wash (Clark County School District 2014).

The City and Nellis AFB also have plans to implement storm drainage improvements. The proposed project involves construction of a storm drain under Hollywood Boulevard north of Las Vegas Boulevard, and the Range Wash – Hollywood Branch (RWHW) and Range Wash – East Tributary (RWEA). All of the proposed construction north of Las Vegas Boulevard will be done within existing rights-of-way (ROW). South of Las Vegas Boulevard, the proposed improvements to Range Wash are located on Nellis AFB. The

RWEA will have a concrete channel between Munitions Road and the Dunes South Detention Basin, Dunes South Detention Basin, a berm across the natural wash of the East Tributary directing flow into the Dunes South Detention Basin, and a concrete-lined outfall channel connecting the Dunes South Detention Basin to the Confluence Detention Basin. Although final design and alignment have not been determined, some of this work will likely overlap or be adjacent to the proposed TASS improvements.

4.14.1 Noise

The on-going and planned construction projects associated with the beddown of the F-35s or the various capital improvement projects would likely have overlapping schedules with the proposed MILCON and O&M projects associated with the Preferred Alternative, that could create temporary, but cumulative effects on noise. Since the proposed TASS construction projects would be initiated in FY 2020, the on-going F-35 construction projects would likely be completed or nearing completion. Furthermore, no other construction projects are currently planned during the same time frame adjacent to the TASS/CIG HQ, where construction noise could be experienced off-base. While the F-35 apron expansion and some of the proposed TASS construction projects are adjacent to each other, these construction sites are far enough from the installation boundary, that off-base ambient noise levels would not be affected. All noise generated by the construction activities would be temporary, limited to the duration of construction. The addition of the TASS F-16 aircraft operation would result in imperceptible increases in the noise level surrounding Nellis AFB, as indicated previously in Figure 4-2. Therefore, there would be no permanent change to the noise environment on Nellis AFB and no cumulative impacts.

4.14.2 Air Quality

The on-going and planned construction projects associated with the beddown of the F-35s or the various capital improvement projects would likely have overlapping schedules with the proposed MILCON and O&M projects associated with the Preferred Alternative, that could create temporary, but cumulative effects on air quality. Since the proposed TASS construction projects would be initiated in FY 2020, the on-going F-35 construction projects would likely be completed or nearing completion. However, as indicated in Appendix C, emissions caused by the proposed TASS construction projects would be below any NAAQS or GHG thresholds; therefore, the addition of emissions from other construction projects would likely result in minimal cumulative effects. Mitigation of air quality impacts through BMPs for the Action Alternatives would minimize any cumulative air quality impacts on Nellis AFB and the Clark County area.

4.14.3 Water Resources

The proposed TASS construction projects would add to the impermeable surfaces at Nellis AFB. Engineering designs of stormwater controls such as retention basins would take the additional areas into consideration so that no additional cumulative effects on natural drainages would occur. No impacts on subsurface water resources would result from the Preferred Alternative, and surface water impacts would be mitigated through appropriate NDEP permits. Incorporation of post-construction stormwater controls, including revegetation, would minimize long-term impacts on surface water associated with excess stormwater runoff during rain events, so only minimal cumulative impacts on water resources would result from of the Preferred Alternative.

4.14.4 Biological Resources

All actions and construction on Nellis AFB comply with NEPA requirements to minimize impacts on native biological resources. The on-going and planned construction projects associated with the beddown of the F-35s or the various capital improvement projects would likely have overlapping schedules with the proposed MILCON and O&M projects associated with the Preferred Alternative. In addition, some of these construction projects are adjacent to the proposed TASS MILCON and O&M projects. However, the on-going, planned and proposed construction projects all occur within previously disturbed areas that support little, if any, native habitat. Due to the sparse presence of natural or native biological resources on any of the sites affected by the Proposed Action or Action Alternatives, the impacts on biological resources would not contribute to any cumulative impacts resulting from other actions on Nellis AFB or the local area.

4.14.5 Cultural Resources

All projects on Nellis AFB are conducted in accordance with the ICRMP to minimize impacts on cultural and historic resources on the base. All ground-disturbing projects on Nellis AFB are coordinated with the Nevada SHPO under Section 106 of the NHPA to ensure that no adverse effects occur, or that mitigation measures are implemented in the event that adverse effects are unavoidable. Since no cultural resources were located in any of the proposed project sites and Building 295 was deemed to not be eligible for listing in the NRHP, no contribution to cumulative impacts on Nellis AFB would occur as a result of the Preferred Alternative.

4.14.6 Land Use

There would be no significant, adverse land use impacts as a result of implementing the Preferred Alternative. Other construction projects associated on-going and planned construction projects associated with the beddown of the F-35s or the various capital improvement projects would be adjacent to the proposed TASS MILCON and O&M projects. These projects would likely change specific land uses on Nellis AFB; however, the overall land use as a military installation would remain unchanged. Construction at each of the proposed TASS project sites would result in minor impacts due to compliance with the current Area Development Plan, and cumulative land use impacts on Nellis AFB would not be significant.

4.14.7 Utilities and Infrastructure

There would be negligible impacts on utilities and infrastructure with implementation of any of the Preferred Alternative; therefore, there would be no cumulative impacts.

4.14.8 Transportation

The on-going and planned construction projects associated with the beddown of the F-35s or the various capital improvement projects would likely have overlapping schedules with the proposed MILCON and O&M projects associated with the Preferred Alternative that could create temporary, but cumulative, effects on transportation on and near Nellis AFB. Since the proposed TASS construction projects would be initiated in FY 2020, the on-going F-35 construction projects would likely be completed or nearing completion. Implementation of the Preferred Alternative would result in minor to moderate impacts on traffic levels for some local arteries during construction; however, there would be minor cumulative impacts on transportation and traffic for off-base streets in the vicinity of Nellis AFB.

4.14.9 Socioeconomics

Implementation of the Preferred Alternative would have negligible beneficial and adverse cumulative impacts on socioeconomics.

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 5.0
REFERENCES

5.0 REFERENCES

Bergin, Kathleen Ann. 1993. *Archaeology of the Main Cantonment, Nellis Air Force Base, Clark County, Nevada*. Prepared for the U.S. Department of the Interior, National Park Service Nellis Air Force Base. Environmental Solutions, Inc., Irvine, California.

Bergin, Kathleen Ann. 1995. *Archaeology of Areas II and III, Nellis Air Force Base, Clark County, Nevada*. Prepared for the U.S. Department of the Interior, National Park Service Nellis Air Force Base. Environmental Solutions, Inc., Irvine, California.

California Department of Transportation. 1998. Technical Noise Supplement. California Department of Transportation Environmental Program Environmental Engineering-Noise, Air Quality, and Hazardous Waste Management Office. October 1998.

Chambers, Jeanne C., Brooks, Matthew L., Pendleton, Burton K., Raish, Carol B., eds. 2013. The Southern Nevada Agency Partnership Science and Research Synthesis: Science to sup-port land management in Southern Nevada. Gen. Tech. Rep. RMRS-GTR-303. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 207 p.

Clark County Planning Commission. 2006. Clark County Utilities Element Report. Clark County Department of Comprehensive Planning. Accessed 05 October 2016.

Clark County School District. 2014. *Comprehensive Annual Budget Report, For Fiscal Year Ending June 30, 2014*.

Council on Environmental Quality (CEQ). 2010. Federal Greenhouse Gas Accounting and Reporting Guidance. 6 October 2010.

Davis, Gene P., and Ann DuBarton. 1991. *Clark County Regional Flood Control District Final Master Plan: 10-Year Plan Facility Cultural Resource Survey Report*. Prepared for the Bureau of Land Management, Clark County Regional Flood Control District, and the U.S. Army Corps of Engineers, Sacramento District. Dames & Moore.

DoD. 2016. Department of Defense Strategic Sustainability Performance Plan FY 2016. Department of Defense Undersecretary for Acquisition, Technology and Logistics. 7 September 2016. Internet URL: http://www.denix.osd.mil/sustainability/dod-sspp/; last accessed January 2017.

Duke, Curt. 2001. *Cultural Resource Assessment: Cingular Wireless Facility No. LV 122-02, Clark County, Nevada*. LSA Project No. PBM032. Prepared for Cingular Wireless. LSA Associates, Inc., Irvine, California.

Duke, Curt. 2002. *Cultural Resource Assessment: Cingular Wireless Facility No. LV 152-04, Clark County, Nevada*. LSA Project No. PBM232. Prepared for Cingular Wireless. LSA Associates, Inc., Irvine, California.

Dunar, A. J. and D. McBride. 1993. *Building Hoover Dam: An Oral History of the Great Depression*. Twayne Publishers, New York City, New York.

Energy Information Administration. 2016. Electricity Data Browser: Nellis Air Force Base Solar Array. Accessed 5 October 2016.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629 (February 16, 1994).

Executive Order 13045, Protection of Children From Environmental Health Risks and Safety Risks, 62 FR 19885 (April 23, 1997).

Federal Highway Administration (FHWA). 2016. "Special Report: Highway construction Noise: Measurement, Prediction, and Mitigation, Appendix A Construction Equipment Noise Levels and Ranges." Internet URL: www.fhwa.dot.gov/environment/nose/highway/hcn06.htm

Fletcher, F. N. 1920. The Trappers and Explorers of the Great Basin. In *Nevada Historical Society Papers, 1917-1920,* Volume II: 208-232. A. Carlisle & Co., Reno, Nevada.

Fowler, D. D., and D. B. Madsen. 1986. Prehistory of the Southeastern Area. In *Great Basin,* edited by Warren D'Azevedo, pp. 173-182. Handbook of North American Indians, Volume 11. Smithsonian Institution, Washington, D.C.

Geo-Marine. 2006. *Nellis Air Force Base – Historic Evaluation of 9 Buildings*. Prepared for Nellis Air Force Base, Air Combat Command Headquarters. Geo-Marine, Inc.

Hatoff, Brian W. 1975. Nellis Air Force Base Withdrawal of BLM Lands. Project No. N-7262.

HRA, Inc. 2004. *An Archaeological Survey for the Las Vegas Valley Disposal Boundary Environmental Impact Statement, Clark County, Nevada*, edited by Richard V.N. Ahlstrom, Suxanne Eskenazi, and Heidi Roberts. HRA, Inc. Archaeological Report No. 03-15. Prepared for PBS&J and the Bureau of Land Management, Las Vegas Field Office. HRA, Inc. Conservation Archaeology, Las Vegas.

Hughes, R. E., and J. A. Bennyhoff. 1986. Early Trade. In *Great Basin,* edited by Warren D'Azevedo, pp. 238-255. Handbook of North American Indians, Volume 11. Smithsonian Institution, Washington, D.C.

Jensen, A. 1926. History of the Las Vegas Mission. In *Nevada Historical Society Papers, 1925-1926,* Volume V:119-284, Nevada Historical Society, Reno, Nevada.

LaPoint, B. 1987. *Las Vegas from Trails to Rails*. Nevada Power Company, Las Vegas, Nevada.

Las Vegas Global Economic Alliance. 2016. Major Employers. Internet URL: https://www.lvgea.org/market-information/major-employers/

Lawrence, Pamela, Gregory R. Seymour, Heather Cain, and Hal B. Rager. 1999. *Nellis Air Force Withdrawal Lands, Clark County, Nevada*. HRC Report 5-164-10. Prepared for Nevada Environmental Consultants, Inc. and Nellis Air Force Base. Harry Reid Center for Environmental Studies, Marjorie Barrick Museum of Natural History, University of Nevada, Las Vegas.

Lawton, H. W. 1976. Regional Environmental History of the Yuha Desert. In *Background to the Prehistory of the Yuha Desert Region*, edited by Philip J. Wilke, pp.43-72, Ballena Press.

Loeltz, O.J. 1963. Ground-Water Conditions in the Vicinity of Lake Mead Base Las Vegas Valley, Nevada. Contributions to the Hydrology of the United States. U.S. Geological Survey Water Supply Paper 1669-Q.

Lyneis, Margaret. M. 1992. The Main Ridge Community at Lost City, Virgin Anasazi Architecture, Ceramics, and Burials. *University of Utah Anthropological Papers*, Number 117. University of Utah Press, Salt Lake City.

Lyneis, Margaret, Mary Rusco, and Keith Myhrer. 1989. Investigations at Adam 2 (26Ck 2059): A Mesa House Phase Site in the Moapa Valley, Nevada. *Nevada State Museum Anthropological Paper Number* 22. Nevada State Museum, Carson City, Nevada.

McCallen, David, Arthur Rodgers, Shawn Larsen, Barbara Luke, Catherine Snelson, Wanda Taylor, John Anderson, John Louie. 2003. Las Vegas Seismic Response Project. Lawrence Livermore National laboratory, University of Nevada Las Vegas, Nevada Seismological Laboratory, University of Nevada Reno.

McIntyre, N.E., Rango, J., Fagan, W.F., Faeth, S.H. 2001. Ground arthropod community structure in a heterogeneous urban environment. *Landscape and Urban Planning.* 52:pgs. 257-274.

Myhrer, Keith, and Margaret Lyneis. 1985. The Bovine Bluff Site: An Early Puebloan Site in the Upper Moapa Valley. *Bureau of Land Management Contributions to the Study of Cultural Resources Number* 15. Bureau of Land Management, Reno, Nevada.

Myhrer, K., W. G. White, and S. D. Rolf. 1990. Archaeology of the Old Spanish Trail/Mormon Road: From Las Vegas to the California Border. *Bureau of Land Management Technical Report* Number 17. Reno, Nevada.

Natural Resources Conservation Service (NRCS). 2006. Soil Surveys of Clark County Area, Nevada. United States Department of Agriculture, NRCS.

Nellis Air Force Base (AFB). 2004. Air Installation Compatible Use Zone (AICUZ) 2004. Volume 1 and 2. U.S. Air Force, Nellis AFB, Nevada.

Nellis AFB. 2010a. Final Integrated Natural Resources Management Plan Nellis Air Force Base/ Creech Air Force Base/ Nevada Test and Training Range. Nellis AFB, Nevada 99th Civil Engineering Squadron Environmental Management Flight.

Nellis AFB. 2010b. USFWS IPaC Trust Resources Report (Generated 4 October 2016), Nevada Natural Heritage Program (http://heritage.nv.gov/taxon_detail/14021. Accessed 4 October 2016.

Nellis AFB. 2011. Nellis Air Force Base 2011 Mobile Source Emission Inventory. Prepared for Clark County Department of Air Quality, 2014.

Nellis AFB. 2013. Final Nellis Air Force Base Capital Improvements Program Environmental Assessment.

Nellis AFB. 2015a. Drinking Water Quality Report for Nellis Air Force Base.

Nellis AFB. 2015b. Economic Impact Analysis 2015, Nellis Air Force Base, Creech Air Force Base, Nevada Test and Training Range. Internet URL: http://www.nellis.af.mil/Portals/104/Documents/Economic%20Impact%20Analysis/Economic%20Impact%20Analysis%20Report%20FY%202015%20-%20FINAL%20SIGNED.pdf

Nevada Department of Transportation. 2013. 2013 Annual Traffic Report. Internet URL: http//www.nevadadot.com/uploadedfiles/NDOT/NDOT_Divisions/Planning/Traffic/2013Clark.pdf

Nevada Division of Water Resources (NDEP). 2013. Nevada Flood Risk Portfolio: Flood Hazards and Flood Risk in Nevada's Watersheds. A Nevada Division of Water Resources Cooperative Technical Partner Project.

Nevada Division of Environmental Protection (NDEP). 2015. 2015 Recycling and Waste Reduction Report. Nevada Department of Conservation and Natural Resources, Dividison of environmental Protection, and Bureau of Waste Management.

Nevada Division of Water Resources. 2013. Nevada Flood Risk Portfolio: Flood Hazards and Flood Risk in Nevada's Watersheds. A Nevada Division of Water Resources Cooperative Technical Partner Project.

Nevada Natural Heritage Program. 2016. "Species Information. " Internet URL: http://heritage.nv.gov/get_data. Accessed October 4, 2016.

Plume, R.W. 1989. Ground-Water Conditions in Las Vegas Valley, Clark County, Nevada: Part 1, a Hydrogeologic Framework. U.S. Geological Survey Water Supply Paper 2320-A.

Price, J. G. 2003. Geology of Nevada. Proceedings of the 39th Forum on the Geology of Industrial Minerals, 19-21 May 2003, Nevada: Nevada Bureau of Mines and Geology Special Publication 33.

Rundel, P.W. and A.C. Gibson. 1996. *Ecological Communities and Processes in a Mojave Desert Ecosystem: Rock Valley, Nevada*. Cambridge University Press, New York.

Shutler, Richard, Jr. 1961. Lost City Pueblo Grande de Nevada. *Nevada State Museum Papers Number* 5. Carson City, Nevada.

Southern Nevada Water Authority (SNWA). 2015. Water Resource Plan. https://www.snwa.com/ws/resource_plan.html. Accessed 5 October 2016.

Speck, R.L. 1982. Las Vegas Valley Area, Nevada Part of Clark County. United States Department of Agriculture, Soil Conservation Service.

Stebbins, R. C. 2003. *A Field Guide to Western Reptiles and Amphibians*. Third Edition. Peterson Field Guide Series Boston: Houghton Mifflin Company.

United States Air Force (USAF). 1997. *Guide for Environmental Justice Analysis with the Environmental Impact Analysis Process (EIAP).*

USAF. 2011a. Final Environmental Impact Statement, F-35 Force Development Evaluation and Weapons School Beddown, USAF Air Combat Command, May 2011.

USAF. 2011b. Headquarters Air Combat Command Infrastructure Assessment. Nellis AFB. March.

USAF. 2012. Installation (Nellis, Creech, and NTTR) Integrated Cultural Resources Management Plan. 31 August.

USAF. 2015. 2015 Drinking Water Quality Report for Nellis Air Force Base. http://www.nellis.af.mil/Portals/104/Documents/Environmental%20Assessments/2015%20Nellis%20AFB%20Consumer%20Confidence%20Report%20V2.pdf?ver=2016-06-14-165736-780. Accessed 4 October 2016.

USAF. 2016. F-16 Fighting Falcon. http://www.af.mil/AboutUs/FactSheets/Display/tabid/224/Article/104505/f-16-fighting-falcon.aspx. Accessed November 2016.

USAF Safety Office. 2016. Aviation Statistics for F16. Accessed at URL: http://www.safety.af.mil/Divisions/Aviation-Safety-Division/Aviation-Statistics. Last accessed on 12 October 2016.

U.S. Army Corps of Engineers (USACE). 2007. U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook.

U.S. Bureau of Economic Analysis (BEA). 2015a. CA25N Total Full-time and Part-Time Employment by NAICS Industry. Internet URL: http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=7#reqid=70&step=1&isuri=1

BEA. 2015b. CA1 Personal Income Summary: Personal Income, Population, Per Capita Personal Income. Internet URL: http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=7#reqid=70&step=1&isuri=1

U.S. Bureau of Labor Statistics (BLS). 2016a. Local Area Unemployment Statistics. Labor Force Data by County, 2015 Annual Averages. Internet URL: http://www.bls.gov/lau/

BLS. 2016b. Local Area Unemployment Statistics. Unemployment Rates for States: 2015 Annual Averages. Internet URL: http://www.bls.gov/lau/lastrk15.htm

U.S. Census Bureau. 2000. 2000 Decennial Census. Internet URL: http://factfinder2.census.gov/

U.S. Census Bureau. 2010. 2010 Decennial Census. Internet URL: http://factfinder2.census.gov/

U.S. Census Bureau. 2015. Poverty Thresholds for 2015 by Size of Family and Number of Related Children Under 18 Years.

U.S. Census Bureau. 2016a. American Community Survey, 1-Year Estimates, 2015. BO1003: Total Population. Accessed through http://factfinder2.census.gov/

U.S. Census Bureau. 2016b. American Community Survey, 5-Year Estimates, 2010-2014. DP05: Demographic and Housing Estimates. Accessed through http://factfinder2.census.gov/

U.S. Census Bureau. 2016c. American Community Survey, 5-Year Estimates, 2010-2014. DP04: Selected Housing Characteristics. Accessed through http://factfinder2.census.gov/

U.S. Census Bureau. 2016d. American Community Survey, 5-Year Estimates, 2010-2014. DP03: Selected Economic Characteristics. Accessed through http://factfinder2.census.gov/

U.S. Environmental Protection Agency (USEPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Report 550/9-74-004.

USEPA. 2016a. Criteria Air Pollutants-NAAQS Table. www.epa.gov/criteria-air-pollutants/naaqs-table

USEPA. 2016b. The Green Book. www3.epa.gov/airquality/greenbook/gbstateb.html

USEPA. 2016c. 2015 Greenhouse Gas Emissions from Large Facilities. Internet URL: https://ghgdata.epa.gov/ghgp/main.do#/listFacility. Last accessed January 2017.

U.S. Fish and Wildlife Service (USFWS). 2016. "IPaC Information for Planning and Conservation." Internet URL: https://ecos.fws.gov/ipac/project. Accessed October 4, 2016.

U.S. Housing and Urban Development (HUD). 1984. 24 CFR Part 51 - Environmental Criteria and Standards Sec. 51.103 Criteria and standards 44 FR 40861, 12 July 1979, as amended at 49 FR 12214. 29 March 1984.

Warren, Claude N. 1991. Subsistence Focus and Cultural Change in the Central Mojave Desert. In *Archaeological Investigations at Nelson Wash, Fort Irwin, California*, pp. 318-364. Fort Irwin Archaeological Project Research Report 23, Volume 11. September.

Warren, C. N. and R. H. Crabtree. 1986. Prehistory of the Southwestern Area. In *Great Basin,* edited by Warren D'Azevedo, pp. 183-193. Handbook of North American Indians, Volume 11. Smithsonian Institution, Washington, D.C.

Wright, Frank. 1993. *Desert Airways, A Short History of Clark County Aviation, 1920-1948*. Clark County Heritage Museum Occasional Paper Number 1. Clark County Heritage Museum, Boulder City, Nevada.

SECTION 6.0
LIST OF PREPARERS

6.0 LIST OF PREPARERS

The following people were primarily responsible for preparing this EA.

Name	Agency Organization	Discipline/ Expertise	Experience	Role in Preparing EA
Tod Oppenborn	USAF	Physical Scientist	27 years of environmental planning and compliance experience	Nellis AFB EIAP Program Manager
Charles McGregor	USACE, Fort Worth District	Environmental Planning	26 years of NEPA and Environmental Studies	USACE Environmental Project Manager
Chris Ingram	GSRC	Biology/Ecology	38 years of EA/EIS preparation and environmental planning studies	GSRC Project Manager
Ann Guissinger	GSRC	Socioeconomics	34 years of economic planning and assessment	Socioeconomic analyses
John Ginter	GSRC	Biology	24 years of biological field surveys and environmental planning	Biology, land use
Steve Oivanki, PG	GSRC	Geology	24 years of EA preparation and remediation	Soils, water quality, sediment, geology, and hazardous materials analyses
Logan Mccardle	GSRC	Biology/ Environmental Science	5 years of environmental planning projects	Wildlife, wetlands, and threatened and endangered species analyses
David Hart, RPA	GSRC	Anthropology/ Archaeology	20 years of cultural resource studies and Section 106 compliance	Cultural resources
Erin Edwards	GSRC	Architectural History	8 years of architectural history evaluations	Historic structures

THIS PAGE LEFT INTENTIONALLY BLANK

APPENDIX A
CORRESPONDENCE

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 07 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Office Manager
Nevada Department of Wildlife – Southern Region - Henderson Office
744 South Racetrack Road
Henderson, NV 89015

Dear Sir/Madam:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal and look forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 0 7 2017

Deborah MacNeill
Field Manager
BLM – Pahrump Field Office
4701 North Torrey Pines Drive
Las Vegas, NV 89130

Dear Ms. MacNeill:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 0 7 2017

City of North Las Vegas
Community Development, Planning & Zoning Division
2250 Las Vegas Blvd, Suite 114
North Las Vegas, NV 89030

Dear Sir/Madam:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal andlook forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 07 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Martyn James
Director of Planning Services
Regional Transportation Commission of Southern Nevada
600 S. Grand Central Parkway, Suite 350
Las Vegas, NV 89106

Dear Mr. James:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 07 2017

Jacob Snow
General Manager
Regional Transportation Commission of Southern Nevada
600 S. Grand Central Parkway, Suite 350
Las Vegas, NV 89106

Dear Mr. Snow:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Michael Senn
Assistant Field Supervisor
US Fish and Wildlife Service – Southern Nevada Fish and Wildlife Office
4701 North Torey Pines Drive
Las Vegas, NV 89130

Dear Mr. Senn:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Bruce Peterson
State Conservationist
USDA Natural Resource Conservation Service - Nevada State Office
1365 Corporate Boulevard
Reno, NV 89502

Dear Mr. Peterson:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Field Station Manager
US Geological Survey – Las Vegas Field Station
160 N. Stephanie Street
Henderson, NV 89074

Dear Sir/Madam:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Adria DeCorte
Resource Management Officer
Nevada Department of Forestry – Las Vegas Office
4747 Vegas Drive
Las Vegas, NV 89108

Dear Ms. DeCorte:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB NV 89191

Skip Canfield
Nevada Division of State Lands
901 S. Stewart Street, Suite 5003
Carson City, NV 89701-5246

Dear Mr. Canfield:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 07 2017

Jennifer Newmark
Nevada Natural Heritage Program
901 S. Stewart Street, Suite 5002
Carson City, NV 89701

Dear Ms. Newmark:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 07 2017

George Tsukamoto
Interim Director
Nevada Department of Wildlife – Headquarters
1100 Valley Road
Reno, NV 89512

Dear Mr. Tsukamoto:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 07 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

D. Bradford Hardenbrook
Supervisory Habitat Biologist
Nevada Department of Wildlife – Southern Region
4747 Vegas Drive
Las Vegas, NV 89108

Dear Mr. Hardenbrook:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Kristine N. Brown
Nevada State Historic Preservation Office
901 S. Stewart St., Suite 5004
Carson City, NV 89701

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Ms. Brown,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the State Historic Preservation Office (SHPO) may have an interest; and to invite the SHPO to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know of any issues or concerns for the SHPO in the development of this National Environmental Policy Act (NEPA) analysis and completion of the Section 106 consultation. At this time, Nellis AFB does not know of any properties of religious

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.
[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 07 2017

Dan Balduini
U.S. Fish and Wildlife Service
1340 Financial Boulevard, Suite 234
Reno, NV 89502

Dear Mr. Balduini:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Gregory Blackburn
Director
City of North Las Vegas - Community Development, Planning, & Zoning Division
2200 Civic Center Drive
Las Vegas, NV 89030

Dear Mr. Blackburn:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB NV 89191

Shaun Sanchez
US Fish and Wildlife Service – Desert National Wildlife Refuge Complex
4701 North Torrey Pines Drive
Las Vegas, NV 89130

Dear Mr. Sanchez:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal and look forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 0 7 2017

Bob Ross
Field Manager
BLM – Las Vegas Field Office
4701 North Torrey Pines Drive
Las Vegas, NV 89130

Dear Mr. Ross:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

US Army Corps of Engineers – Arizona-Nevada Area Office
3636 N. Central Avenue, Suite 900
Phoenix, AZ 85012

Dear Sir/Madam:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal and look forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 07 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Douglas Furtado
District Manager
BLM - Battle Mountain District Office
50 Bastian Road
Battle Mountain, NV 89820

Dear Mr. Furtado:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 07 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB NV 89191

Commissioner Steve Sisolak
Chairperson
Clark County Commission
500 South Grand Central Parkway, 6th Floor
Las Vegas, NV 89109

Dear Chairperson:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 07 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Mario Bermudez
Planning Manager
Clark County Department of Comprehensive Planning
500 S. Grand Central Parkway, First Floor
Las Vegas, NV 89155

Dear Mr. Bermudez:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

John Mendoza
Senior Planner
Clark County Department of Air Quality & Environmental Management
500 S. Grand Central Parkway, P.O. Box 555210
Las Vegas, NV 89155

Dear Mr. Mendoza:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Carolyn Edwards
Trustee, District F
Clark County School District
5100 W. Sahara Avenue
Las Vegas, NV 89146

Dear Ms. Edwards:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base (AFB), Nevada. To take into account various environmental concerns, the USAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. Accordingly, the USAF seeks consultation with your office.

The EA will, as required by law and regulations, consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis AFB conducting Close Air Support (CAS) training. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the area of potential effect (APE) for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB, as depicted on the attached map. The Air Force can provide additional information if necessary as the EA is ongoing.

The military construction (MILCON) projects would be conducted in phases over a 4- to 5-year period. A new maintenance hangar/aircraft maintenance unit and the TASS Headquarters building would be the first two MILCON projects. Demolition of an existing building (Building 295) would be required before construction of the new hangar could be built. The TASS Headquarters is currently planned to be constructed at Freedom Park adjacent to the Green Flag Operations Building and the Joint Tactical Air Controller (JTAC) Operations Building, which would facilitate communications between the joint missions.

The other two MILCON projects involve expansion of the east-side apron to provide ramp space for displaced heavy aircraft and addition to the live ordnance loading area (LOLA), which is also located on the east side of the airfield. The latter project would extend the LOLA ramps for six additional aircraft spots and construct an associated support facility. These two areas, which encompass approximately 15 acres, contain native vegetation but have been disturbed by past activities; still, they will be surveyed for sensitive resources as part of the EA process.

The EA will assess the potential environmental consequences associated with the proposed action and the no action alternative. Potential impacts identified during the initial planning stages include effects on noise, air quality, traffic/transportation, biological and cultural resources, and socioeconomic conditions. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to provide your agency with a copy of the Draft EA once the document is completed. Please inform us if additional copies are needed or if someone else within your agency other than you should receive the Draft EA.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenborn, Nellis AFB NEPA Program Manager, tod.oppenborn@us.af.mil, (702) 652-9366. Please let us know if you have interest in consulting about the proposal and I look forward to receiving any input you may have regarding this endeavor.

Respectfully,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 07 2017

Chairperson Shannon Romero
Big Pine Paiute Tribe of the Owens Valley
P.O. Box 700
825 South Main Street
Big Pine, CA 93513

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Romero,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Big Pine Paiute Tribe of the Owens Valley may have an interest; and to invite the Big Pine Paiute Tribe of the Owens Valley to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Big Pine Paiute Tribe of the Owens Valley desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.
[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us. af.mil, (702) 652-5813. Please let us know if you have interest in consulting about the proposal and llook forward to receiving any input you may have regarding this endeavor.

Sincerely,

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Chairperson Gerald Howard
Bishop Paiute Tribe
50 Tusu Lane
Bishop, CA 93514

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Howard,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Bishop Paiute Tribe may have an interest; and to invite the Bishop Paiute Tribe to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Bishop Paiute Tribe desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.
[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil, (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil, (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal and look forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 07 2017

Chairperson Charles Wood
Chemehuevi Indian Tribe
P.O. Box 1976
Havasu Lake, CA 92363

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Wood,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Chemehuevi Indian Tribe may have an interest; and to invite the Chemehuevi Indian Tribe to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Chemehuevi Indian Tribe desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

---

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.

[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal andlook forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 07 2017

Chairperson Dennis Patch
Colorado River Indian Tribes
26600 Mohave Road
Parker, AZ 85344

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Patch,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Colorado River Indian Tribes may have an interest; and to invite the Colorado River Indian Tribes to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Colorado River Indian Tribes desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

---

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.

[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal and look forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 0 7 2017

Chairperson Perline Thompson
Duckwater Shoshone Tribe
P.O. Box 140068
511 Duckwater Falls
Duckwater, NV 89314

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Thompson,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Duckwater Shoshone Tribe may have an interest; and to invite the Duckwater Shoshone Tribe to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Duckwater Shoshone Tribe desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

---

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.

[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal andlook forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 0 7 2017

Chairperson Alvin Marques
Ely Shoshone Tribe
16 Shoshone Circle
Ely, NV 89301

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Marques,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Ely Shoshone Tribe may have an interest; and to invite the Ely Shoshone Tribe to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Ely Shoshone Tribe desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

---

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.

[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil, (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil, (702) 652-5813. Please let us know if you have interest in consulting about the proposal and look forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 07 2017

Chairperson Norman Wilder
Fort Independence Indian Tribe
P.O. Box 67
131 North Hwy 395
Independence, CA 93526

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Wilder,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Fort Independence Indian Tribe may have an interest; and to invite the Fort Independence Indian Tribe to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Fort Independence Indian Tribe desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.
[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal andlook forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 0 7 2017

Chairperson Roland Maldonado
Kaibab Band of Southern Paiutes
HC 65 Box 2
Fredonia, AZ 86022

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Maldonado,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Kaibab Band of Southern Paiutes may have an interest; and to invite the Kaibab Band of Southern Paiutes to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Kaibab Band of Southern Paiutes desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

---

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.

[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal and look forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Chairperson Benny Tso
Las Vegas Paiute Tribe
#1 Paiute Drive
Las Vegas, NV 89106

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Tso,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Las Vegas Paiute Tribe may have an interest; and to invite the Las Vegas Paiute Tribe to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Las Vegas Paiute Tribe desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

---

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.

[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal and look forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 07 2017

Chairperson Mary Wuester
Lone Pine Paiute-Shoshone Tribe
P.O. Box 747
975 Teya Road
Lone Pine, CA 93545

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Wuester,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Lone Pine Paiute-Shoshone Tribe may have an interest; and to invite the Lone Pine Paiute-Shoshone Tribe to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Lone Pine Paiute-Shoshone Tribe desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

---

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.

[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal andlook forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 0 7 2017

Chairperson Robert Tom
Moapa Band of Paiutes
P.O. Box 340
Moapa, NV 89025

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Tom,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Moapa Band of Paiutes may have an interest; and to invite the Moapa Band of Paiutes to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Moapa Band of Paiutes desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.
[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal and look forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 07 2017

Native American Coordinator Richard Arnold
Pahrump Paiute Tribe
P.O. Box 3411
Pahrump, NV 89041

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Arnold,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Pahrump Paiute Tribe may have an interest; and to invite the Pahrump Paiute Tribe to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Pahrump Paiute Tribe desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.

[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod .oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal andlook forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

Enable Success Through Innovative Base Support

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 07 2017

Chairperson Corrina Bow
Paiute Indian Tribe of Utah
440 North Paiute Drive
Cedar City, UT 84721

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Bow,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Paiute Indian Tribe of Utah may have an interest; and to invite the Paiute Indian Tribe of Utah to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Paiute Indian Tribe of Utah desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.
[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod .oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal andlook forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 07 2017

Chairperson George Gholson
Timbisha Shoshone Tribe
621 West Line St. Suite 109
Bishop, CA 93515

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Gholson,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Timbisha Shoshone Tribe may have an interest; and to invite the Timbisha Shoshone Tribe to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Timbisha Shoshone Tribe desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

---

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.

[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil, (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil, (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal andlook forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

FEB 0 7 2017

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

Chairperson Wayne Dyer
Yomba Shoshone Tribe
HC 61, Box 6275
Austin, NV 89310

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Dyer,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Yomba Shoshone Tribe may have an interest; and to invite the Yomba Shoshone Tribe to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Yomba Shoshone Tribe desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

---

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.

[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please let us know if you have interest in consulting about the proposal and look forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

DEPARTMENT OF THE AIR FORCE
99TH CIVIL ENGINEER SQUADRON (ACC)
NELLIS AIR FORCE BASE NEVADA

99 CES/CENP
6020 Beale Ave.
Nellis AFB, NV 89191

FEB 07 2017

Chairperson Tina Braithwaite
Benton Paiute Indian Tribe
25669 Highway 6, PMB I
Benton, CA 93512

Subject: Introduction of the Proposed Beddown of a Tactical Air Support Squadron (TASS) Environmental Assessment and Section 106 Consultation Invitation for Nellis Air Force Base

Dear Chairperson Braithwaite,

The purpose of this letter is twofold: to give you an opportunity to review and comment on a proposed action in which the Benton Paiute Indian Tribe may have an interest; and to invite the Benton Paiute Indian Tribe to participate in government-to-government consultation with Nellis Air Force Base (AFB) pursuant to Section 106 of the National Historic Preservation Act. [1]

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Proposed Beddown of a TASS at Nellis AFB, Nevada. This EA will, as required by law and regulations,[2] consider the potential impacts resulting from basing 16 F-16C aircraft (and related construction, demolition, and renovation of facilities) at Nellis AFB, NV. The USAF has identified Nellis AFB as the preferred alternative and eliminated further consideration of other installations using established criteria as permitted by 36 C.F.R. §989.8.

If Nellis AFB is selected for the beddown of the TASS, 16 F-16C aircraft would be relocated from Hill AFB, UT to Nellis AFB. The F-16Cs would operate in existing airspace and the types of flight operations would be similar to existing operations at Nellis conducting Close Air Support. The F-16Cs would use existing fuel jettison areas, if necessary. Preliminary review indicates that noise levels from these operations would be similar to noise levels associated with the current F-16C and F-35 missions at Nellis AFB. Therefore the project area for this action will be limited to the areas of construction, demolition, and renovation on Nellis AFB. The Air Force can provide additional information if necessary as the EA is ongoing.

Please let my point of contact, provided below, know whether the Benton Paiute Indian Tribe desires to participate development of this National Environmental Policy Act (NEPA) analysis, or to engage in government-to-government consultation. Nellis AFB does not know of any properties of religious and cultural significance within the project area. Nevertheless, we ask for your assistance in identifying such properties of which we may be unaware, particularly those that may be affected by this proposal.

---

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.

[2] National Environmental Policy Act (NEPA) of 1969 [42USC 4321 et seq.]; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508; and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),

For staff questions, comments, or input on the NEPA process, please contact Mr. Tod Oppenbom, Nellis AFB NEPA Program Manager, tod.oppenbom@us.af.mil , (702) 652-9366. For matters related to the Section 106 process, you may contact Ms. Kish LaPierre, kish.lapierre@us.af.mil , (702) 652-5813. Please Jet us know if you have interest in consulting about the proposal and look forward to receiving any input you may have regarding this endeavor.

Sincerely

CHARLES W. ROWLAND
Chief, Portfolio Optimization

Attachment:
Project Location Map

E2017-098 (EA - Proposed Beddown of a Tactical Air Support Squadron (TASS) at Nellis Air Force Base)

AGENCY COMMENTS:

The Nevada Department of Wildlife (NDOW) is generally supportive of the proposed F-16C beddown at Nellis AFB, and interested in reviewing the EA when available. In a telephone conversation on 13 February 2017 with USAF's Ted Oppenborn, I understand NDOW is on the mailing list and will receive the EA when ready for public review.

Signature: D. Bradford Hardenbrook
Supervisory Habitat Biologist
NDOW – Southern Region

Date: 6 March 2017

APPENDIX B
NELLIS AIR FORCE BASE
AIR INSTALLATIONS COMPATIBLE USE ZONES (AICUZ)
NOISE MODEL OPERATIONAL DATA DOCUMENTATION

Nellis Air Force Base

Air Installations Compatible Use Zones (AICUZ) Study

Final

2017

Air Force Civil Engineer Center
2261 Hughes, Suite 155
Joint Base San Antonio
Lackland, TX 78236-9853

MEMORANDUM FOR: Area Governments

FROM: **[Organization]**

[Address]

SUBJECT: Air Installations Compatible Use Zones (AICUZ) Study

1. This AICUZ Study for Nellis Air Force Base (AFB) is an update of the AICUZ study dated **[YEAR]**. This update was initiated because of **[provide reason for the study such as flight track changes, operational changes, and mission changes]**. It is a reevaluation of aircraft noise and accident potential related to Air Force flying operations. It is designed to aid in the development of local planning mechanisms which will protect the public safety and health, as well as preserve the operational capabilities of Nellis AFB. The noise contour projected is a planning contour

2. The enclosed report contains a summary description of the affected area around the base. The report outlines the location of runway clear zones, aircraft accident potential zones and noise contours, and recommends compatible land use for areas in the vicinity of the base. It is our recommendation that this information will be incorporated into your community plans, zoning ordinances, subdivision regulations, building codes, and other related documents.

3. This AICUZ study provides a planning noise contour. Long-range planning by local land use authorities involves long-range strategies to influence present and future uses of land. Frequent AICUZ updates can undermine a community's planning assumptions for comprehensive planning. To assist communities, the Air Force provides planning contours – noise contours based on reasonable projections of future missions and operations. AICUZ studies using planning contours provide a description of the long-term (5-10 year) aircraft noise environment for projected aircraft operations that is consistent with the planning horizon used by State, tribal, regional and local planning bodies.

4. The basic objective of the AICUZ program is to achieve compatible use of public and private lands in the vicinity of military airfields by controlling incompatible development through local actions. This update provides noise contours based upon the Day-Night Average Sound Level (DNL) metric used by the Air Force. This report provides the information necessary to maximize beneficial use of the land surrounding Nellis AFB while minimizing the potential for degradation of the health and safety of the affected public.

5. We greatly value the positive relationship Nellis AFB has experienced with its neighbors over the years. As a partner in the process, we have attempted to minimize noise disturbances through such actions as: minimizing night flying, avoiding flights over heavily populated areas, installing jet engine noise suppressers for maintenance activities, etc. We solicit your cooperation in implementing the recommendations and guidelines presented in this AICUZ study.

[Commander's Signature Block]

Table of Contents

Sections

Figures

Tables

Appendices

Appendices Tables

1.0 AICUZ Overview

This study is an update of the Nellis Air Force Base (AFB) Air Installations Compatible Use Zones (AICUZ) Study. The update presents and documents the changes to the AICUZ since the last study was released in 2004. It reaffirms Air Force policy of promoting public health, safety, and general welfare in areas surrounding base while seeking development compatible with the defense flying mission. This study presents changes in flight operations since the last study, and provides current noise contours and recommendations for achieving development compatible with the defense flying mission.

1.1 AICUZ Program

Military airfields attract development – people who work on base want to live nearby while others want to provide services to base employees and residents. When incompatible development occurs near an installation or training area, affected parties within the community may seek relief through political channels that could restrict, degrade or eliminate capabilities necessary to perform the defense mission. In the early 1970s, the Department of Defense (DoD) established the AICUZ program. The goal of the program is to protect the health, safety, and welfare of those living and working in the vicinity of a military installation while sustaining the Air Force's operational mission. The Air Force accomplishes this goal by promoting proactive, collaborative planning for compatible development to sustain mission and community objectives.

F-35A Lightning on Arrival

The AICUZ Program recommends that noise levels, Clear Zones, Accident Potential Zones (APZs), and flight clearance requirements associated with military airfield operations be incorporated into local community planning programs in order to maintain the airfield's operational requirements while minimizing the impact to residents in the surrounding community. Mutual cooperation between military airfield planners and their community-based counterparts serves to increase public awareness of the importance of air installations and the need to address mission requirements and associated noise and risk factors. As the communities that surround airfields grow and develop, the United States Department of the Air Force has the responsibility to communicate and collaborate with local government on land use planning, zoning, and similar matters that could affect the installations' operations or missions.

1.2 Purpose, Scope, and Authority

1.2.1 Purpose

The purpose of the AICUZ program is to promote development compatible with the defense flying mission while protecting the health, safety, and welfare of neighbors in surrounding municipalities while preserving the defense flying mission. The inclusion of recommendations from this AICUZ study into the planning process will help the surrounding municipalities and local planning entities meet goals of preventing incompatible uses that might compromise Nellis AFB's ability to fulfill its mission requirements.

1.2.2 Scope

This study is based on projected air operations to present planning noise contours. Clear Zones and Accident Potential Zones associated with Nellis AFB runways are provided with recommendations for compatible land use in the vicinity of the base for state and local governments to incorporate into comprehensive plans, zoning ordinances, subdivision regulations, building codes, and other related documents.

1.2.3 Authority

Department of Defense Instruction (DoDI) 4165.57 establishes policy and assigns responsibility for educating air installation personnel and engaging local communities on issues related to noise, safety, and compatible land use in and around air installations as well as prescribes procedures for plotting noise contours for land use compatibility analysis.

AFI 32-7063 implements DoDI 4165.57 and applies to all Air Force installations with active runways located in the United States and its territories. This instruction provides guidance to installation AICUZ Program Managers (PMs) with a framework to comply with Air Force Policy Directive (AFPD) 32-70.

AF Handbook (AFH) 32-7084 *AICUZ Program Manager's Guide*: This handbook provides installation AICUZ PMs specific guidance concerning the organizational tasks and procedures necessary to implement the AICUZ program. It is written in a "how to" format and aligns with AFI 32-7063.

1.3 Previous AICUZ Efforts and Related Studies

The following studies are relevant to this document:

- The 2004 update to the Nellis AFB AICUZ study for the period 1992-2001.
- The 2011 Environmental Impact Statement (EIS) for the F-35 Force Development Evaluation and Weapons School Beddown.
- 2017 Close Air Support Integrations Group F-16 Beddown.

1.4 Changes that Require an AICUZ Update

The 2017 Nellis AFB AICUZ Study updates the 2004 AICUZ Study and provides flight track, APZ, and noise zone information that reflects the most accurate picture of the installation's aircraft activities as projected to 2024. As such, the AICUZ program allows communities to take a longer view in land use planning.

As the DoD aircraft fleet mix and training requirements change over time the resulting flight operations, which drive the noise contours, change as well. Additionally, non-operational changes may also require the need for an AICUZ update. The primary changes since the previous AICUZ update are:

- Introduction of the F-35 Lightning II aircraft.
- Stand-up of Close Air Support Integration Group.
- Replacement of the 65th AGRS with contracted aggressor aircraft.
- For FY24, the number of annual Red Flag exercises are expected to increase from two to 12 Red Flag Exercises.
- The update of the AICUZ Instruction. The Nellis AICUZ uses the most recent Air Force Instruction (AFI), which uses "annual average day." The primary reason for the change to average annual day is to be consistent with the land use recommendations guidelines.

Air Force Air Demonstration Squadron the "Thunderbirds"

2.0 Nellis AFB, Nevada

Welcome to Nellis AFB

Nellis AFB, home of the Warfighter, is a prominent military installation located in the U.S. desert southwest. The installation has a rich history and serves as the staging ground for a vast number of military mission sets. This section provides a bit of detail about the base, the units that call Nellis "home" and the impact that it has on the local economy.

2.1 Location

As shown in Figure 2-1, Nellis AFB, a part of the United States Air Force's Air Combat Command (ACC), is located approximately eight miles northeast of Las Vegas, Nevada. The base itself covers more than 14,000 acres, while the total land area occupied by Nellis and its restricted ranges is about 5,000 square miles, or 2.9 million acres. An additional 7,700 square miles of airspace north and east of the restricted ranges are also available for military flight operations.


A-10s on runway at Nellis AFB

The main base is bordered by Nellis Boulevard, Las Vegas Boulevard, and the City of North Las Vegas to the west, unincorporated County lands called Sunrise Manor to the south and southeast, Sunrise Mountain to the east, and City of North Las Vegas and unincorporated Clark County to the north. Interstate 15 passes north of the base connecting Las Vegas to Salt Lake City, Utah, and south to Los Angeles, California.

2.2 History

Nellis AFB began as the Las Vegas Army Air Field in late 1941, hosting the Army Air Corps Flexible Gunnery School which started B-17 gunnery training in early 1942. In 1944, B-17 co-pilot training was added. During the height of World War II, more than 600 gunners and 215 co-pilots graduated from the school every five weeks. In March 1945, B-17 co-pilot training was cancelled and the B-17 gunnery program gave way to B-29 gunnery training. Following the end of the war, the base was a separation center and then placed on temporary standby status, finally closing in January 1947.


B-17 Gunnery School / Pilot Training

Reopened in 1949 as Las Vegas Air Force Base, it was renamed the next year in honor of Lieutenant William Harrell Nellis. Lt Nellis, a P-47 pilot from southern Nevada, was killed in action Dec. 27, 1944, while on his 70th combat mission over Luxembourg during the Battle of the Bulge in support of the besieged 101st Airborne Division.

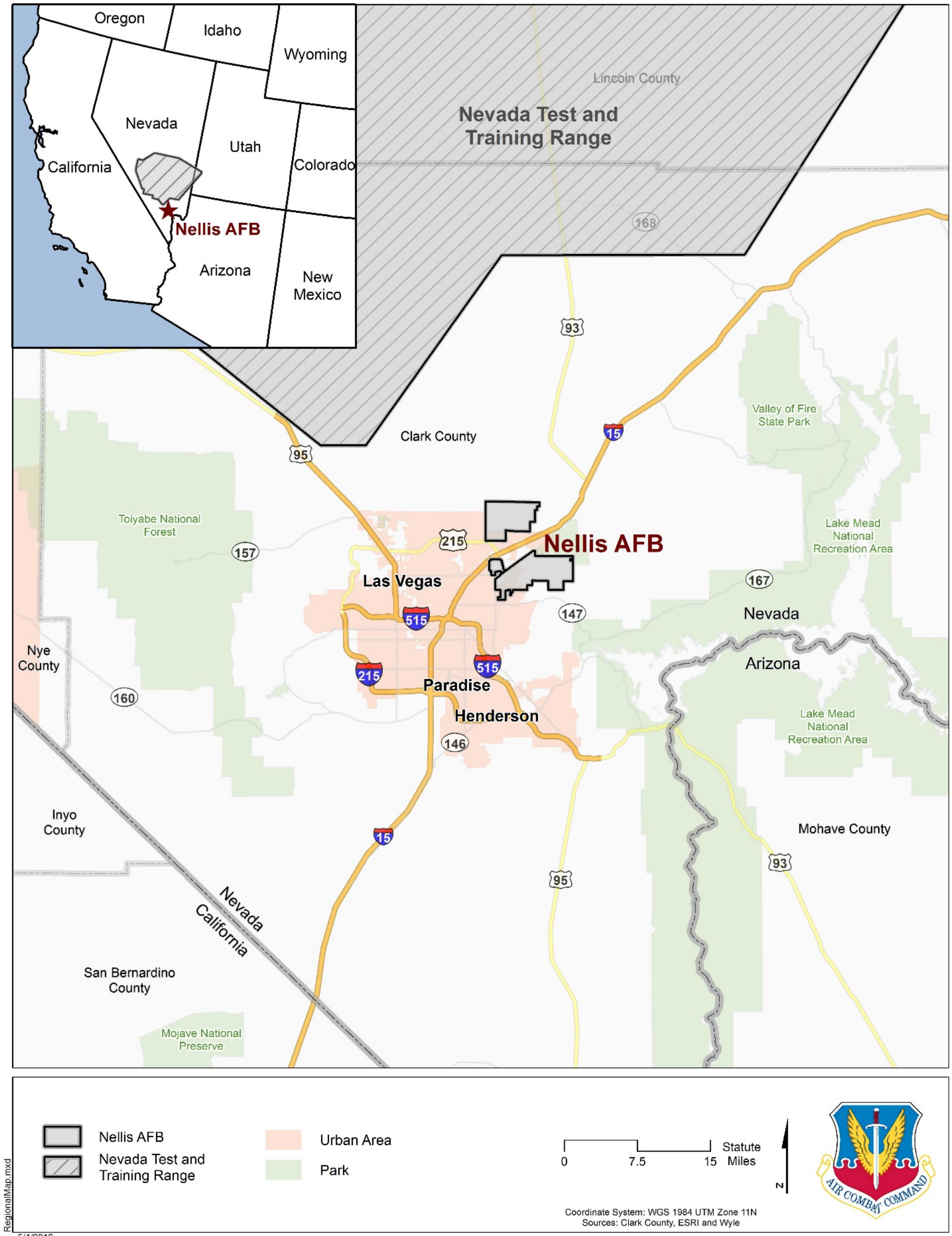
Initially an advanced pilot training base, the mission changed to F-86 flight training and gunnery for qualified pilots. During the Korean War, the training received at Nellis AFB was directly responsible for the 14:1 kill ratio of the F-86 against the superior MiG-15. At the time, Nellis was the only base training F-86 combat pilots – pilots returning from the theater were used as instructors at the Combat Crew Training School, and provided the air expertise that allowed the United States to maintain air superiority throughout the war.

With a 1958 transfer from Air Training Command to Tactical Air Command, the mission transitioned from initial aircraft qualification and gunnery training to advanced, graduate-level weapons training. The United States Air Force (USAF) Tactical Fighter Weapons Center (now the USAF Warfare Center) was activated in 1966. In 1975, Red Flag air-to-air exercises were started and in 1990, the Air Warrior, now Green Flag-West, air-to-ground training mission moved to Nellis AFB.


1Lt William H. Nellis

Today, as part of the USAF Warfare Center (USAFWC), units at Nellis AFB continue to provide training for composite strike forces that include every type of aircraft in the U.S. Air Force inventory, along with air and ground units of the Army, Navy, Marines and air units from allied nations. Nellis AFB is also responsible for operational test and evaluation, as well as tactics development.

Figure 2-1. Regional Setting



2.3 Mission

Nellis AFB provides realistic advanced composite strike force training for the U.S. Air Force, other services, and air and ground units from allied nations, which includes virtually every type of aircraft used by the Air Force, air and ground units from the Army, Navy, and Marines, and air units from allied nations. Flight training is accomplished through Nellis AFB's host command, the USAFWC. Nellis AFB organizations also perform operational testing and evaluation, develop and evaluate combat tactics, and maintain combat-ready forces for worldwide deployment and tactical testing and evaluation, using the latest weapon systems.

To execute its mission, the USAFWC oversees the operations of four wings, two named units, and one detachment: 99th Air Base Wing, 57th Wing, the Nevada Test and Training Range (NTTR) and the Air Force Joint Test Program Office at Nellis AFB; the 53rd Wing at Eglin AFB, Florida; and the 505th Command and Control Wing at Hurlburt Field, Florida, and Air Force Tactical Exploitation of National Capabilities at Schriever AFB, Colorado. Of these, the 57th Wing, the NTTR, and the 53rd Wing are relevant to flying activity at Nellis AFB and are described below.

2.3.1 57th Wing

The 57th Wing is the most diverse wing in the United States Air Force. It provides advanced aerospace training to world-wide combat air forces and showcases aerospace power to the world while overseeing the dynamic and challenging flying operations at Nellis. It manages all flying operations at Nellis AFB and conducts advanced aircrew, space, logistics and command and control training through the USAF Weapons School, Red Flag and Green Flag exercises. Important components of the training include adversary tactics replication (provided by the wing's aggressor squadrons) and graduate level instruction and tactics development (accomplished through each of its schools). The wing additionally supports the USAFWC's test and evaluation activities and showcases U.S. air power through the USAF Air Demonstration Squadron "Thunderbirds."

F-16's and F15's from Nellis' Aggressor Squadrons

2.3.2 53rd Wing and 53rd Test and Evaluation Group

The 53rd Wing is located at Eglin AFB, FL and serves as the focal point for the Combat Air Forces in electronic warfare, armament and avionics, chemical defense, reconnaissance and aircrew training devices. The wing is responsible for operational testing and evaluation of new equipment and systems proposed for use by these forces. Current wing initiatives include advanced self-protection systems for combat aircraft, aircrew life support systems, aerial reconnaissance improvements, new armament and weapons delivery systems, and improved maintenance equipment and logistics support.

The 53rd Wing, comprised of four groups, numbers more than 2,200 military and civilians at 22 various locations throughout the U.S. The wing reports to the USAFWC at Nellis AFB.

MQ-1 Predator Remotely Piloted Aircraft

The 53rd Test and Evaluation Group (TEG) is responsible for the overall execution of the 53rd Wing's flying activities at Nellis AFB and several other bases throughout the U.S. The mission of the TEG is to provide the warfighter with the latest in software, hardware, weapons and tactics techniques and procedures to win America's wars.

Members of the group execute operational test and evaluation (OT&E), and tactics development projects assigned by Air Combat Command (ACC) for A-10, B-1, B-2, B-52, F-15C/E, F-16, F-22A, Guardian Angel, HH-60G, HC-130J, MQ-1, MQ-9, RQ-4, and U-2 combat aircraft. The 53 TEG also supports current Air Force Operational Test and Evaluation Center efforts with the F-35A Lightning II. The unit performs functional management for acquisition, modification, testing and certification for fighter, bomber and combat support aircrew training systems. The group also conducts foreign military exploitation and special access projects. Since July 15, 2012, the group has OT&E responsibility for space control and space range assets.

2.3.3 422nd Test and Evaluation Squadron

As their name implies, the 422nd Test and Evaluation Squadron (422 TES) is tasked with testing and evaluating weapons systems, exploiting foreign technologies, and developing/publishing leading edge tactics to improve the future combat capability of aerospace forces. It is composed of aircrew and support personnel supporting five different flights of fighters and helicopter aircraft: A-10, F-15C, F-15E, F-16C, F-22, F-35 and HH-60G. Testing in a simulated combat environment benefits U.S. aircrews worldwide with operationally proven hardware and software systems.

2.3.4 Nevada Test and Training Range

The NTTR, formerly the 98th Range Wing, provides the warfighter a flexible, realistic and multidimensional battle-space to conduct testing tactics development, and advanced training in support of U.S. national interests. Aircraft from Nellis AFB operate on the NTTR, which offers more than 7,700 square miles of airspace and 4,700 square miles of restricted land as shown in Figure 2-1. The NTTR also provides instrumentation and target maintenance support for Green Flag-West at the National Training Center and at the Leach Lake Tactics Range (LLTR). More than 75 percent of all live munitions used by the Air Force for training are dropped on the NTTR.

As a Major Range Test Facility Base (MRTFB) activity, the NTTR supports the DoD advanced composite force training, tactics development, and electronic combat testing as well as DOD and Department of Energy (DOE) testing, research, and development. The NTTR hosts numerous Red Flag and U.S. Air Force Weapons School exercises each year, as well as various test and tactics development missions.

The NTTR coordinates operational and support matters with major commands, other services, DOE and Department of Interior, as well as other federal, state, and local government agencies. The NTTR acts as the single point of contact for range customers.

The scope of this AICUZ does not include the NTTR, but some of the flying activity at Nellis AFB is directly related to usage of the NTTR.

A-10 Thunderbolt drops bombs on the Nevada Test and Training Range

2.3.5 563rd Rescue Group, Operating Location-Alpha (OL-A) and 66th Rescue Squadron

The mission of the 563rd Rescue Group Operating Location-Alpha (OL-A) is to provide administrative oversight and operational support for the 58th Rescue Squadron, the 66th Rescue Squadron (66 RQS), the 823rd Maintenance Squadron and one detachment, Det. 1, 563rd Operations Support Squadron, at Nellis AFB. The OL-A manages scheduling, training, plans, logistics, maintenance support, safety and resource management functions and provides command and control for home station taskings.

HH-60G Pave Hawk Helicopters conduct operations

The mission of the 66 RQS is to provide rapidly deployable, expeditionary, and agile combat search and rescue (CSAR) forces to theater combatant commanders in response to contingency operations worldwide. The 66 RQS operates the HH-60G "Pave Hawk" medium-lift helicopter. They tactically employ the HH-60G helicopter and its crew in hostile environments to recover downed aircrew and isolated personnel during day, night, or marginal weather conditions in contested airspace.

The 66 RQS directly supports HH-60G logistical and maintenance support requirements for the USAF Weapons School and ACC-directed operational test missions. The squadron also conducts peacetime search and rescue (SAR) in support of the National Search and Rescue Plan and the USAFWC, disaster relief, international aid, and emergency medical evacuations.

2.3.6 88th Test and Evaluation Squadron

The 88th Test and Evaluation Squadron (88 TES) is part of the Combat Search and Rescue (CSAR) Combined Test Force (CSAR CTF), which integrates Developmental Test and Operational Test units comprised of personnel and resources from USAF Mobility Command and USAF Air Combat Command. The CSAR CTF is currently the Responsible Test Organization for the HH-60G, HC-130N/P/J aircraft and the Guardian Angel Weapons System.

2.3.7 Department of Energy

The Department of Energy operates the Remote Sensing Lab at Nellis AFB which is a component of the National Nuclear Security Administration (NNSA). The NNSA provides a wide spectrum of services related to nuclear material including defense programs, emergency response, defense of nuclear security, monitoring, etc.

2.4 Airfield Environment

Located on the south eastern side of the main base the airfield (Figure 2-2) includes, but is not limited to aircraft hangars for maintenance and storage, aircraft parking ramps and taxiways, two hard surface runways, assorted office buildings and support facilities such as hush houses for engine run maintenance, and munitions storage areas. The two runways (Figure 2-3) are positioned in parallel and are oriented to a magnetic heading. In one direction, the runways face northeast on a heading of 030^{o} and at the opposite end, a southwest heading of 210^{o}. Both runways have the same heading and are distinguished by the suffix “L” for “left” and “R” for “right.” The runways can be used in either direction and they are labeled 03L, 03R and 21L, 21R, or traditionally as 03L/21R and 03R/21L respectively to represent the opposite ends of each runway.

Nellis Air Force Base

The runways (Rwy) in use are determined by the direction of the prevailing winds and a variety of other factors discussed in Section 3.5. For example, if the prevailing winds are blowing (coming) “from” the north, then aircraft will take off and land towards the north on Rwy 03L/R and if the prevailing winds are blowing (coming) “from” the south, then aircraft will take off and land towards the south on Rwy 21L/R. In other words, “fixed wing” aircraft will almost always takeoff and land “into” the wind.

Helicopters are capable of departing to and arriving from any direction. Three specific areas within the airfield environment are designated for “rotary wing” operations (Jolly Pad, Transient Pad, and Taxiway G) as indicated in Figure 2-3 below.

Figure 2-2. Nellis AFB Airfield Environment

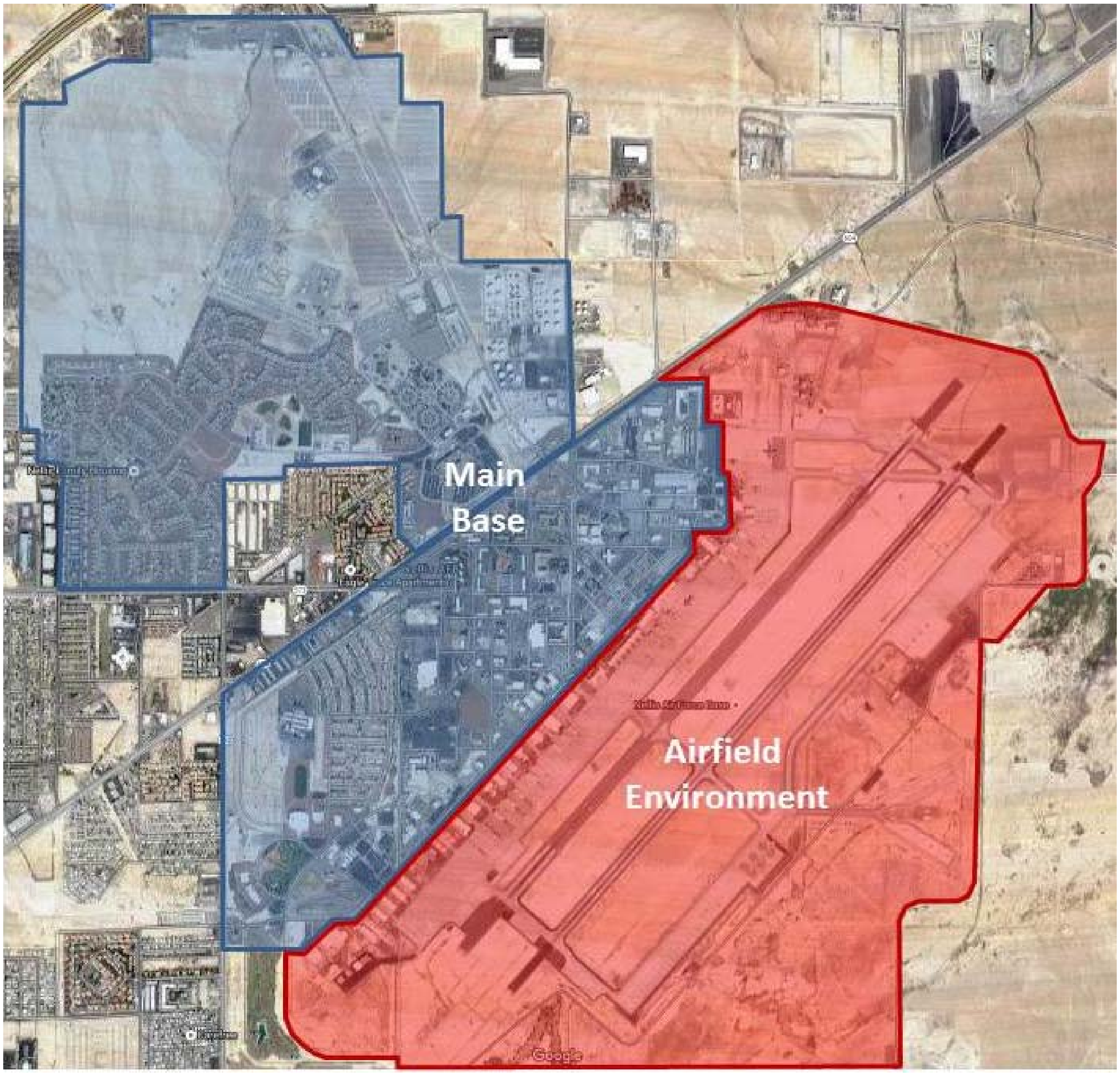
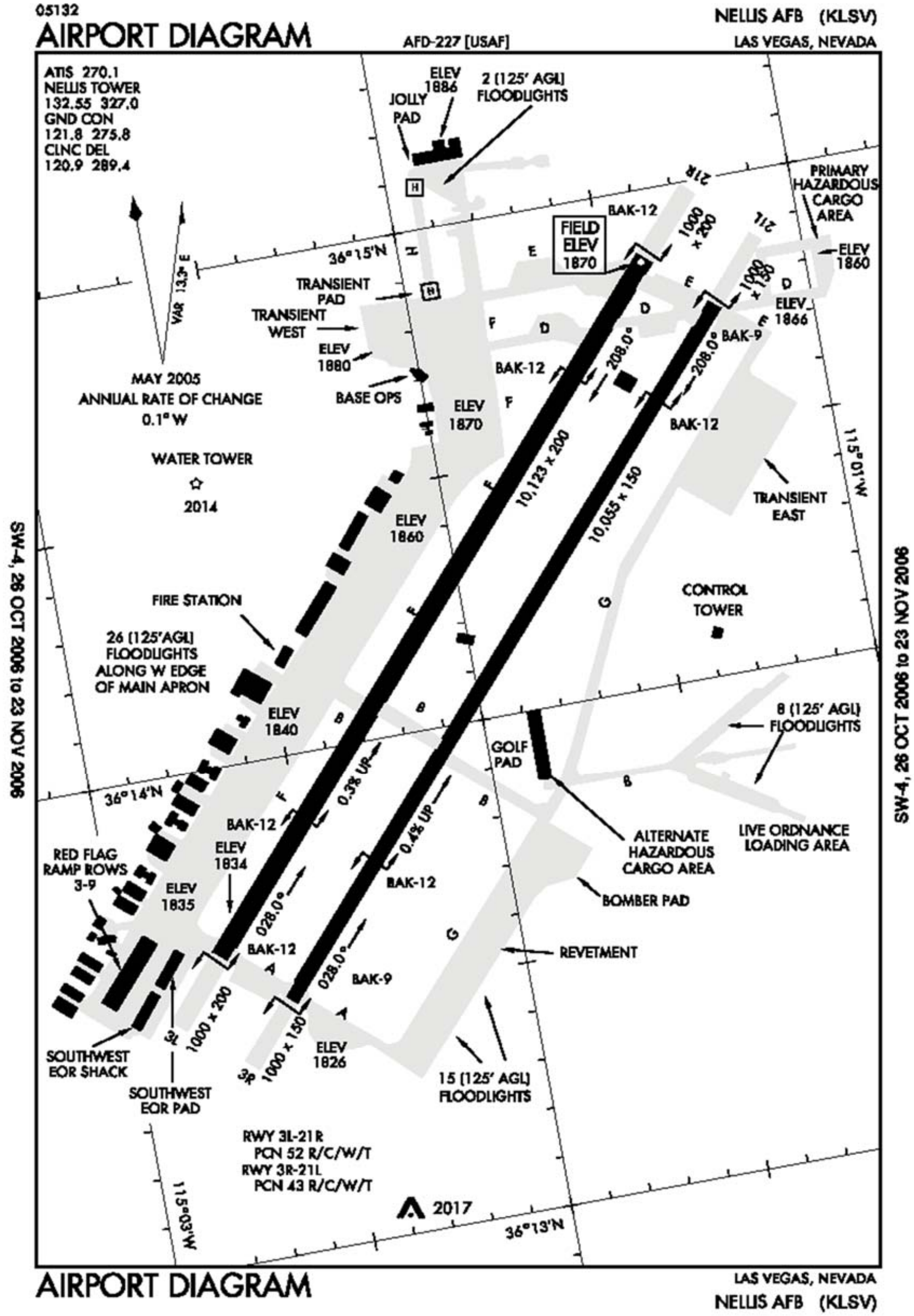


Figure 2-3. Nellis AFB Airport Diagram



2.5 Local Economic Impacts

Nellis AFB is situated in Clark County, Nevada and is considered a part of the greater metropolitan Las Vegas area. Its region of influence (ROI) extends outward to a 50-mile radius from the base borders and includes the five incorporated and nineteen unincorporated townships within the Las Vegas valley. The city's center is one of the largest, most profitable economic hubs in the desert southwest and, since 2001, has been considered one of the fastest-growing cities in the United States. According to the U.S. Census Bureau, there are 2.2 million people living in Clark County as of July 2014.

The Nellis Complex is one of the largest employers in the state of Nevada employing approximately 10,000 military personnel and nearly 4,000 civilians

The Nellis Complex is one of the largest employers in the state of Nevada employing approximately 10,000 military personnel and nearly 4,000 civilians. In addition, the Nellis Complex supports approximately 23,000 military dependents. These personnel reside both on-base and within the community (Table 2-1). Total civilian employment is shown in Table 2-2. Nellis military personnel support an annual payroll over $820 million (Table 2-3). A summary of the gross annual civilian payroll, $314 million, is shown in Table 2-4. The combined Nellis Complex annual payroll is over $1 billion. Nellis expenditures for contracts, procurement, material, equipment, supplies, and capital assets are more than $3.4 billion for 2015 (Table 2-5).

B-1B Lancer depart Nellis with Las Vegas in the background

Table 2-1. Total Military and Dependent Personnel by Classification and Housing
(Total Persons)

Classification	On-Base Residents	Off-Base Residents	Total
Active Duty	1,819	7,284	9,103
Reserve/Air National Guard		620	620
Dependents	3,638	19,760	23,398
Retirees		29,375	29,375
Total	**5,457**	**57,039**	**62,496**

Table 2-2. Total Civilian Personnel by Appropriated and Non-Appropriated Funds
(Total Persons)

Appropriated Fund Civilians	Total
General Schedule	882
Federal Wage Board	123
Sub-Total	1,005
Non-Appropriated Fund AF Civilians	**Total**
Civilian NAF	484
Civilian Base Exchange	310
Contract Civilians	1,533
Private Business	216
Sub-Total	2,543
Total	**3,548**

Table 2-3. Annual Military Payroll by Category and Housing Location
(Millions of Dollars)

Classification	On-Base Residents	Off-Base Residents	Total
Active Duty	$113.90	$693.50	$807.40
Reserve/Air National Guard	-	$12.90	$12.90
Total	**$113.90**	**$706.40**	**$820.30**

Table 2-4. Annual Civilian Payroll by Appropriated and Non-Appropriated Funds
(Millions of Dollars)

Appropriated Fund Civilians	Total
General Schedule	$59.40
Federal Wage Board	$7.70
Sub-Total	$67.10
Non-Appropriated Fund AF Civilians	**Total**
Civilian NAF	$12.20
Civilian Base Exchange	$6.80
Contract Civilians	$221.30
Private Business	$6.90
Sub-Total	$247.20
Total	**$314.30**

Table 2-5. Summary of Construction, Contracts, and Expenditures for Materials, Equipment and Supplies
(Millions of Dollars)

Expense Category	Amount
Commissary (Inventory)	$2.60
Army & Air Force Exchange Service (inventory)	$13.80
Health (TRICARE)	$176.90
Education (Tuition Assistance)	$5.20
Temporary Duty	$332.00
Other Materials, Equipment, Supplies	$800.80
Government Purchase Card Expenses	$23.60
Utilities	$12.10
Service Contracts	$119.20
Construction (1)	$86.30
Sub-Total	$1,572.50
Multi-Year Capital Assets	**Amount**
Existing Equipment (Inventory)	$678.80
Multi-Year Contracts	$681.80
Miscellaneous Contracts	$502.90
Sub-Total	$1,863.50
Total Annual Expenditure	**$3,436.00**

3.0 Aircraft Operations

Armed F-16 Fighting Falcon departs for NTTR

Aircraft operations are the primary source of noise associated with a military airbase. The level of noise exposure relates to a number of variables, including the aircraft type, engine power setting, altitude flown, direction of the aircraft, flight track, temperature, relative humidity, frequency and time of operation (day/night).

This chapter of the AICUZ Study discusses the various types of aircraft and their associated operations at Nellis Air Force Base.

3.1 Aircraft Types

The two primary classifications (types) of aircraft in operation at Nellis AFB are fixed wing or rotary wing (helicopter) aircraft. An assortment of these are permanently assigned to Nellis and are the most commonly observed aircraft to conduct operations from the installation. Aircraft that are not permanently assigned, but conduct operations from the base on an occasional basis are referred to as transient. A brief description of base assigned and the most common transient aircraft is provided below.

3.1.1 Base Assigned Aircraft

The A-10 Thunderbolt II is the first Air Force aircraft specially designed for close air support of ground forces. They are simple, effective and survivable twin-engine jet aircraft that can be used against all ground targets, including tanks and other armored vehicles.

A-10C

F-15CD/E

The F-15 Eagle is a twin engine, all-weather, extremely maneuverable, tactical fighter designed to permit the Air Force to gain and maintain air supremacy over the battlefield.

The F-16 Fighting Falcon is a compact, multi-role fighter aircraft. It is highly maneuverable and has proven itself in air-to-air combat and air-to-surface attack. It provides a relatively low-cost, high-performance weapon system for the United States and allied nations.

F-16C/D

F-22

The F-22 Raptor, a critical component of the Global Strike Task Force, is designed to project air dominance, rapidly and at great distances and defeat threats attempting to deny access to our nation's Air Force, Army, Navy and Marine Corps. The F-22 cannot be matched by any known or projected fighter aircraft.

The F-35A is the U.S. Air Force's latest fifth-generation fighter. With its aerodynamic performance and advanced integrated avionics, the F-35A will provide next-generation stealth, enhanced situational awareness, and reduced vulnerability for the United States and allied nations.

F-35A

C-12

The C-12 Huron is a military version of an executive passenger and transport aircraft based on the Beech Model 200 Super King Air. It is primarily used by the U.S. Air Force, US Navy, US Army and US Marine Corps for several functions, including range clearance, embassy support, medical evacuation, VIP transport, passenger and light cargo transport.

The primary mission of the HH-60G Pave Hawk helicopter is to conduct day or night personnel recovery operations into hostile environments to recover isolated personnel during war. The HH-60G is also tasked to perform military operations other than war, including civil search and rescue, medical evacuation, disaster response, humanitarian assistance, security cooperation/aviation advisory, NASA space flight support, and rescue command and control.


HH-60G

3.1.2 Transient Aircraft


F/A-18E

The McDonnell Douglas F/A-18 Super Hornet, is highly capable across the full mission spectrum: air superiority, fighter escort, reconnaissance, aerial refueling, close air support, air defense suppression and day/night precision strike. Compared to the original F/A-18 A through D models, the Super Hornet has a longer range, can be used as an aerial refueling platform, has increased survivability/lethality and improved carrier suitability.

The KC-135 Stratotanker provides the core aerial refueling capability for the United States Air Force and has excelled in this role for more than 50 years. This unique asset enhances the Air Force's capability to accomplish its primary mission of global reach. It also provides aerial refueling support to Air Force, Navy, Marine Corps and allied nation aircraft. The KC-135 is also capable of transporting litter and ambulatory patients using patient support pallets during aeromedical evacuations.

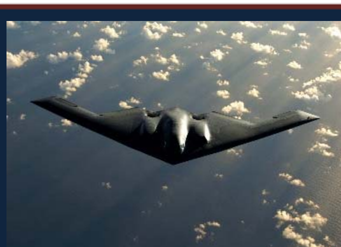

KC-135


C-130E/H/J

The C-130 Hercules primarily performs the tactical portion of the airlift mission. The aircraft is capable of operating from rough, dirt strips and is the prime transport for airdropping troops and equipment into hostile areas. The C-130 operates throughout the U.S. Air Force, serving with Air Mobility Command, Air Force Special Operations Command, Air Combat Command, U.S. Air Forces in Europe, Pacific Air Forces, Air National Guard and the Air Force Reserve Command, fulfilling a wide range of operational missions in both peace and war situations. Basic and specialized versions of the aircraft airframe perform a diverse number of roles, including airlift support, Antarctic ice resupply, aeromedical missions, weather reconnaissance, aerial spray missions, firefighting duties for the U.S. Forest Service and natural disaster relief missions.

Carrying the largest conventional payload of both guided and unguided weapons in the Air Force inventory, the multi-mission B-1 Lancer is the backbone of America's long-range bomber force. It can rapidly deliver massive quantities of precision and non-precision weapons against any adversary, anywhere in the world, at any time.


B-1B


B-2

The B-2 Spirit is a multi-role bomber capable of delivering both conventional and nuclear munitions. A dramatic leap forward in technology, the bomber represents a major milestone in the U.S. bomber modernization program. The B-2 brings massive firepower to bear, in a short time, anywhere on the globe through previously impenetrable defenses.

The B-52 Stratofortress is a long-range, heavy bomber that can perform a variety of missions. The bomber is capable of flying at high subsonic speeds at altitudes up to 50,000 feet. It can carry nuclear or precision guided conventional ordnance with worldwide precision navigation capability.


B-52

3.2 Maintenance Operations


F-16 in Hush House

Maintenance is an integral part of any flying operation and it requires a dedicated team of professionals to ensure that units can meet flying schedule requirements. Two key tasks in maintaining aircraft are low and high powered engine maintenance runs.

Engine runs may be conducted at any power setting between idle and maximum power. Low to mid-range powered engine runs are typically conducted on aircraft parking ramps or just outside of maintenance hangars. High powered engine runs are typically conducted in two acoustical enclosures commonly referred to as hush houses (buildings specifically designed to muffle engine noise). Noise associated with these operations is included in the noise analysis and has been modeled for incorporation into the Nellis noise contours.

3.3 Flight Operations

Each time an aircraft crosses over a runway threshold (the beginning or ending of a runway's useable surface) with the intent to either takeoff, practice an approach, or land, it is counted or considered as a single flight operation. For example, a departure counts as a single operation but a pattern is counted as two because an aircraft crosses both the approach and departure ends of a runway.

Operations in the Nellis terminal area are conducted on a year around basis and in general, temporarily increase during large-scale simulated combat exercises such as Red Flag and Green Flag. The following paragraphs and figures highlight a number of various operations and their associated flight tracks. Each track is designed to maximize air traffic efficiency while simultaneously minimizing the effects of noise.

F-16 departs over the community

- **Takeoff.** When an aircraft is positioned on the runway, the engine power is set to facilitate movement and eventual flight.
- **Departure.** For the purpose of air traffic sequencing, separation, noise abatement, compliance with avoidance areas, and safety, aircraft follow specific ground tracks and altitude restrictions to depart an airfield (Figure 3-2).
- **Straight-In Arrival.** An aircraft is aligned with the runway extended centerline and begins a gradual descent for landing. This type of approach enables an aircraft to maintain a smooth, stable and steady approach and requires no additional maneuvering.
- **Overhead Break Arrival.** An expeditious arrival using visual flight rules (VFR). The aircraft arrives over the airfield on the runway centerline at a specified point and altitude and then performs a 180-degree "break turn" away from the runway to enter the landing pattern. Once established, the landing gear and flaps are

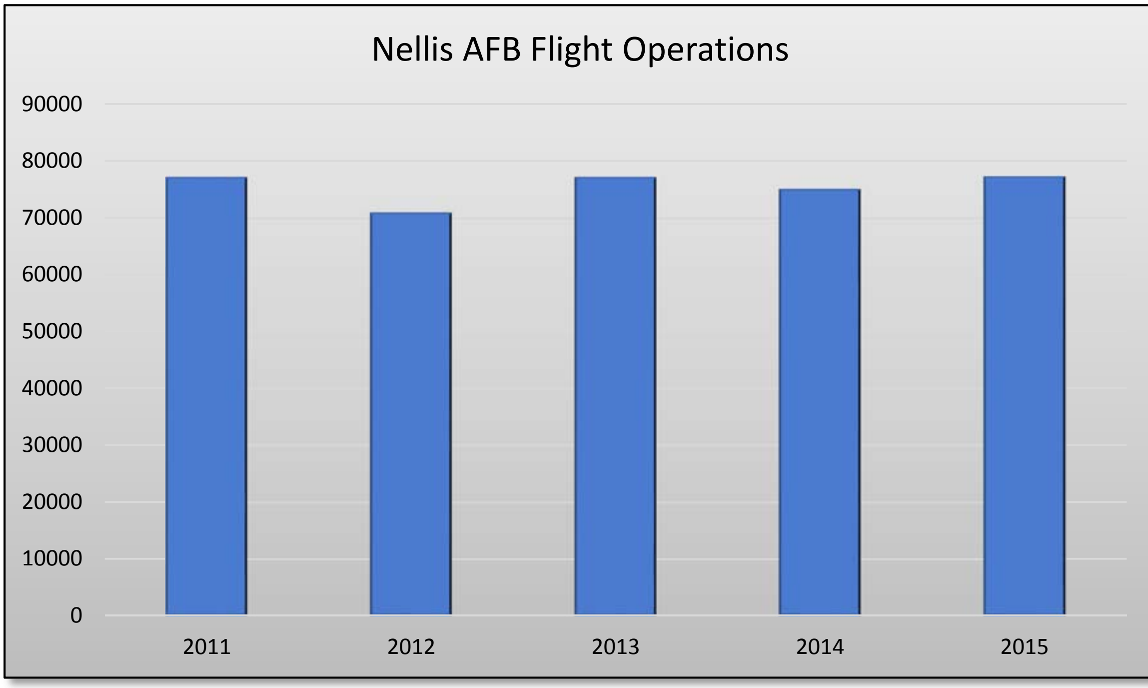
lowered and the pilot performs a second 180-degree descending turn toward runway centerline to land.

- **Pattern Work.** Pattern work refers to traffic pattern training where the pilot performs takeoffs and landings in quick succession by taking off, flying the pattern, and then landing. Traffic pattern training is demanding and utilizes all the basic flying maneuvers a pilot learns: takeoffs, climbs, turns, climbing turns, descents, descending turns, and straight and level landings.
    - **Low Approach.** A low approach is an approach to a runway that does not result in a landing, but rather a descent towards the runway followed by a climb-out away from the airfield. Low approaches are accomplished for a number of reasons. One such reason is to practice avoiding potential ground obstructions (i.e., vehicles, debris, stray animals, etc.).
    - **Touch and Go.** A touch-and-go landing pattern is a maneuver that involves landing on a runway and taking off again without coming to a full stop. Usually the pilot then circles the airport in a defined pattern known as a circuit and repeats the maneuver.
    - **Box Pattern.** Ground Control Approach (GCA) is a radar or "talk down" approach directed from the ground by an air traffic controller (ATC). ATC personnel provide pilots with verbal course and glide slope information, allowing them to make an instrument approach during inclement weather. A Box Pattern is normally flown to practice GCA approaches. The Box Pattern utilizes a "box-shaped" flight pattern with four 90-degree turns done at a set altitude, used to practice a variety of approach procedures at an airfield.
    - **Radar Approach.** An instrument approach is provided with active assistance from ATC during poor weather conditions. ATC personnel direct the aircraft toward the runway centerline. Once established on the centerline, pilots use aircraft instruments to maintain runway alignment and adherence to altitude restrictions until the pilot is able to acquire visual sight with the runway environment. Pilots often practice this type of approach to maintain proficiency.
    - **Simulated Flame-Out (SFO).** This is a visual flight maneuver for single-engine aircraft used to simulate a landing recovery from a complete loss of engine thrust. To execute the maneuver, a pilot must establish the aircraft on a specified flight profile (altitude, airspeed, position over the airfield) which would allow the aircraft to glide safely across the runway threshold in a position to land. If properly executed, the maneuver should not require the use of additional engine power until after the maneuver is complete.

3.4 Annual Aircraft Operations

Figure 3-1 describes all aircraft operations that occurred at Nellis over a five-year period, including based and transient aircraft. As described below, total annual operations account for each departure and arrival, including those conducted as part of a pattern operation.

Figure 3-1. Summary of Flight Ops for FY 2001 – FY 2015



3.5 Runway Utilization & Flight Tracks

3.5.1 Runway Utilization

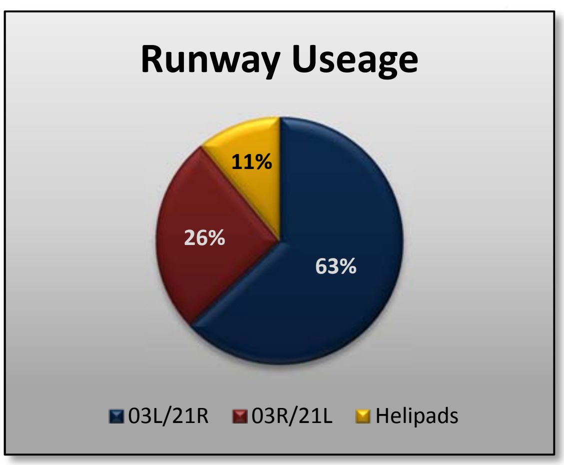
The frequency with which a runway is used is determined by a variety of factors including the airfield environment (layout, lights, runway length, etc.), direction of prevailing winds, location of natural terrain features (rivers, lakes, mountains, etc.), wildlife activity, number of aircraft in the pattern, and/or the preference of a runway for the purpose of safety and noise abatement.

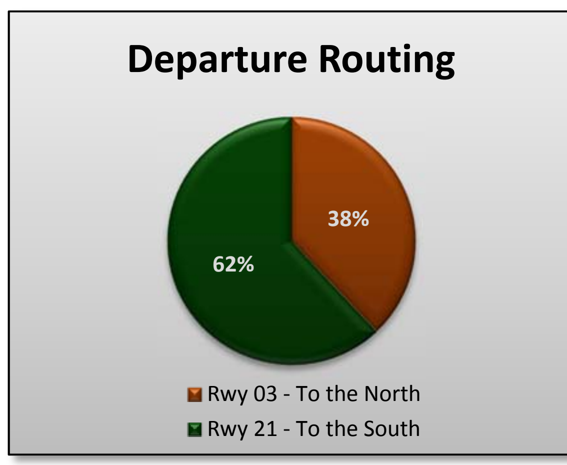
The runway in use at Nellis is established by Base Operations, control tower personnel and the Supervisor of Flying. Pattern procedures are adjusted accordingly to maximize air traffic flow efficiency. Table 3-2 depicts the runway orientation and size characteristics for each runway while Figure 3-2 displays how frequent each runway is used. The Jolly and Transient helicopter pads are referenced in Section 2.4 are also displayed in the graph below.

Table 3-1. Runway Dimensions and Orientations

Runway	Orientation (relative to magnetic North)	Length (ft)	Width (ft)	Overrun Length (ft)
03L/21R (inboard)	29° / 209°	10,120	200	1,000 ft each end
03R/21L (outboard)	29° / 209°	10,051	150	1,000 ft each end

Figure 3-2. Runway Usage and Departure Routing





3.5.2 Flight Tracks

> Flight Track – A precise route taken or due to be taken through the air by an aircraft…

Flight tracks depict where aircraft fly in relation to an airfield. They are designed for departures, arrivals and for pattern work procedures, and are designated for each runway to facilitate operational safety, noise abatement (Section 3.6), aircrew proficiency and the efficient flow of air traffic within the tower controlled airspace. Aircraft flight tracks are not set highways in the sky. While flight tracks are shown as a line on the map, they are actually bands. Aircraft de-confliction, configuration, pilot technique, takeoff weight, and wind all affect the path taken. The flight tracks for Nellis AFB are presented in figures 3-3, 3-4 and 3-5.

3.6 Noise Abatement

The Air Force recognizes that noise from military operations may cause concern for people living near military installations.

For this reason, the Air Force has established a Noise Program aimed at reducing and controlling the emission of noise and vibrations associated with the use of military aircraft, weapons systems and munitions. The result is the implementation of various strategies, techniques and procedures, documented under the Nellis AFB Noise Abatement Program, that are aimed at protecting persons and structures from the harmful effects of noise and vibrations.

Nellis AFB has noise abatement procedures for departures from Runway 21 include:

- Initially maintain runway heading and expedite their climb to an altitude of 2,500-3,000 ft Mean Sea Level (MSL).
- Terminate use of afterburner no later than reaching 300 kts or abeam the southwest end of the on-base Nellis golf course, whichever occurs last.
- Initiate a 60° banked right turn to a heading of 300° to avoid populated areas and fly between Shadow Creek Golf Course and Craig Ranch Regional Park.
- In the vicinity of the Shadow Creek Golf Course and Craig Ranch Regional Park, be at a minimum altitude of 5,000-6,000 ft MSL.
- Intercept a northbound heading (if heading north) at a maximum distance of 12 nautical miles from the Nellis runways.
- Remain within an arc of radius 4 nautical miles from the Nellis runways until heading westbound.
- Avoid the Las Vegas airport by 7.5 nautical miles.

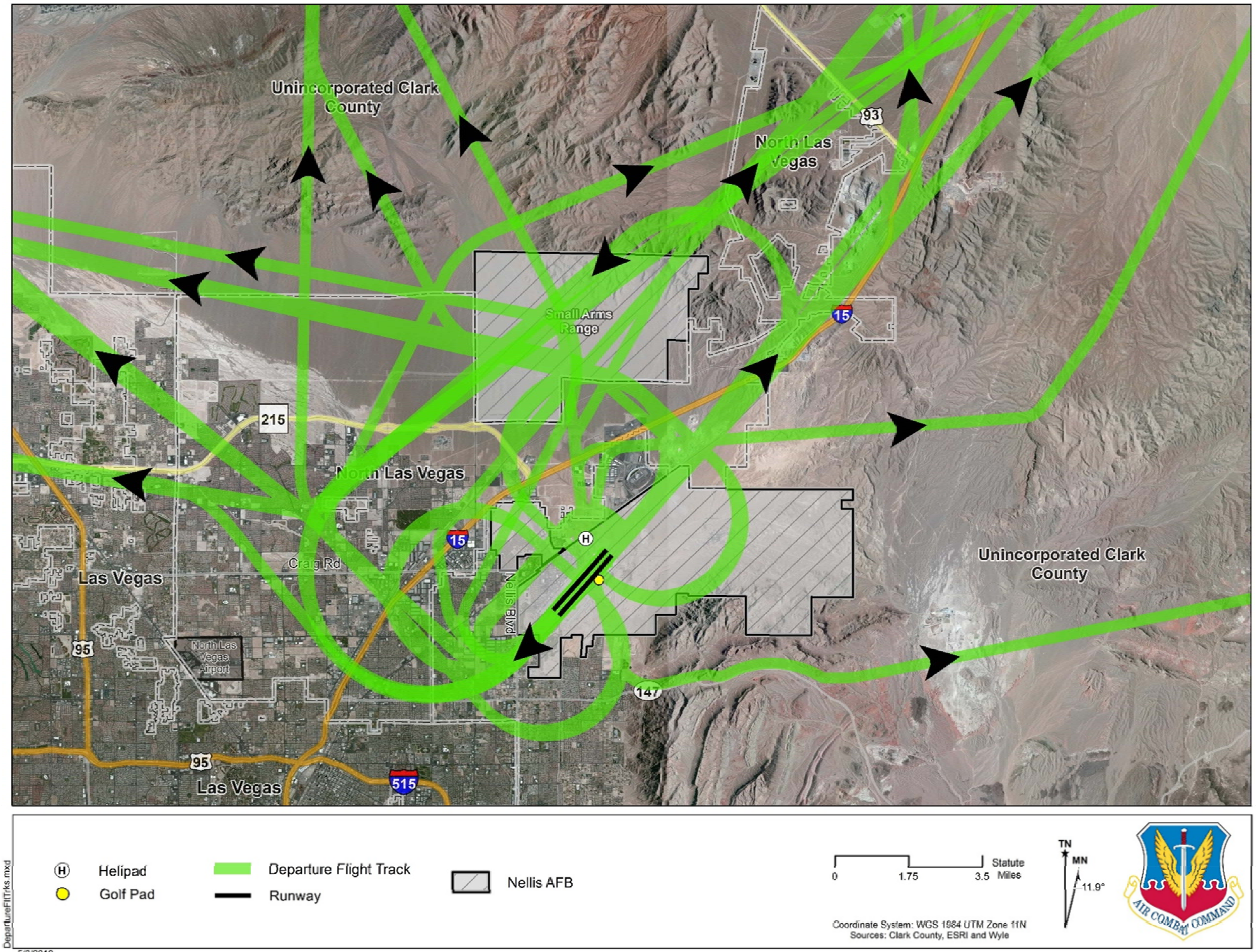
Base leadership periodically reviews existing flight operations practices and their potential impact on surrounding communities and other populated areas. This requirement facilitates the planning, designation and establishment of flight tracks preferably over sparsely populated areas and/or waterways as often or practicable as possible to balance operational safety and reduce noise exposure levels to surrounding communities.

Flight tracks are established over sparsely populated areas as often as possible.

3.7 Noise Complaints

Nellis AFB has historically experienced a minimum of noise complaints due to its location away from main public use areas. All noise complaints are evaluated to ensure future operations, where possible, do not generate unacceptable noise and provide results from noise investigations back to the complainant as soon as practical. Citizens are encouraged to contact 99th Air Base Wing Public Affairs with any noise complaints. The public affairs office can be reached at 702-652-2750.

Figure 3-3. Departure Flight Tracks



APPENDIX C
AIR QUALITY

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

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: NELLIS AFB
County(s): Clark; Lincoln; Nye
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

b. Action Title: Stand-up Tactical Air Support Squadron (TASS) Beddown

c. Project Number/s (if applicable): 2016-0000019-02

d. Projected Action Start Date: 4 / 2015

e. Action Description:

The proposed action would stand up the TASS at Nellis AFB and align it under the 57 CIG. The aircraft requirement of the CIG is based on replicating, in a training environment, the CAS capability across the Air Force. The action would transfer/assign up to 16 Fourth Generation F-16C aircraft to the TASS. Personnel would increase by a total of 109 positions and 170 contract maintenance positions. Fourth Generation aircraft could include a mixture of F-16's and A-10's not to exceed a total of 16 Fourth Generation aircraft. Several facility projects are needed to support this action. The first is the set-up of temporary trailers to support Ops personnel. The second is the construction of an Ops facility for Group and TASS. The third is the construction of a Hanger/AMU and Replacement Admin building. The third is the expansion of the East Side Apron. The fourth is the LOLA Ramp expansion. The fourth is the addition to the Munitions Mx support facility. Additionally, several renovation projects are planned for buildings 239, 241, 234, and 625. It is assumed that the renovations are interior work only, which have a negligible impact on emissions. Therefore, activities associated with renovations are excluded from this ACAM analysis.

f. Point of Contact:
Name: Stephen Moser
Title: GS-11
Organization: 99CES/CEIEC
Email: stephen.moser@us.af.mil
Phone Number: (702)652-2882

2. Analysis: 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. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: _____ applicable
__X__ not applicable

Conformity Analysis Summary:

2015

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Clark Co, NV			

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

VOC	-14.608		
NOx	-49.643		
CO	-49.657		
SOx	-3.685		
PM 10	-6.492	100	No
PM 2.5	-5.887		
Pb	0.000		
NH3	0.000		
CO2e	-10405.0		
Las Vegas, NV			
VOC	-14.608		
NOx	-49.643		
CO	-49.657	100	No
SOx	-3.685		
PM 10	-6.492		
PM 2.5	-5.887		
Pb	0.000		
NH3	0.000		
CO2e	-10405.0		

2016

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Clark Co, NV			
VOC	-19.478		
NOx	-66.191		
CO	-66.209		
SOx	-4.914		
PM 10	-8.656	100	No
PM 2.5	-7.849		
Pb	0.000		
NH3	0.000		
CO2e	-13873.3		
Las Vegas, NV			
VOC	-19.478		
NOx	-66.191		
CO	-66.209	100	No
SOx	-4.914		
PM 10	-8.656		
PM 2.5	-7.849		
Pb	0.000		
NH3	0.000		
CO2e	-13873.3		

2017

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Clark Co, NV			
VOC	-4.046		
NOx	-18.542		
CO	25.164		
SOx	0.722		
PM 10	-1.970	100	No

PM 2.5	-3.282		
Pb	0.000		
NH3	0.013		
CO2e	2733.8		
Las Vegas, NV			
VOC	-4.046		
NOx	-18.542		
CO	25.164	100	No
SOx	0.722		
PM 10	-1.970		
PM 2.5	-3.282		
Pb	0.000		
NH3	0.013		
CO2e	2733.8		

2018

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Clark Co, NV			
VOC	3.032		
NOx	-4.853		
CO	59.952		
SOx	2.996		
PM 10	-0.740	100	No
PM 2.5	-2.171		
Pb	0.000		
NH3	0.013		
CO2e	9428.7		
Las Vegas, NV			
VOC	3.032		
NOx	-4.853		
CO	59.952	100	No
SOx	2.996		
PM 10	-0.740		
PM 2.5	-2.171		
Pb	0.000		
NH3	0.013		
CO2e	9428.7		

2019

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Clark Co, NV			
VOC	-3.684		
NOx	-25.041		
CO	19.988		
SOx	0.005		
PM 10	-3.257	100	No
PM 2.5	-3.642		
Pb	0.000		
NH3	0.013		
CO2e	225.2		
Las Vegas, NV			

VOC	-3.684		
NOx	-25.041		
CO	19.988	100	No
SOx	0.005		
PM 10	-3.257		
PM 2.5	-3.642		
Pb	0.000		
NH3	0.013		
CO2e	225.2		

2020

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Clark Co, NV			
VOC	-3.249		
NOx	-22.188		
CO	22.898		
SOx	0.012		
PM 10	-0.541	100	No
PM 2.5	-3.513		
Pb	0.000		
NH3	0.015		
CO2e	864.7		
Las Vegas, NV			
VOC	-3.249		
NOx	-22.188		
CO	22.898	100	No
SOx	0.012		
PM 10	-0.541		
PM 2.5	-3.513		
Pb	0.000		
NH3	0.015		
CO2e	864.7		

2021

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Clark Co, NV			
VOC	-1.710		
NOx	-14.692		
CO	29.648		
SOx	0.029		
PM 10	22.316	100	No
PM 2.5	-3.176		
Pb	0.000		
NH3	0.018		
CO2e	2786.9		
Las Vegas, NV			
VOC	-1.710		
NOx	-14.692		
CO	29.648	100	No
SOx	0.029		
PM 10	22.316		

PM 2.5	-3.176		
Pb	0.000		
NH3	0.018		
CO2e	2786.9		

2022

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Clark Co, NV			
VOC	-3.282		
NOx	-22.120		
CO	22.772		
SOx	0.012		
PM 10	-3.104	100	No
PM 2.5	-3.501		
Pb	0.000		
NH3	0.014		
CO2e	1123.8		
Las Vegas, NV			
VOC	-3.282		
NOx	-22.120		
CO	22.772	100	No
SOx	0.012		
PM 10	-3.104		
PM 2.5	-3.501		
Pb	0.000		
NH3	0.014		
CO2e	1123.8		

2023 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Clark Co, NV			
VOC	-3.753		
NOx	-25.174		
CO	19.819		
SOx	0.006		
PM 10	-3.257	100	No
PM 2.5	-3.642		
Pb	0.000		
NH3	0.012		
CO2e	460.1		
Las Vegas, NV			
VOC	-3.753		
NOx	-25.174		
CO	19.819	100	No
SOx	0.006		
PM 10	-3.257		
PM 2.5	-3.642		
Pb	0.000		
NH3	0.012		
CO2e	460.1		

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Stephen Moser, GS-11	DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location
Base: NELLIS AFB
County(s): Clark; Lincoln; Nye
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Action Title: Stand-up Tactical Air Support Squadron (TASS) Beddown

- Project Number/s (if applicable): 2016-0000019-02

- Projected Action Start Date: 4 / 2015

- Action Purpose and Need:

Purpose of the Action
Stand-up and activate a Tactical Air Support Squadron (TASS) at Nellis AFB and align/organized under the 57th Close Air Support Integration Group (57 CIG). The 57 CIG is a name-only change of the previously existing 57th Operations Group (57 OG). The renaming was part of an Organizational Change Request (OCR) directed by Commander of Air Combat Command (COMACC). Along with existing Nellis AFB squadrons (6 CTS, 12 CTS, 549 CTS), the TASS would train tactical level Close Air Support (CAS) integration experts to dominate joint combined arms operations, to advance the joint CAS enterprise, and to preserve the USAF CAS culture.

Establishing the TASS under the newly named CIG is a Chief of Staff of the Air Force (CSAF) initiative resulting from the CAS Focus Conference held in March 2015. The CIG and its subordinate squadrons would improve and expand training opportunities for both aviators and in-demand Joint Tactical Air Control Parties (TACP), by using live virtual constructive training and even contracted CAS aircraft for Joint Terminal Attack Controller (JTAC) training.

Need for the Action
Improve and expand training opportunities for both aviators and in-demand Joint TACPs, by using live virtual constructive training and even contracted CAS aircraft for JTAC training. Aligning service exercises to better coordinate CAS training, such as combining Blue Flag exercises with the Army Warfighter Assessment.

The CIG and its subordinate squadrons would improve and expand training opportunities for both aviators and in-demand Joint Tactical Air Control Parties (TACP), by using live virtual constructive training and even contracted CAS aircraft for Joint Terminal Attack Controller (JTAC) training.

- Action Description:

The proposed action would stand up the TASS at Nellis AFB and align it under the 57 CIG. The aircraft requirement of the CIG is based on replicating, in a training environment, the CAS capability across the Air Force. The action would transfer/assign up to 16 Fourth Generation F-16C aircraft to the TASS. Personnel would increase by a total of 109 positions and 170 contract maintenance positions. Fourth Generation aircraft could include a mixture of F-16’s and A-10’s not to exceed a total of 16 Fourth Generation aircraft. Several facility projects are needed to support this action. The first is the set-up of temporary trailers to support Ops personnel. The second is the construction of an Ops facility for Group and TASS. The third is the construction of a Hanger/AMU and Replacement Admin building. The third is the expansion of the East Side Apron. The fourth is the LOLA Ramp expansion. The fourth is the addition to the Munitions Mx support facility. Additionally, several renovation projects are planned for buildings 239, 241, 234, and 625. It is assumed that the renovations are interior work only, which have a negligible impact on emissions. Therefore, activities associated with renovations are excluded from this ACAM analysis.

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Point of Contact

Name: Stephen Moser
Title: GS-11
Organization: 99CES/CEIEC
Email: stephen.moser@us.af.mil
Phone Number: (702)652-2882

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Temporary Trailers to Support Ops (Interim)
3.	Construction / Demolition	Ops Facility for Group and TASS
4.	Construction / Demolition	Hangar/AMU and Replacement Admin Bldg
5.	Construction / Demolition	East Side Apron expansion
6.	Construction / Demolition	LOLA Ramp expansion/Support Facility
7.	Construction	Addition to Munitions Mx support facility
8.	Personnel	Personnel
9.	Aircraft	F-16s Aircraft Operations - Standup to April 17 (10 Jets)
10.	Aircraft	removal of 65 AGRS F-15s from nellis
11.	Heating	Heating for Hangar/AMU and Replacement Admin Bldg
12.	Heating	Heating for Ops Facility
13.	Heating	Heating for Addition to Munitions Mx support facility
14.	Aircraft	F-16s Aircraft Operations - May 17 to June 17 (12 jets)
15.	Aircraft	F-16s Aircraft Operations - July 17 to Sept 17 (14 jets)
16.	Aircraft	F-16s Aircraft Operations - Oct 17 to Dec 18 (16 jets)
17.	Aircraft	F-16s Aircraft Operations - Jan 19 on (10 Jets)

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: Clark
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: Temporary Trailers to Support Ops (Interim)

- Activity Description:
ASSUMPTIONS:
- Facility size: approx 15,000 SF
- Utilities: water, gas, power, comm and sewer for a total of 800 LF of trenching
- Trailers expected to be in use for 5 years. No new parking lot will be constructed
- Total area disturbance: approx. 20,000 SF by 1 ft
- 10% of grading material is hauled off/on site
- Estimated construction timeline: Apr 2017 thru Sep 2017
- 10% of the trenched material is hauled off/on site
- Depth and width of the trench is 4ft

Trench Area = 800*4 = 3,200 SF
Trench volume = 800*4*4 = 12,800 CF
Trench haul material = 12,800 ft3 *10% = 1,280 CF = 48 CY

Grade haul material = 20,000 SF * 1 ft * 10% = 2,000 CF = 70 CY

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Start Date
Start Month: 4
Start Month: 2017

- Activity End Date
Indefinite: False
End Month: 9
End Month: 2017

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.199599
SO_x	0.002526
NO_x	1.397974
CO	1.024697
PM 10	0.756788

Pollutant	Total Emissions (TONs)
PM 2.5	0.064390
Pb	0.000000
NH_3	0.000402
CO_2e	245.5

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2017

- Phase Duration
Number of Month: 3
Number of Days: 0

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 20000
Amount of Material to be Hauled On-Site (yd^3): 70
Amount of Material to be Hauled Off-Site (yd^3): 70

- 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 (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

	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

2.1.3 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	0.1120	0.0014	0.8007	0.5843	0.0396	0.0396	0.0101	132.99
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0674	0.0012	0.5044	0.3568	0.0206	0.0206	0.0060	122.69
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2464	0.0024	1.9508	0.9300	0.0796	0.0796	0.0222	239.64
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0558	0.0007	0.3680	0.3666	0.0221	0.0221	0.0050	66.923

- 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	000.388	000.002	000.353	003.730	000.009	000.008		000.027	00360.796
LDGT	000.502	000.003	000.614	005.613	000.010	000.009		000.028	00468.695
HDGV	001.047	000.005	001.651	020.421	000.025	000.022		000.045	00800.782
LDDV	000.131	000.003	000.179	002.675	000.004	000.004		000.008	00356.291
LDDT	000.363	000.005	000.585	005.524	000.007	000.007		000.008	00525.919
HDDV	000.632	000.014	006.941	002.223	000.268	000.246		000.029	01568.712
MC	003.061	000.003	000.836	013.798	000.027	000.024		000.051	00395.491

2.1.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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

2.2 Trenching/Excavating Phase

2.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2017

- Phase Duration
Number of Month: 3
Number of Days: 0

2.2.2 Trenching / Excavating Phase Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft^2): 3200
Amount of Material to be Hauled On-Site (yd^3): 48
Amount of Material to be Hauled Off-Site (yd^3): 48

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 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

2.2.3 Trenching / Excavating 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	0.1120	0.0014	0.8007	0.5843	0.0396	0.0396	0.0101	132.99
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0674	0.0012	0.5044	0.3568	0.0206	0.0206	0.0060	122.69
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2464	0.0024	1.9508	0.9300	0.0796	0.0796	0.0222	239.64
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0558	0.0007	0.3680	0.3666	0.0221	0.0221	0.0050	66.923

- 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	000.388	000.002	000.353	003.730	000.009	000.008		000.027	00360.796
LDGT	000.502	000.003	000.614	005.613	000.010	000.009		000.028	00468.695
HDGV	001.047	000.005	001.651	020.421	000.025	000.022		000.045	00800.782
LDDV	000.131	000.003	000.179	002.675	000.004	000.004		000.008	00356.291
LDDT	000.363	000.005	000.585	005.524	000.007	000.007		000.008	00525.919

HDDV	000.632	000.014	006.941	002.223	000.268	000.246		000.029	01568.712
MC	003.061	000.003	000.836	013.798	000.027	000.024		000.051	00395.491

2.2.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location
County: Clark
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: Ops Facility for Group and TASS

- Activity Description:
Ops Facility for Group and TASS- Bldg sized for 90-100 PN

ASSUMPTIONS:
- Facility size: approx. 24,000 SF (2 stories).
- Utilities: water, gas, power, comm and sewer for a total of 800 LF of trenching.
- Parking lot: approx. 25,000 SF parking lot addition
- Total area disturbance: approx. 90,000 SF
- Estimated construction timeline: Apr 2020-Apr 2021
- The analysis is based on the assumption that each floor of the building is 12ft in height.
- 10% of grading material is hauled off/on site
- 10% of the trenched material is hauled off/on site
- Depth and width of the trench is 4ft

Trench Area = 800*4 = 3,200 SF
Trench volume = 800*4*4 = 12,800 CF
Trench haul material = 12,800 ft3 *10% = 1,280 CF = 48 CY

Grade haul material = 20,000 SF * 1 ft * 10% = 2,000 CF = 70 CY

Architectural Coating = 4 * (Surface Area)^1/2 * Height = 4 * (24,000)^1/2 * 2 (two storied building) * 12 ft = 14,900 SF

- Activity Start Date
Start Month: 4
Start Month: 2020

- Activity End Date
Indefinite: False
End Month: 4
End Month: 2021

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.481393
SO_x	0.004287

Pollutant	Total Emissions (TONs)
PM 2.5	0.088904
Pb	0.000000

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

NO_x	1.902228
CO	1.966599
PM 10	0.669848

NH_3	0.001512
CO_2e	415.2

3.1 Site Grading Phase

3.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2020

- Phase Duration
Number of Month: 0
Number of Days: 19

3.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 90000
Amount of Material to be Hauled On-Site (yd^3): 70
Amount of Material to be Hauled Off-Site (yd^3): 70

- 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 (yd^3): 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

3.1.3 Site Grading Phase Emission Factor(s)

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

3.1.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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

3.2 Trenching/Excavating Phase

3.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2020

- Phase Duration
Number of Month: 0
Number of Days: 19

3.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 3200
Amount of Material to be Hauled On-Site (yd^3): 48
Amount of Material to be Hauled Off-Site (yd^3): 48

- 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 Equipmen Composite	1	8

Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 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

3.2.3 Trenching / Excavating 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	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

3.2.4 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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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

3.3 Building Construction Phase

3.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2020

- Phase Duration
Number of Month: 9
Number of Days: 14

3.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 24000
Height of Building (ft): 24
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

3.3.3 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	0.0898	0.0013	0.6610	0.3917	0.0256	0.0256	0.0081	128.83
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e

Emission Factors	0.0320	0.0006	0.1690	0.2160	0.0070	0.0070	0.0028	54.467
Generator Sets Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0395	0.0006	0.3232	0.2731	0.0149	0.0149	0.0035	61.081
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897
Welders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0310	0.0003	0.1734	0.1816	0.0102	0.0102	0.0027	25.672

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

3.3.4 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 (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
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 (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
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

3.4 Architectural Coatings Phase

3.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 19

3.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 14900
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

3.4.3 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

3.4.4 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 (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 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 (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

3.5 Paving Phase

3.5.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 4

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 19

3.5.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 25000

- 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

3.5.3 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	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

3.5.4 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 (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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 (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

4. Construction / Demolition

4.1 General Information & Timeline Assumptions

- Activity Location
County: Clark
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: Hangar/AMU and Replacement Admin Bldg

- Activity Description:
To support 200 PN in the hangar/AMUand another 50 in the admin bldg. (replacement for bldg that will be in the footprint of the new hangar).

ASSUMPTIONS:
- Facility size: approx. 45,000 SF for Hangar/AMU and 10,000 SF for replacement admin facility
- Utilities: water, gas, power, comm and sewer for a total of 1000 LF of trenching
- Parking lot: approx. 90,000 SF parking lot
- Total area disturbance: approx. 200,000 SF
- Estimated construction timeline: Apr 2020-Oct 2021
- Each floor of the building is 12ft in height with 2 floor height

Trench Area = 1,000*4 = 4,000 SF
Trench volume = 1,000*4*4 = 16,000 CF
Trench haul material = 16,000 CF *10% = 1,600 CF = 59 CY

Grade haul material = 200,000 SF * 1 ft * 10% = 20,000 CF = 741 CY

Architectural Coating = 4 * (Surface Area)^1/2 * Height = 4 x(55,000)^1/2 * 2 (two storied building) x 12 ft = 22,514 ft2

- Activity Start Date
Start Month: 4
Start Month: 2020

- Activity End Date
Indefinite: False
End Month: 9
End Month: 2021

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.753983
SO_x	0.006875
NO_x	3.060225
CO	3.125699
PM 10	2.147618

Pollutant	Total Emissions (TONs)
PM 2.5	0.142521
Pb	0.000000
NH_3	0.002653
CO_2e	669.4

4.1 Demolition Phase

4.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2020

- Phase Duration
Number of Month: 0
Number of Days: 28

4.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 8400
Height of Building to be demolished (ft): 12

- Default Settings Used: Yes

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 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

4.1.3 Demolition Phase Emission Factor(s)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0483	0.0006	0.3409	0.3782	0.0195	0.0195	0.0043	58.572
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

4.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (0.00042 * BA * BH) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
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} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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

4.2 Site Grading Phase

4.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2020

- Phase Duration
Number of Month: 0
Number of Days: 28

4.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 200000
Amount of Material to be Hauled On-Site (yd^3): 741
Amount of Material to be Hauled Off-Site (yd^3): 741

- 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	8

Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 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

4.2.3 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	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

4.2.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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

4.3 Trenching/Excavating Phase

4.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 4

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Quarter: 1
Start Year: 2020

- Phase Duration
Number of Month: 0
Number of Days: 28

4.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 16000
Amount of Material to be Hauled On-Site (yd^3): 59
Amount of Material to be Hauled Off-Site (yd^3): 59

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 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

4.3.3 Trenching / Excavating 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	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

4.3.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

4.4 Building Construction Phase

4.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2020

- Phase Duration
Number of Month: 14
Number of Days: 6

4.4.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 55000
Height of Building (ft): 24
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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- 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

4.4.3 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	0.0898	0.0013	0.6610	0.3917	0.0256	0.0256	0.0081	128.83
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0320	0.0006	0.1690	0.2160	0.0070	0.0070	0.0028	54.467
Generator Sets Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0395	0.0006	0.3232	0.2731	0.0149	0.0149	0.0035	61.081
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897
Welders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0310	0.0003	0.1734	0.1816	0.0102	0.0102	0.0027	25.672

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

4.4.4 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 (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
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 (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

4.5 Architectural Coatings Phase

4.5.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 8
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 28

4.5.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 22514
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

4.5.3 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

4.5.4 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 (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 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 (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

4.6 Paving Phase

4.6.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 9
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 28

4.6.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 90000

- 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	2	6
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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

4.6.3 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	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

4.6.4 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 (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)

HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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 (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

5. Construction / Demolition

5.1 General Information & Timeline Assumptions

- Activity Location
County: Clark
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: East Side Apron expansion

- Activity Description:
Constructs an addition to the east side apron to accommodate large frame aircraft

ASSUMPTIONS:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Size: total of 45,100 SY concrete and asphalt pavements to be constructed in already disturbed area; PCC apron = 292,000 SF (730' by 400'), asphalt = 66,100 SF= 64,000 SF (730' by 400') apron and 50,400 SF (2,100' by 24') road
- Utilities: No utility displacements expected except for 1,200 LF edge lighting at 2' deep
- No new parking lot
- Total area disturbance: approx. 600,000 SF
- 10% of grading material is hauled off/on site
- Estimated construction timeline: Apr 2021-Apr 2022

Trench Area = 1,200*2 = 2,400 SF

Grade haul material = 600,000 SF * 1 ft * 10% = 60,000 CF = 2,222 CY

- Activity Start Date
Start Month: 4
Start Month: 2021

- Activity End Date
Indefinite: False
End Month: 2
End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.968542
SO_x	0.014145
NO_x	6.347442
CO	5.863741
PM 10	18.201359

Pollutant	Total Emissions (TONs)
PM 2.5	0.283703
Pb	0.000000
NH_3	0.003245
CO_2e	1403.4

5.1 Site Grading Phase

5.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 3
Number of Days: 0

5.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 600000
Amount of Material to be Hauled On-Site (yd^3): 2222
Amount of Material to be Hauled Off-Site (yd^3): 2222

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

- Construction Exhaust (default)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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	2	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 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

5.1.3 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	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Scrapers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1814	0.0026	1.2262	0.7745	0.0491	0.0491	0.0163	262.89
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139

MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

5.1.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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

5.2 Trenching/Excavating Phase

5.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 0
Number of Days: 14

5.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 2400
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 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

5.2.3 Trenching / Excavating 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	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1814	0.0026	1.2262	0.7745	0.0491	0.0491	0.0163	262.89
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

5.2.4 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 (yd^3)

$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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

5.3 Building Construction Phase

5.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 10
Number of Days: 0

5.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 135000
Height of Building (ft): 3
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: No

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Air Compressors Composite	2	8
Cement and Mortar Mixers Composite	2	6
Concrete/Industrial Saws Composite	1	6
Generator Sets Composite	1	8
Graders Composite	1	4
Rollers Composite	2	6
Rubber Tired Dozers Composite	1	8
Surfacing Equipment Composite	2	6
Tractors/Loaders/Backhoes Composite	2	7
Welders Composite	1	3

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20

- 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

- 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

- Vendor Trips Vehicle Mixture (%)

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

5.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Air Compressors Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0441	0.0007	0.2927	0.3051	0.0158	0.0158	0.0039	63.706
Cement and Mortar Mixers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0085	0.0001	0.0535	0.0414	0.0021	0.0021	0.0007	7.2674
Concrete/Industrial Saws Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0443	0.0006	0.3176	0.3761	0.0170	0.0170	0.0040	58.563
Generator Sets Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0362	0.0006	0.2977	0.2707	0.0130	0.0130	0.0032	61.074
Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e

Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Rollers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0539	0.0007	0.3483	0.3816	0.0205	0.0205	0.0048	67.160
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Surfacing Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0779	0.0016	0.5953	0.3859	0.0216	0.0216	0.0070	166.13
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890
Welders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0280	0.0003	0.1634	0.1787	0.0088	0.0088	0.0025	25.665

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

5.3.4 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 (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
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 (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
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

5.4 Paving Phase

5.4.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 3
Number of Days: 0

5.4.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 66100

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- 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	2	6
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

5.4.3 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	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1814	0.0026	1.2262	0.7745	0.0491	0.0491	0.0163	262.89
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124

HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

5.4.4 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 (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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 (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

6. Construction / Demolition

6.1 General Information & Timeline Assumptions

- Activity Location
County: Clark
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: LOLA Ramp expansion/Support Facility

- Activity Description:
LOLA Ramp expansion/Support Facility- to accommodate anticipated mission munitions requirements

ASSUMPTIONS:
- Size: total of 11,470 SY concrete and asphalt pavements to be constructed in already disturbed area; apron = 103,200 SF (215’ by 480’), asphalt = 29,760 SF (1,240’ by 24’) asphault shoulders
- Utilities: 1,500 LF edge lighting and 500 ft other utilities at 3’ deep/wide
- No new parking lot
- Total area disturbance: approx. 180,000 SF
- Estimated construction timeline: Apr 2021-Apr 2022

Trench Area = 1,200*3 = 3,600 SF
Trench volume = 3,600*3*3 = 10,800 CF
Trench haul material = 10,800 CF *10% = 1,080 CF = 40 CY

Grade haul material = 180,000 SF * 1 ft * 10% = 18,000 CF = 667 CY

- Activity Start Date
Start Month: 4
Start Month: 2021

- Activity End Date
Indefinite: False
End Month: 6
End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.829095
SO_x	0.012314
NO_x	5.469001
CO	5.122057
PM 10	7.440648

Pollutant	Total Emissions (TONs)
PM 2.5	0.242090
Pb	0.000000
NH_3	0.002759
CO_2e	1218.9

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

6.1 Site Grading Phase

6.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 4
Number of Days: 0

6.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 180000
Amount of Material to be Hauled On-Site (yd^3): 667
Amount of Material to be Hauled Off-Site (yd^3): 667

- 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	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 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

6.1.3 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	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93

Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

6.1.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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

6.2 Trenching/Excavating Phase

6.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 1
Number of Days: 0

6.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 3600
Amount of Material to be Hauled On-Site (yd^3): 40
Amount of Material to be Hauled Off-Site (yd^3): 40

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 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

6.2.3 Trenching / Excavating 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	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

6.2.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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

6.3 Building Construction Phase

6.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 10

Number of Days: 0

6.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 103200
Height of Building (ft): 3
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Air Compressors Composite	2	8
Cement and Mortar Mixers Composite	2	6
Concrete/Industrial Saws Composite	1	6
Generator Sets Composite	1	6
Graders Composite	1	4
Rollers Composite	2	6
Rubber Tired Dozers Composite	1	8
Surfacing Equipment Composite	2	6
Tractors/Loaders/Backhoes Composite	2	8
Welders Composite	1	3

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20

- 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

- 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

- Vendor Trips Vehicle Mixture (%)

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

6.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Air Compressors Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Emission Factors	0.0441	0.0007	0.2927	0.3051	0.0158	0.0158	0.0039	63.706
Cement and Mortar Mixers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0085	0.0001	0.0535	0.0414	0.0021	0.0021	0.0007	7.2674
Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0443	0.0006	0.3176	0.3761	0.0170	0.0170	0.0040	58.563
Generator Sets Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0362	0.0006	0.2977	0.2707	0.0130	0.0130	0.0032	61.074
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Rollers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0539	0.0007	0.3483	0.3816	0.0205	0.0205	0.0048	67.160
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Surfacing Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0779	0.0016	0.5953	0.3859	0.0216	0.0216	0.0070	166.13
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890
Welders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0280	0.0003	0.1634	0.1787	0.0088	0.0088	0.0025	25.665

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

6.3.4 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 (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
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 (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
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

6.4 Paving Phase

6.4.1 Paving Phase Timeline Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 1
Number of Days: 0

6.4.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 29760

- 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

6.4.3 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	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- 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	000.217	003.152	000.007	000.006		000.023	00333.001
LDGT	000.353	000.003	000.387	004.397	000.009	000.008		000.024	00429.124
HDGV	000.778	000.005	001.126	016.414	000.020	000.018		000.045	00792.406
LDDV	000.104	000.003	000.137	002.597	000.004	000.004		000.008	00323.890
LDDT	000.248	000.004	000.397	004.475	000.007	000.006		000.008	00459.539
HDDV	000.483	000.013	005.163	001.750	000.175	000.161		000.028	01528.139
MC	003.015	000.003	000.828	013.258	000.027	000.023		000.053	00395.795

6.4.4 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 (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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 (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

7. Construction / Demolition

7.1 General Information & Timeline Assumptions

- Activity Location
County: Clark
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: Addition to Munitions Mx support facility

- Activity Description:
Small building addition to accommodate an additional 20 personnel.

ASSUMPTIONS:
- Size: approximately 1,200 SF addition
- Utilities: approx. 100 LF
- Parking: Approx 5,000 SF parking addition
- Total area disturbance: approx. 20,000 SF
- Estimated construction timeline: Jun 2018-Apr 2019
- This analysis is based on the assumption that each floor of the building is 12ft in height.

Architectural Coating = 4 * (Surface Area)^1/2 * Height = 4 * (1,200')^1/2 * 1' (one storied building) x 12' = 1,700 SF

- Activity Start Date
Start Month: 6
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 4
End Month: 2019

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.217648
SO_x	0.002626
NO_x	1.267005

Pollutant	Total Emissions (TONs)
PM 2.5	0.060093
Pb	0.000000
NH_3	0.000772

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

CO	1.157306		CO_2e	254.8
PM 10	0.260924			

7.1 Site Grading Phase

7.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 1
Number of Days: 0

7.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 20000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 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 (yd^3): 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

7.1.3 Site Grading Phase Emission Factor(s)

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

Graders Composite

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- 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	000.347	000.002	000.298	003.513	000.008	000.007		000.025	00352.061
LDGT	000.444	000.003	000.525	005.150	000.010	000.009		000.027	00454.877
HDGV	000.943	000.005	001.449	018.879	000.023	000.020		000.045	00797.765
LDDV	000.115	000.003	000.156	002.578	000.004	000.004		000.008	00344.974
LDDT	000.319	000.004	000.513	005.136	000.007	000.007		000.008	00501.756
HDDV	000.576	000.014	006.275	002.043	000.232	000.213		000.029	01554.144
MC	003.044	000.003	000.833	013.597	000.027	000.024		000.052	00395.604

7.1.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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

7.2 Trenching/Excavating Phase

7.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 0
Number of Days: 14

7.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 400
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 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

7.2.3 Trenching / Excavating 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	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- 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	000.347	000.002	000.298	003.513	000.008	000.007		000.025	00352.061
LDGT	000.444	000.003	000.525	005.150	000.010	000.009		000.027	00454.877
HDGV	000.943	000.005	001.449	018.879	000.023	000.020		000.045	00797.765
LDDV	000.115	000.003	000.156	002.578	000.004	000.004		000.008	00344.974
LDDT	000.319	000.004	000.513	005.136	000.007	000.007		000.008	00501.756
HDDV	000.576	000.014	006.275	002.043	000.232	000.213		000.029	01554.144
MC	003.044	000.003	000.833	013.597	000.027	000.024		000.052	00395.604

7.2.4 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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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

7.3 Building Construction Phase

7.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2018

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Phase Duration
Number of Month: 9
Number of Days: 0

7.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 1200
Height of Building (ft): 12
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

7.3.3 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	0.1012	0.0013	0.7908	0.4059	0.0318	0.0318	0.0091	128.85
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0371	0.0006	0.2186	0.2173	0.0101	0.0101	0.0033	54.479
Tractors/Loaders/Backhoes Composite								

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- 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	000.347	000.002	000.298	003.513	000.008	000.007		000.025	00352.061
LDGT	000.444	000.003	000.525	005.150	000.010	000.009		000.027	00454.877
HDGV	000.943	000.005	001.449	018.879	000.023	000.020		000.045	00797.765
LDDV	000.115	000.003	000.156	002.578	000.004	000.004		000.008	00344.974
LDDT	000.319	000.004	000.513	005.136	000.007	000.007		000.008	00501.756
HDDV	000.576	000.014	006.275	002.043	000.232	000.213		000.029	01554.144
MC	003.044	000.003	000.833	013.597	000.027	000.024		000.052	00395.604

7.3.4 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 (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
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 (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
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

7.4 Architectural Coatings Phase

7.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2019

- Phase Duration
Number of Month: 1
Number of Days: 0

7.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 1700
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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

7.4.3 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	000.347	000.002	000.298	003.513	000.008	000.007		000.025	00352.061
LDGT	000.444	000.003	000.525	005.150	000.010	000.009		000.027	00454.877
HDGV	000.943	000.005	001.449	018.879	000.023	000.020		000.045	00797.765
LDDV	000.115	000.003	000.156	002.578	000.004	000.004		000.008	00344.974
LDDT	000.319	000.004	000.513	005.136	000.007	000.007		000.008	00501.756
HDDV	000.576	000.014	006.275	002.043	000.232	000.213		000.029	01554.144
MC	003.044	000.003	000.833	013.597	000.027	000.024		000.052	00395.604

7.4.4 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 (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 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 (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

7.5 Paving Phase

7.5.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 4
Start Quarter: 1
Start Year: 2019

- Phase Duration

Number of Month: 1
Number of Days: 0

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

7.5.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft^2): 5000

- 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

7.5.3 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	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- 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	000.347	000.002	000.298	003.513	000.008	000.007		000.025	00352.061
LDGT	000.444	000.003	000.525	005.150	000.010	000.009		000.027	00454.877
HDGV	000.943	000.005	001.449	018.879	000.023	000.020		000.045	00797.765
LDDV	000.115	000.003	000.156	002.578	000.004	000.004		000.008	00344.974
LDDT	000.319	000.004	000.513	005.136	000.007	000.007		000.008	00501.756

HDDV	000.576	000.014	006.275	002.043	000.232	000.213		000.029	01554.144
MC	003.044	000.003	000.833	013.597	000.027	000.024		000.052	00395.604

7.5.4 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 (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
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 (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

8. Personnel

8.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Clark
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: Personnel

- Activity Description:
The proposed action would add up to 16 F-16C aircraft (14 PAI and 2 BAI) to Nellis AFB. Local base manpower would increase by 109 active duty and federal civilian positions and up to 170 civilian contract maintenance positions.

In another, but similar, action completed on 31 March 2015, the AF transferred/retired 19 Total Aircraft Inventory (TAI) F-15C/D aircraft from the 65th Aggressor Squadron (65 AGRS) at Nellis AFB. The 65 AGRS was inactivated and the action was part of the larger AF effort to recapitalize existing infrastructure, acquire new weapons systems, and meet budget constraints levied by Congressional sequester. The action also resulted in the reduction of 202 manpower positions.

The addition of aircraft and personnel for the CIG/TASS is similar in magnitude to the reductions experienced in the 65 AGRS approximately one year ago.

- Activity Start Date
Start Month: 1
Start Year: 2017

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.223998
SO_x	0.001160
NO_x	0.229560
CO	2.233863
PM 10	0.004388

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.003931
Pb	0.000000
NH_3	0.012367
CO_2e	188.4

8.2 Personnel Assumptions

- Number of Personnel

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Active Duty Personnel: 30
Civilian Personnel: 0
Support Contractor Personnel: 47
Air National Guard (ANG) Personnel: 0
Reserve Personnel: 0

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

- Personnel Work Schedule
Active Duty Personnel: 5 Days Per Week (default)
Civilian Personnel: 5 Days Per Week (default)
Support Contractor Personnel: 5 Days Per Week (default)
Air National Guard (ANG) Personnel: 4 Days Per Week (default)
Reserve Personnel: 4 Days Per Month (default)

8.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

8.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.388	000.002	000.353	003.730	000.009	000.008		000.027	00360.796
LDGT	000.502	000.003	000.614	005.613	000.010	000.009		000.028	00468.695
HDGV	001.047	000.005	001.651	020.421	000.025	000.022		000.045	00800.782
LDDV	000.131	000.003	000.179	002.675	000.004	000.004		000.008	00356.291
LDDT	000.363	000.005	000.585	005.524	000.007	000.007		000.008	00525.919
HDDV	000.632	000.014	006.941	002.223	000.268	000.246		000.029	01568.712
MC	003.061	000.003	000.836	013.798	000.027	000.024		000.051	00395.491

8.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year
$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel
WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year
$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year
$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

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

9. Aircraft

9.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Clark; Lincoln; Nye
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: F-16s Aircraft Operations - Standup to April 17 (10 Jets)

- Activity Description:
10 Jets (approx 1152 sorties)

- Activity Start Date
Start Month: 1
Start Year: 2017

- Activity End Date
Indefinite: No
End Month: 4
End Year: 2017

- Activity Emissions:

Pollutant	Total Emissions (TONs)	Pollutant	Total Emissions (TONs)
VOC	1.999468	PM 2.5	1.116820
SO_x	1.108567	Pb	0.000000
NO_x	10.717083	NH_3	0.000000
CO	16.610652	CO_2e	3132.0
PM 10	1.396298		

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)	Pollutant	Total Emissions (TONs)
VOC	1.230245	PM 2.5	0.887132
SO_x	0.970567	Pb	0.000000
NO_x	8.719244	NH_3	0.000000
CO	10.725768	CO_2e	3017.2
PM 10	1.157220		

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Total Emissions (TONs)	Pollutant	Total Emissions (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

VOC	0.769224
SO_x	0.138000
NO_x	1.997839
CO	5.884884
PM 10	0.239079

PM 2.5	0.229688
Pb	0.000000
NH_3	0.000000
CO_2e	114.8

9.2 Aircraft & Engines

9.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-16C
Engine Model: F100-PW-200
Primary Function: Combat
Number of Engines: 1

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

9.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1005.95	2.05	1.06	6.21	24.06	2.49	2.24	3234
Approach	3251.45	0.05	1.06	17.93	1.22	2.37	2.13	3234
Intermediate	5650.65	0.07	1.06	26.55	0.38	1.58	1.42	3234
Military	8888.05	0.11	1.06	34.32	0.56	1.58	1.42	3234
After Burn	40122.70	0.69	1.06	6.63	10.42	3.04	2.74	3234

9.3 Flight Operations

9.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 10
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 1152
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 24

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out (mins): 18.5 (default)
Takeoff (mins): 0.4 (default)
Climb Out (mins): 0.8 (default)
Approach (mins): 3.5 (default)
Taxi/Idle In (mins): 11.3 (default)

- Trim Test
Idle (mins): 12 (default)
Approach (mins): 27 (default)
Intermediate (mins): 9 (default)

Military (mins): 9 (default)
AfterBurn (mins): 3 (default)

9.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year
AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + $AEM_{APPROACH}$ + $AEM_{CLIMBOUT}$ + $AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
AE_{TGO} = $AEM_{APPROACH}$ + $AEM_{CLIMBOUT}$ + $AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL}$ = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

9.4 Auxiliary Power Unit (APU)

9.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
1	1	No	T-62T-40-8	

9.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
T-62T-40-8	272.6	0.493	0.289	1.216	3.759	0.131	0.037	910.8

9.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
NA: Number of Aircraft
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

9.5 Aerospace Ground Equipment (AGE)

9.5.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 1152

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	2	No	Air Compressor	MC-11
1	1	No	Bomb Lift	MJ-1B
1	0.33	No	Generator Set	A/M32A-86D
1	0.5	No	Heater	H1
1	0.5	No	Hydraulic Test Stand	MJ-2/TTU-228 - 130hp
1	8	No	Light Cart	NF-2
1	0.33	No	Start Cart	A/M32A-60A

9.5.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-11	1.8	0.276	0.004	0.177	12.262	0.109	0.100	34.8
MJ-1B	0.0	3.040	0.219	4.780	3.040	0.800	0.776	141.2
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
MJ-2/TTU-228 - 130hp	7.4	0.195	0.053	3.396	0.794	0.089	0.086	168.8
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

9.5.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year
$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

10. Aircraft

10.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location
County: Clark; Lincoln; Nye
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: removal of 65 AGRS F-15s from nellis

- Activity Description:
In another, but similar, action completed on 31 March 2015, the AF transferred/retired 19 Total Aircraft Inventory (TAI) F-15C/D aircraft from the 65th Aggressor Squadron (65 AGRS) at Nellis AFB. The 65 AGRS

was inactivated and the action was part of the larger AF effort to recapitalize existing infrastructure, acquire new weapons systems, and meet budget constraints levied by Congressional sequester. The action also resulted in the reduction of 202 manpower positions.

- Activity Start Date
Start Month: 4
Start Year: 2015

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	-19.477928
SO_x	-4.913678
NO_x	-66.191228
CO	-66.209065
PM 10	-8.656452

Pollutant	Emissions Per Year (TONs)
PM 2.5	-7.848697
Pb	0.000000
NH_3	0.000000
CO_2e	-13873.3

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	-16.669460
SO_x	-4.409835
NO_x	-58.897034
CO	-44.723108
PM 10	-7.783565

Pollutant	Emissions Per Year (TONs)
PM 2.5	-7.010097
Pb	0.000000
NH_3	0.000000
CO_2e	-13454.2

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	-2.808468
SO_x	-0.503843
NO_x	-7.294194
CO	-21.485957
PM 10	-0.872887

Pollutant	Emissions Per Year (TONs)
PM 2.5	-0.838600
Pb	0.000000
NH_3	0.000000
CO_2e	-419.1

10.2 Aircraft & Engines

10.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-15E
Engine Model: F100-PW-220
Primary Function: Combat
Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

10.2.2 Aircraft & Engines Emission Factor(s)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1084.00	7.94	1.06	4.61	35.30	2.06	1.85	3234
Approach	3837.00	5.12	1.06	12.53	1.92	2.63	2.37	3234
Intermediate	5770.00	2.89	1.06	22.18	0.86	2.06	1.85	3234
Military	9679.00	1.79	1.06	29.32	0.86	1.33	1.20	3234
After Burn	41682.00	1.53	1.06	8.37	11.99	1.15	1.04	3234

10.3 Flight Operations

10.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 19
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 1402
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 24

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out (mins): 18.5 (default)
Takeoff (mins): 0.4 (default)
Climb Out (mins): 0.8 (default)
Approach (mins): 3.5 (default)
Taxi/Idle In (mins): 11.3 (default)

- Trim Test

Idle (mins): 12 (default)
Approach (mins): 27 (default)
Intermediate (mins): 9 (default)
Military (mins): 9 (default)
AfterBurn (mins): 3 (default)

10.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
AE_{TGO} = $AEM_{APPROACH}$ + $AEM_{CLIMBOUT}$ + $AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL}$ = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
AE_{TRIM} = $AEPS_{IDLE}$ + $AEPS_{APPROACH}$ + $AEPS_{INTERMEDIATE}$ + $AEPS_{MILITARY}$ + $AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

10.4 Auxiliary Power Unit (APU)

10.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

10.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

10.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
NA: Number of Aircraft
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

10.5 Aerospace Ground Equipment (AGE)

10.5.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 1402

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	2	No	Air Compressor	MC-11
1	1	No	Bomb Lift	MJ-1B
1	0.33	No	Generator Set	A/M32A-86D
1	0.5	No	Heater	H1
1	0.5	No	Hydraulic Test Stand	MJ-2/TTU-228 - 130hp
1	8	No	Light Cart	NF-2
1	0.33	No	Start Cart	A/M32A-60A

10.5.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-11	1.8	0.276	0.004	0.177	12.262	0.109	0.100	34.8
MJ-1B	0.0	3.040	0.219	4.780	3.040	0.800	0.776	141.2
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
MJ-2/TTU-228 - 130hp	7.4	0.195	0.053	3.396	0.794	0.089	0.086	168.8
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

10.5.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year
AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

11. Heating

11.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Clark
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: Heating for Hangar/AMU and Replacement Admin Bldg

- Activity Description:
Facility size: 55,000 SF; approx. 45,000 SF for Hangar/AMU and 10,000 SF for replacement admin facility.

- Activity Start Date
Start Month: 1
Start Year: 2021

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.009738
SO_x	0.001062
NO_x	0.177048
CO	0.148720
PM 10	0.013456

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.013456
Pb	0.000000
NH_3	0.000000
CO_2e	213.1

11.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 55000
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)

Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0676

- Default Settings Used: Yes

- Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

11.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

11.4 Heating Formula(s)

- Heating Fuel Consumption ft^3 per Year
FC_{HER}= HA * EI / HV / 1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

- Heating Emissions per Year
HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

12. Heating

12.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Clark
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: Heating for Ops Facility

- Activity Description:
Ops Facility for Group and TASS- Bldg sized for 90-100 PN Fac size: approx. 24,000 SF (2 stories).

- Activity Start Date
Start Month: 1
Start Year: 2021

- Activity End Date

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.004507
SO_x	0.000492
NO_x	0.081943
CO	0.068832
PM 10	0.006228

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.006228
Pb	0.000000
NH_3	0.000000
CO_2e	98.7

12.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 24000
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0717

- Default Settings Used: Yes

- Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

12.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

12.4 Heating Formula(s)

- Heating Fuel Consumption ft^3 per Year
FC_{HER}= HA * EI / HV / 1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

- Heating Emissions per Year
HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

13. Heating

13.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Clark
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: Heating for Addition to Munitions Mx support facility

- Activity Description:
Addition to Munitions Mx support facility- small building addition to accommodate an additional 20 PN. Size: approximately 1,200 SF addition

- Activity Start Date
Start Month: 4
Start Year: 2019

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.000253
SO_x	0.000028
NO_x	0.004606
CO	0.003869
PM 10	0.000350

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000350
Pb	0.000000
NH_3	0.000000
CO_2e	5.5

13.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 1200
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0806

- Default Settings Used: Yes

- Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

13.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e

5.5	0.6	100	84	7.6	7.6			120390

13.4 Heating Formula(s)

- Heating Fuel Consumption ft^3 per Year

FC_{HER}= HA * EI / HV / 1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

- Heating Emissions per Year

HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

14. Aircraft

14.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Clark; Nye; Lincoln
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: F-16s Aircraft Operations - May 17 to June 17 (12 jets)

- Activity Description:
12 Jets (approx 1768 sorties)

- Activity Start Date
Start Month: 5
Start Year: 2017

- Activity End Date
Indefinite: No
End Month: 6
End Year: 2017

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	2.762501
SO_x	0.919314
NO_x	7.435857
CO	14.954120
PM 10	0.966804

Pollutant	Total Emissions (TONs)
PM 2.5	0.739177
Pb	0.000000
NH_3	0.000000
CO_2e	2621.4

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	2.172229
SO_x	0.813418
NO_x	5.902793
CO	10.438289
PM 10	0.783344

Pollutant	Total Emissions (TONs)
PM 2.5	0.562924
Pb	0.000000
NH_3	0.000000
CO_2e	2533.3

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Total Emissions (TONs)
VOC	0.590272
SO_x	0.105896
NO_x	1.533064
CO	4.515831
PM 10	0.183460

Pollutant	Total Emissions (TONs)
PM 2.5	0.176253
Pb	0.000000
NH_3	0.000000
CO_2e	88.1

14.2 Aircraft & Engines

14.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-16C
Engine Model: F100-PW-220
Primary Function: Combat
Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

14.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1084.00	7.94	1.06	4.61	35.30	2.06	1.85	3234
Approach	3837.00	5.12	1.06	12.53	1.92	2.63	2.37	3234
Intermediate	5770.00	2.89	1.06	22.18	0.86	2.06	1.85	3234
Military	9679.00	1.79	1.06	29.32	0.86	1.33	1.20	3234
After Burn	41682.00	1.53	1.06	8.37	11.99	1.15	1.04	3234

14.3 Flight Operations

14.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 12
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 1768
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 24

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out (mins): 18.5 (default)
Takeoff (mins): 0.4 (default)
Climb Out (mins): 0.8 (default)
Approach (mins): 3.5 (default)
Taxi/Idle In (mins): 11.3 (default)

- Trim Test
Idle (mins): 12 (default)
Approach (mins): 27 (default)
Intermediate (mins): 9 (default)
Military (mins): 9 (default)
AfterBurn (mins): 3 (default)

14.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year
$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL}$ = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
AE_{TRIM} = $AEPS_{IDLE}$ + $AEPS_{APPROACH}$ + $AEPS_{INTERMEDIATE}$ + $AEPS_{MILITARY}$ + $AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

14.4 Auxiliary Power Unit (APU)

14.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
1	1	No	T-62T-40-8	

14.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
T-62T-40-8	272.6	0.493	0.289	1.216	3.759	0.131	0.037	910.8

14.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
NA: Number of Aircraft

EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

14.5 Aerospace Ground Equipment (AGE)

14.5.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 1768

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	2	No	Air Compressor	MC-11
1	1	No	Bomb Lift	MJ-1B
1	0.33	No	Generator Set	A/M32A-86D
1	0.5	No	Heater	H1
1	0.5	No	Hydraulic Test Stand	MJ-2/TTU-228 - 130hp
1	8	No	Light Cart	NF-2
1	0.33	No	Start Cart	A/M32A-60A

14.5.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-11	1.8	0.276	0.004	0.177	12.262	0.109	0.100	34.8
MJ-1B	0.0	3.040	0.219	4.780	3.040	0.800	0.776	141.2
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
MJ-2/TTU-228 - 130hp	7.4	0.195	0.053	3.396	0.794	0.089	0.086	168.8
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

14.5.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year
AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

15. Aircraft

15.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Location
County: Clark; Lincoln; Nye
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: F-16s Aircraft Operations - July 17 to Sept 17 (14 jets)

- Activity Description:
14 Jets (approximately 1880 sorties)

- Activity Start Date
Start Month: 7
Start Year: 2017

- Activity End Date
Indefinite: No
End Month: 9
End Year: 2017

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	4.708010
SO_x	1.627151
NO_x	12.810586
CO	25.760114
PM 10	1.644724

Pollutant	Total Emissions (TONs)
PM 2.5	1.233639
Pb	0.000000
NH_3	0.000000
CO_2e	4685.5

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	3.766512
SO_x	1.458245
NO_x	10.365315
CO	18.557261
PM 10	1.352101

Pollutant	Total Emissions (TONs)
PM 2.5	0.952511
Pb	0.000000
NH_3	0.000000
CO_2e	4545.0

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Total Emissions (TONs)
VOC	0.941498
SO_x	0.168906
NO_x	2.445272
CO	7.202853
PM 10	0.292623

Pollutant	Total Emissions (TONs)
PM 2.5	0.281128
Pb	0.000000
NH_3	0.000000
CO_2e	140.5

15.2 Aircraft & Engines

15.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-16C
Engine Model: F100-PW-220
Primary Function: Combat
Number of Engines: 1

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Original Engine Name:

15.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1084.00	7.94	1.06	4.61	35.30	2.06	1.85	3234
Approach	3837.00	5.12	1.06	12.53	1.92	2.63	2.37	3234
Intermediate	5770.00	2.89	1.06	22.18	0.86	2.06	1.85	3234
Military	9679.00	1.79	1.06	29.32	0.86	1.33	1.20	3234
After Burn	41682.00	1.53	1.06	8.37	11.99	1.15	1.04	3234

15.3 Flight Operations

15.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 14
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 1880
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 24

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out (mins): 18.5 (default)
Takeoff (mins): 0.4 (default)
Climb Out (mins): 0.8 (default)
Approach (mins): 3.5 (default)
Taxi/Idle In (mins): 11.3 (default)

- Trim Test

Idle (mins): 12 (default)
Approach (mins): 27 (default)
Intermediate (mins): 9 (default)
Military (mins): 9 (default)
AfterBurn (mins): 3 (default)

15.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL}$ = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

15.4 Auxiliary Power Unit (APU)

15.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
1	1	No	T-62T-40-8	

15.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
T-62T-40-8	272.6	0.493	0.289	1.216	3.759	0.131	0.037	910.8

15.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
NA: Number of Aircraft
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

15.5 Aerospace Ground Equipment (AGE)

15.5.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 1880

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	2	No	Air Compressor	MC-11
1	1	No	Bomb Lift	MJ-1B
1	0.33	No	Generator Set	A/M32A-86D
1	0.5	No	Heater	H1
1	0.5	No	Hydraulic Test Stand	MJ-2/TTU-228 - 130hp
1	8	No	Light Cart	NF-2
1	0.33	No	Start Cart	A/M32A-60A

15.5.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-11	1.8	0.276	0.004	0.177	12.262	0.109	0.100	34.8
MJ-1B	0.0	3.040	0.219	4.780	3.040	0.800	0.776	141.2

A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
MJ-2/TTU-228 - 130hp	7.4	0.195	0.053	3.396	0.794	0.089	0.086	168.8
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

15.5.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year

AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

16. Aircraft

16.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Clark; Lincoln; Nye
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

- Activity Title: F-16s Aircraft Operations - Oct 17 to Dec 18 (16 jets)

- Activity Description:
16 Jets (approx 2100 sorties)

- Activity Start Date
Start Month: 10
Start Year: 2017

- Activity End Date
Indefinite: No
End Month: 12
End Year: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	27.690772
SO_x	9.882810
NO_x	75.292507
CO	153.946651
PM 10	9.588931

Pollutant	Total Emissions (TONs)
PM 2.5	7.041600
Pb	0.000000
NH_3	0.000000
CO_2e	28671.3

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	22.432407

Pollutant	Total Emissions (TONs)
PM 2.5	5.471468

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

SO_x	8.939452		Pb	0.000000
NO_x	61.635404		NH_3	0.000000
CO	113.717950		CO_2e	27886.6
PM 10	7.954603			

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Total Emissions (TONs)		Pollutant	Total Emissions (TONs)
VOC	5.258366		PM 2.5	1.570131
SO_x	0.943358		Pb	0.000000
NO_x	13.657103		NH_3	0.000000
CO	40.228701		CO_2e	784.7
PM 10	1.634328			

16.2 Aircraft & Engines

16.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
- **Aircraft Designation:** F-16C
- **Engine Model:** F100-PW-220
- **Primary Function:** Combat
- **Number of Engines:** 1

- Aircraft & Engine Surrogate
- **Is Aircraft & Engine a Surrogate?** No
- **Original Aircraft Name:**
- **Original Engine Name:**

16.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1084.00	7.94	1.06	4.61	35.30	2.06	1.85	3234
Approach	3837.00	5.12	1.06	12.53	1.92	2.63	2.37	3234
Intermediate	5770.00	2.89	1.06	22.18	0.86	2.06	1.85	3234
Military	9679.00	1.79	1.06	29.32	0.86	1.33	1.20	3234
After Burn	41682.00	1.53	1.06	8.37	11.99	1.15	1.04	3234

16.3 Flight Operations

16.3.1 Flight Operations Assumptions

- Flight Operations
- **Number of Aircraft:** 16
- **Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:** 2100
- **Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:** 0
- **Number of Annual Trim Test(s) per Aircraft:** 24

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)
- **Taxi/Idle Out (mins):** 18.5 (default)
- **Takeoff (mins):** 0.4 (default)
- **Climb Out (mins):** 0.8 (default)

Approach (mins): 3.5 (default)
Taxi/Idle In (mins): 11.3 (default)

- Trim Test
Idle (mins): 12 (default)
Approach (mins): 27 (default)
Intermediate (mins): 9 (default)
Military (mins): 9 (default)
AfterBurn (mins): 3 (default)

16.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year
$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL}$ = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

16.4 Auxiliary Power Unit (APU)

16.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
1	1	No	T-62T-40-8	

16.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
T-62T-40-8	272.6	0.493	0.289	1.216	3.759	0.131	0.037	910.8

16.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
NA: Number of Aircraft
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

16.5 Aerospace Ground Equipment (AGE)

16.5.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 2100

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	2	No	Air Compressor	MC-11
1	1	No	Bomb Lift	MJ-1B
1	0.33	No	Generator Set	A/M32A-86D
1	0.5	No	Heater	H1
1	0.5	No	Hydraulic Test Stand	MJ-2/TTU-228 - 130hp
1	8	No	Light Cart	NF-2
1	0.33	No	Start Cart	A/M32A-60A

16.5.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-11	1.8	0.276	0.004	0.177	12.262	0.109	0.100	34.8
MJ-1B	0.0	3.040	0.219	4.780	3.040	0.800	0.776	141.2
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
MJ-2/TTU-228 - 130hp	7.4	0.195	0.053	3.396	0.794	0.089	0.086	168.8
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

16.5.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year
$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

17. Aircraft

17.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Clark; Lincoln; Nye
Regulatory Area(s): Clark Co, NV; Las Vegas, NV

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Title: F-16s Aircraft Operations - Jan 19 on (10 Jets)

- Activity Description:
10 Jets (1800 sorties)

- Activity Start Date
Start Month: 1
Start Year: 2019

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)	Pollutant	Emissions Per Year (TONs)
VOC	15.486311	PM 2.5	4.182431
SO_x	4.916652	Pb	0.000000
NO_x	40.524547	NH_3	0.000000
CO	83.572523	CO_2e	13827.6
PM 10	5.375492		

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)	Pollutant	Emissions Per Year (TONs)
VOC	11.880574	PM 2.5	3.105770
SO_x	4.269778	Pb	0.000000
NO_x	31.159676	NH_3	0.000000
CO	55.987129	CO_2e	13289.5
PM 10	4.254810		

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)	Pollutant	Emissions Per Year (TONs)
VOC	3.605737	PM 2.5	1.076662
SO_x	0.646874	Pb	0.000000
NO_x	9.364871	NH_3	0.000000
CO	27.585395	CO_2e	538.1
PM 10	1.120682		

17.2 Aircraft & Engines

17.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-16C
Engine Model: F100-PW-220
Primary Function: Combat
Number of Engines: 1

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

17.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1084.00	7.94	1.06	4.61	35.30	2.06	1.85	3234
Approach	3837.00	5.12	1.06	12.53	1.92	2.63	2.37	3234
Intermediate	5770.00	2.89	1.06	22.18	0.86	2.06	1.85	3234
Military	9679.00	1.79	1.06	29.32	0.86	1.33	1.20	3234
After Burn	41682.00	1.53	1.06	8.37	11.99	1.15	1.04	3234

17.3 Flight Operations

17.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 10
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 1800
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 24

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out (mins): 18.5 (default)
Takeoff (mins): 0.4 (default)
Climb Out (mins): 0.8 (default)
Approach (mins): 3.5 (default)
Taxi/Idle In (mins): 11.3 (default)

- Trim Test

Idle (mins): 12 (default)
Approach (mins): 27 (default)
Intermediate (mins): 9 (default)
Military (mins): 9 (default)
AfterBurn (mins): 3 (default)

17.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)

AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

17.4 Auxiliary Power Unit (APU)

17.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
1	1	No	T-62T-40-8	

17.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
T-62T-40-8	272.6	0.493	0.289	1.216	3.759	0.131	0.037	910.8

17.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
NA: Number of Aircraft
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

17.5 Aerospace Ground Equipment (AGE)

17.5.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage

Number of Annual LTO (Landing and Take-off) cycles for AGE: 1800

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	2	No	Air Compressor	MC-11
1	1	No	Bomb Lift	MJ-1B
1	0.33	No	Generator Set	A/M32A-86D
1	0.5	No	Heater	H1
1	0.5	No	Hydraulic Test Stand	MJ-2/TTU-228 - 130hp
1	8	No	Light Cart	NF-2
1	0.33	No	Start Cart	A/M32A-60A

17.5.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-11	1.8	0.276	0.004	0.177	12.262	0.109	0.100	34.8
MJ-1B	0.0	3.040	0.219	4.780	3.040	0.800	0.776	141.2
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9

MJ-2/TTU-228 - 130hp	7.4	0.195	0.053	3.396	0.794	0.089	0.086	168.8
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

17.5.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year

AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons