Main Operating Base 5 (MOB 5)

KC-46A Beddown

DRAFT

KC-46A MAIN OPERATING BASE 5 (MOB 5) BEDDOWN ENVIRONMENTAL IMPACT STATEMENT (EIS)



VOLUME II

Prepared for:
Air Force Reserve Command
Air Force Civil Engineer Center
United States Air Force

June 2023

Privacy Advisory

Your comments on this Draft EIS are requested. Letters or other written comments provided may be published in the Final EIS. Comments will normally be addressed in the EIS and made available to the public. Any personal information provided will be used only to identify your desire to make a statement during the public comment period or to fulfill requests for copies of the Final EIS or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EIS.

APPENDIX A

CORRESPONDENCE



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APPENDIX A CORRESPONDENCE

A.1 General Stakeholder Involvement

Table A-1 includes the list of agencies, elected officials, interested organizations and others who received notification from the United States Department of the Air Force regarding the proposed KC-46A Main Operating Base 5 (MOB 5) beddown Environmental Impact Statement organized by base. The names of interested members of the public are not included in this list.

Table A-1. KC-46A MOB 5 EIS General Stakeholder Contact List

Title	Organization/Agency	Sub-Organization	City	State
March ARB				
Representative	U.S. House of Representatives	California District 41	Washington	DC
Senator	U.S. Senate, California	--	Washington	DC
Senator	U.S. Senate, California	--	Washington	DC
Senator	California State Senate	District 31	Riverside	CA
Assemblymember	California State	District 61	Riverside	CA
Vice Chair	County of Riverside	District 1	Riverside	CA
Mayor	City of Riverside	--	Riverside	CA
Mayor	City of Perris	--	Perris	CA
Regional Administrator	U.S. Environmental Protection Agency	Southwest Office	San Francisco	CA
Field Supervisor	U.S. Fish and Wildlife Service	Carlsbad Fish and Wildlife Office	Carlsbad	CA
USFWS Sikes Act Coordinator	U.S. Fish and Wildlife Service	Carlsbad Fish and Wildlife Office	Carlsbad	CA
Commander	U.S. Army Corps of Engineers	Los Angeles District	Los Angeles	CA
Manager	Federal Aviation Administration	Southern California TRACON	San Diego	CA
Director	Federal Aviation Administration	Western Service Center	Des Moines	WA
OPR Director	State of California Clearinghouse Governor's Office	--	Sacramento	CA
SHPO	State Historic Preservation Officer	Office of Historic Preservation	Sacramento	CA
Director	California Department of Fish and Wildlife	--	Sacramento	CA
Secretary for Environmental Protection	California Environmental Protection Agency	--	Sacramento	CA
Executive Officer	Santa Ana Regional Water Quality Control Board	--	Riverside	CA
Program Supervisor, CEQA	South Coast Air Quality Management District	--	Diamond Bar	CA
Assistant Deputy Executive Officer	South Coast Air Quality Management District	Planning Rule Development and Implementations	Diamond Bar	CA
Executive Director	Mojave Air Quality Management District	--	Victorville	CA
Executive Director	Western Riverside Council of Governments	--	Riverside	CA
Community Development Director	City of Moreno Valley Community Development Department	--	Moreno Valley	CA
Executive Director	March Joint Powers Authority	--	Riverside	CA

Table A-1. KC-46A MOB 5 EIS General Stakeholder Contact List (continued)

Title	Organization/Agency	Sub-Organization	City	State
March ARB (continued)				
Asst. City Mgr.	City of Perris	--	Perris	CA
City Manager	San Bernadino	--	San Bernadino	CA
City Manager	Moreno Valley	--	Moreno Valley	CA
Vice President	Provident Bank	--	Riverside	CA
Vice President	Provident Bank	--	Riverside	CA
Vice President	Kidder Mathews	--	El Segundo	CA
Vice President	Fifth Third Bank	--	Ontario	CA
Director	Altura Credit Union	--	Riverside	CA
Vice President	Bank of America	--	Riverside	CA
Attorney	Guralnick & Gilliland, LLP	--	Palm Desert	CA
Attorney	Blumenthal Law Offices	--	Riverside	CA
Reference Librarian	Woodcrest Library	--	Riverside	CA
Reference Librarian	Mead Valley Library	--	Mead Valley	CA
Reference Librarian	Perris Library	--	Perris	CA
Senior Editor	The Press-Enterprise	--	Riverside	CA
Director	590 KTIE AM	--	San Bernardino	CA
Program Manager	91.9 KVCR (NPR)	--	San Bernardino	CA
News Director	KTTC FOX 11/KCOP13	--	Los Angeles	CA
News Director	KTLA-TV	--	Los Angeles	CA
News Director	NBC4 Los Angeles – KNBC	--	Universal City	CA
Vice President - News	KABC-TV	ABC 7	Glendale	CA
President/CEO	Greater Riverside Chamber of Commerce (GROC)	--	Riverside	CA
CEO	Corona Chamber of Commerce	--	Corona	CA
Director	March Joint Powers Authority (JPA)	--	Riverside	CA
CEO	Murrieta Wildomar Chamber of Commerce	--	Murrieta	CA
Chairman	Riverside Chamber of Commerce	--	Riverside	CA
Marketing	Riverside Medical Clinic	--	Riverside	CA
CNO	Riverside Medical Clinic	--	Riverside	CA
Senior Director, Airspace and Air Traffic	Aircraft Owners and Pilots Association (AOPA)	--	Frederick	MD
Airport Manager	Perris Valley Airport	--	Perris	CA
Airport Director	Southern California Logistics Airport	--	Victorville	CA
Director	March Field Air Museum	--	Riverside	CA
CEO	Riverside University	--	Riverside	CA
Grissom ARB				
Senator	U.S. Senate, Indiana	--	Washington	DC
Senator	U.S. Senate, Indiana	--	Washington	DC
U.S. Representative	U.S. House of Representatives	Indiana 2nd Congressional District	Washington	DC
U.S. Representative	U.S. House of Representatives	Indiana 5th Congressional District	Washington	DC
U.S. Representative	U.S. House of Representatives	Indiana 4th Congressional District	Washington	DC
Governor	Indiana State House	Office of the Governor	Indianapolis	IN
Lt. Governor	Indiana State House		Indianapolis	IN
Senator	Indiana State House	Indiana Senate District 21	Indianapolis	IN
Senator	Indiana State House	Indiana Senate District 18	Indianapolis	IN

Table A-1. KC-46A MOB 5 EIS General Stakeholder Contact List (continued)

Title	Organization/Agency	Sub-Organization	City	State
Grissom ARB (continued)				
Representative	Indiana State House	Indiana House District 23	Indianapolis	IN
Representative	Indiana State House	Indiana House District 38	Indianapolis	IN
Mayor	City of Kokomo	--	Kokomo	IN
City Clerk	City of Kokomo	--	Kokomo	IN
Mayor	City of Peru	--	Peru	IN
Peru City Clerk/Treasurer	City of Peru	--	Peru	IN
Mayor	City of Kokomo	--	Kokomo	IN
Mayor	City of Kokomo	--	Kokomo	IN
City Clerk	City of Kokomo	--	Kokomo	IN
Mayor	City of Peru	--	Peru	IN
Peru City Clerk/Treasurer	City of Peru	--	Peru	IN
Zoning Administrator	City of Peru	--	Peru	IN
Mayor	City of Logansport	--	Logansport	IN
Clerk/Treasurer	City of Logansport	--	Logansport	IN
Town Council President	Town of Bunker Hill	--	Bunker Hill	IN
Commission Chairman	Miami County	District 1	Peru	IN
Commission Chairman	Cass County	District 1	Logansport	IN
AICP, Executive Director/Subdivision Administrator	Cass County Government Building	Logansport/Cass County Planning Department	Logansport	IN
Executive Director	North Central Indiana Regional Planning Council	--	Peru	IN
President	Howard County Administration Center	Howard County Commission	Kokomo	IN
State Executive Director	Farm Service Agency	--	Indianapolis	IN
Regional Administrator (Acting)	Federal Aviation Administration, Great Lakes Regional Office	O'Hare Lake Office Center	Des Plaines	IL
Regional Administrator	Ralph Metcalfe Federal Building	U.S. EPA Region 5	Chicago	IL
CTA Program Specialist	Natural Resources Conservation Service	--	Indianapolis	IN
Field Supervisor	U.S. Fish and Wildlife Service	Bloomington Field Office	Bloomington	IN
Executive Director	Indiana Association of Soil and Water Conservation Districts	--	Indianapolis	IN
Director	Indiana Department of Natural Resources	Executive Office	Indianapolis	IN
Director	Indiana State Department of Agriculture	--	Indianapolis	IN
Clerk Treasurer	Galveston Town Hall	--	Galveston	IN
President	Miami County Chamber of Commerce	--	Peru	IN
Executive Director	Logansport-Cass County Chamber of Commerce	--	Logansport	IN
Director	Miami County Economic Development Authority	--	Peru	IN

Table A-1. KC-46A MOB 5 EIS General Stakeholder Contact List (continued)

Title	Organization/Agency	Sub-Organization	City	State
Grissom ARB (continued)				
Director	Cass County Economic Development Authority	--	Logansport	IN
Executive Director	Cass Logansport Economic Development Organization	--	Logansport	IN
President	Grissom Community Council	--	Wabash	IN
Vice President	Grissom Community Council	--	Peru	IN
Executive Director	Grissom Air Museum	--	Peru	IN
President	Walton Town Hall	--	Walton	IN
Commissioner	Indiana Department of Transportation	--	Indianapolis	IN
Executive Director	Indiana Economic Development Corporation	Indiana Office of Defense Development	Indianapolis	IN
Board Chairman	Indiana Economic Development Corporation	--	Indianapolis	IN
Executive Director	Indiana Office of Community and Rural Affairs	--	Indianapolis	IN
Community Liaison	Indiana Office of Community and Rural Affairs	Northeast District	Avilla	IN
Director	Peru Public Library	--	Peru	IN
Director	Kokomo-Howard County Public Library Main	--	Kokomo	IN
Reference Librarian	Kokomo Public Library-South	--	Kokomo	IN
Executive Director	Wabash Carnegie Public Library	--	Wabash	IN
Director	Logansport Public Library	--	Logansport	IN
Managing Editor	Kokomo Tribune	--	Kokomo	IN
Managing Editor	Pharos-Tribune	--	Logansport	IN
Editor	Associated Press	--	Indianapolis	IN
Managing Editor	Chronicle-Tribune	--	Marion	IN
Managing Editor	Indianapolis Business Journal	--	Indianapolis	IN
Editor-in-Chief	Indianapolis Monthly	--	Indianapolis	IN
Editor	Indianapolis Recorder	--	Indianapolis	IN
Executive Editor	Indianapolis Star	--	Indianapolis	IN
Managing Editor	Journal Gazette	--	Fort Wayne	IN
Managing Editor	Peru Tribune	--	Peru	IN
Editor	The Paper	--	Wabash	IN
Editor	Wabash Plain Dealer	--	Wabash	IN
News Reporter	Indiana Public Broadcasting Stations	--	Indianapolis	IN
Director	Network Indiana	WFI Public Broadcasting	Indianapolis	IN
Regional Account Manager	WEDJ-Radio	--	Indianapolis	IN
Account Manager	WLHK-Radio	--	Indianapolis	IN
News Director	WFYI-Radio	--	Indianapolis	IN
Operations Manager	WTLC-Radio	--	Indianapolis	IN
Radio Station Manager	WSQM-Radio	--	Indianapolis	IN
Program Director	WZPL-Radio	--	Indianapolis	IN
General Manager	WBAT-Radio	--	Marion	IN
General Manager	WIWU-Radio	--	Marion	IN
Program Director	WZWZ-Radio	--	Kokomo	IN

Table A-1. KC-46A MOB 5 EIS General Stakeholder Contact List (continued)

Title	Organization/Agency	Sub-Organization	City	State
Grissom ARB (continued)				
Program Director	WWKI-Radio	--	Kokomo	IN
News Director	WSAL-Radio	--	Logansport	IN
Owner	WJOT-Radio	--	Wabash	IN
President and Owner	WKUZ-Radio	--	Wabash	IN
Program Director	WISH/WNDY-TV	--	Indianapolis	IN
News Director	WRTV-TV	--	Indianapolis	IN
General Manager	WTHR-TV	--	Indianapolis	IN
General Manager	WXIN-TV	--	Indianapolis	IN
Director of Operations	Ducks Unlimited	--	Ann Arbor	MI
President	Indiana Farm Bureau	--	Indianapolis	IN
Regional Biologist	Pheasants Forever	Central Indiana	Lafayette	IN
Director of Conservation	The Nature Conservancy	--	Indianapolis	IN
Executive Vice President	REALTORS Association of Central Indiana	--	Kokomo	IN
General Manager	Montgomery Aviation, Inc.	--	Peru	IN
General Manager	Dean Baldwin Painting	--	Peru	IN
Senior Director, Airspace and Air Traffic	Aircraft Owners and Pilots Association (AOPA)	--	Frederick	MD
Commissioner	Indiana Department of Environmental Management (IDEM)	Government and Community Affairs	Indianapolis	IN
NEPA Deputy Director (Acting)	U.S. EPA Region V	--	Chicago	IL
Tinker AFB				
Senator	U.S. Senate, Oklahoma	--	Washington	DC
Senator	U.S. Senate, Oklahoma	--	Washington	DC
Representative	U.S. House of Representatives	Oklahoma District 4	Washington	DC
Senator	Oklahoma State Senate	Oklahoma District 42	Oklahoma City	OK
Representative	Oklahoma House of Representatives	Oklahoma District 95	Oklahoma City	OK
Mayor	City of Del City	--	Del City	OK
County Commissioner	Oklahoma County	District 2	Oklahoma City	OK
Mayor	City of Oklahoma City	--	Oklahoma City	Ok
Mayor	City of Midwest City	--	Midwest City	OK
Governor	Oklahoma	--	Oklahoma City	OK
Field Supervisor	U.S. Fish and Wildlife Service	Oklahoma Ecological Services Field Office	Tulsa	OK
State Director Oklahoma Wildlife Service	U.S. Department of Agriculture	Animal and Plant Health Inspection Service	Oklahoma City	OK
Regional Director	Bureau of Indian Affairs	Eastern Oklahoma Regional Office	Muskogee	OK
Regional Director	Bureau of Indian Affairs	Southern Plains Regional Office	Anadarko	OK
Chief Compliance Assurance and Enforcement Division	EPA Region VI	Compliance Assurance and Enforcement Division (6EN-XP)	Dallas	TX
Regional Administrator	EPA Region VI	--	Dallas	TX

Table A-1. KC-46A MOB 5 EIS General Stakeholder Contact List (continued)

Title	Organization/Agency	Sub-Organization	City	State
Tinker AFB (continued)				
State Conservationist	U.S. Department of Agriculture	Natural Resources Conservation Service	Stillwater	OK
State Coordinator	U.S. Fish and Wildlife Services	Oklahoma Ecological Services Field Office	Tulsa	OK
Division Chief	Federal Emergency Management Association (FEMA)	Mitigation Division	Austin	TX
Operations Project Manager	U.S. Army Corps of Engineers, Tulsa District	Planning and Environmental Division	Tulsa	OK
Chief, Planning and Management Division	Oklahoma Water Resource Board	--	Oklahoma City	OK
Chairman	Oklahoma Corporation Commission	--	Oklahoma City	OK
State Forester	Oklahoma Department of Agriculture, Food and Forestry	Forestry Services	Oklahoma City	OK
Director Oklahoma Department of Wildlife Conservation	Oklahoma Department of Wildlife Conservation	--	Oklahoma City	OK
Director Oklahoma Geological Survey	Oklahoma Geological Survey	--	Norman	OK
Division Manager	Oklahoma Department of Transportation	Environmental Programs Division	Oklahoma City	OK
Executive Director	Oklahoma Department of Environmental Quality	--	Oklahoma City	OK
Deputy SHPO	State Historic Preservation Office	--	Oklahoma City	OK
Central Oklahoma Clean Cities Coordinator	Association of Central Oklahoma Governments	Central Oklahoma Governments	Oklahoma City	OK
Chairman	Midwest City	Planning Commission	Midwest City	OK
Executive Director	Association of Central Oklahoma Governments	--	Oklahoma City	OK
Floodplain Administrator, Director, City Engineer	Oklahoma City	Public Works Department	Oklahoma City	OK
General Manager	City of Oklahoma City	Oklahoma City Water Utilities Trust	Oklahoma City	OK
Vice President	Greater Oklahoma City Chamber of Commerce	Government Relations and Policy	Oklahoma City	OK
Councilman Ward Four	City of Oklahoma City	--	Oklahoma City	OK
Floodplain Administrator, City Engineer	City of Midwest City	--	Midwest City	OK
Floodplain Administrator	City of Del City	--	Del City	OK
Floodplain Administrator	Oklahoma County	--	Oklahoma City	OK
Deputy Director of Public Services	Midwest City Public Library	--	Midwest City	OK
Library Manager	Del City Library	--	Del City	OK
Library Director	Tinker Library	--	Tinker AFB	OK
Executive Editor	The Oklahoman	--	Oklahoma City	OK

Table A-1. KC-46A MOB 5 EIS General Stakeholder Contact List (continued)

Title	Organization/Agency	Sub-Organization	City	State
Tinker AFB (continued)				
Director of Programming	KTOK	1000 News Radio	Oklahoma City	OK
Program Director	KOKC	1520 News Talk	Oklahoma City	OK
News Director	KFOR-TV	NBC	Oklahoma City	OK
News Director	KOCO-TV	ABC	Oklahoma City	OK
Director of Content	KWTV-DT	News 9	Oklahoma City	OK
News Director	KOKH-TV	FOX	Oklahoma City	OK
Director	Will Rogers World Airport	OKC - Oklahoma City Department of Airports	Oklahoma City	OK
Senior Director	Aircraft Owners and Pilots Association (AOPA)	Airspace and Air Traffic	Frederick	MD
Co-Chair	Tinker Restoration Advisory Board	Restoration Advisory Board	Midwest City	OK
President	Oklahoma Wildlife Conservation Federation	--	Oklahoma City	OK
President	Audubon Society, Oklahoma City	--	Oklahoma City	OK
Chapter Chair	Sierra Club	Oklahoma Chapter	Oklahoma City	OK
Community Relations, Chair of Executive Committee	Tinker Restoration Advisory Board	--	Choctaw	OK

Key: AFB = Air Force Base; AOPA = Aircraft Owners and Pilots Association; ARB = Air Reserve Base; CA = California; CEO = Chief Executive Officer; CEQA = California Environmental Quality Act; CNO = Chief Nursing Officer; CTA = Conservation Technical Assistance; DC = District of Columbia; EIS = Environmental Impact Statement; EPA = Environmental Protection Agency; FEMA = Federal Emergency Management Association; GROC = Greater Riverside Chamber of Commerce; IDEM = Indiana Department of Environmental Management; IL = Illinois; IN = Indiana; JPA = Joint Powers Authority; MD = Maryland; MOB 5 = Main Operating Base 5; NEPA = National Environmental Policy Act; NPR = National Public Radio; OK = Oklahoma; OKC = Oklahoma City; OPR = Office of Planning and Research; SHPO = State Historic Preservation Office; TRACON = Terminal Radar Approach Control; TX = Texas; U.S. = United States; USFWS = U.S. Fish & Wildlife Service; WA = Washington.

A.1.1 General Stakeholder Notification Letter

DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER
JOINT BASE SAN ANTONIO LACKLAND TEXAS

October 31, 2022

Mr. Austin Naranjo
Air Force Civil Engineer Center NEPA Division (AFCEC/CZN)
2261 Hughes Ave, Suite 155
Lackland AFB TX 78235-9853

Name/Title
(address being mailed to)
(address being mailed to)
(City, State Zip)

Dear {*Merged Name from list*}

The U.S. Air Force (USAF) is preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental consequences associated with the Air Force Reserve Command (AFRC) KC-46A Main Operating Base 5 (MOB 5) beddown. The USAF has identified Grissom Air Reserve Base (ARB), Indiana; and Tinker AFB, Oklahoma, as reasonable alternatives for the AFRC MOB 5 mission. March Air Reserve Base (ARB), California has been preliminarily identified as the preferred alternative for this mission. All three bases and the No Action Alternative will be equally evaluated in the EIS. Additional information on the beddown and EIS process is included in the attached Notice of Intent (NOI) from the November 10, 2022, *Federal Register*.

The USAF will host an open-house public scoping meeting in the local area near each of the bases proposed for this action (see attached Notice of Intent). The purpose of the meetings and the scoping period is to solicit comments to help effectively define the full range of environmental issues to be analyzed in the EIS. Comments provided to the USAF during the scoping period will be considered in the preparation of the Draft EIS. Additional information can be found on the project website at http://www.kc-46a-mob5.com/.

Please provide any comments by December 21, 2022, in writing to Mr. Austin Naranjo, U.S. Air Force Civil Engineer Center, AFCEC/CZN; 2261 Hughes Ave, Ste. 155, Lackland AFB, TX 78236-9853. Courier deliveries should be addressed to: Mr. Austin Naranjo, AFCEC/CZN, Attn: KC-46A MOB 5 EIS, 3515 General McMullen, Suite 155, San Antonio, TX 78226-2018 or submit them via the project website at http://www.kc-46a-mob5.com/. We appreciate your participation and input on this action.

Sincerely,

AUSTIN NARANJO, GS-13, DAF
Program Manager, NEPA Division

Attachment
Notice of Intent

DEPARTMENT OF DEFENSE

Department of the Air Force

NOTICE OF INTENT TO PREPARE AN ENVIRONMENTAL IMPACT STATEMENT FOR THE KC-46A MAIN OPERATING BASE 5 (MOB 5) BEDDOWN AT GRISSOM ARB, INDIANA, MARCH ARB, CALIFORNIA OR TINKER AFB, OKLAHOMA

AGENCY: Department of Defense, Department of the Air Force.

ACTION: Notice of Intent.

SUMMARY: The Department of the Air Force (DAF) is issuing this Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) to assess the potential social, economic, and environmental impacts associated with the KC-46A Main Operating Base 5 (MOB 5) Beddown. The DAF is proposing to beddown KC-46A tanker aircraft, personnel, and associated infrastructure in support of the MOB 5 mission at one of three installations with March Air Reserve Base (ARB), California as the preferred alternative or at Grissom ARB, Indiana or Tinker Air Force Base (AFB), Oklahoma as reasonable alternatives.

DATES: A public scoping period will take place starting from the date of this NOI publication in the Federal Register. This scoping period will be conducted in compliance with NEPA and Section 106 consultation pursuant to *Code of Federal Regulations* title 36, section 800.2(d). Identification of potential alternatives, information, and analyses relevant to the Proposed Action are requested and will be accepted at any time during the EIS process. To ensure DAF has sufficient time to consider public input in the preparation of the Draft EIS, scoping comments should be submitted to the website or the address listed below within the scoping period. The Draft EIS is anticipated in Summer 2023 and the Final EIS is anticipated in Spring 2024. The Record of Decision would be approved and signed 30 days after the Final EIS.

1

The DAF intends to hold open house scoping meetings from 5 p.m. to 8 p.m. in the following communities on the following dates:

1. March ARB – November 29, 2022, at the March Field Air Museum, 22550 Van Buren Blvd. Riverside, CA 92518
2. Tinker AFB – December 1, 2022, at the Sheraton Midwest City Hotel and Reed Conference Center, 5750 Will Rodgers Rd., Midwest City, OK 73110
3. Grissom ARB – December 6, 2022, at the Milestone Event Center, 1458 North Liberator Rd., Peru, IN 46970

ADDRESSES: The project website (**www.kc-46a-mob5.com**) provides information on the EIS and the scoping process and can be used to submit scoping comments online. Scoping comments may also be submitted to Mr. Austin Naranjo, AFCEC/CZN, Attn: KC-46A MOB 5 EIS, 2261 Hughes Ave, Ste 155, JBSA Lackland, TX 78236-9853 or via email to: afcec.czn.nepacenter@us.af.mil. Courier deliveries should be addressed to: Mr. Austin Naranjo, AFCEC/CZN, Attn: KC-46A MOB 5 EIS, 3515 General McMullen, Suite 155, San Antonio, TX 78226-2018. EIS inquiries and requests for digital or print copies of scoping materials are available upon request at the email or mailing address provided. For printed material requests, the standard U.S. Postal Service shipping timeline will apply. Members of the public who want to receive future mailings informing them on the availability of the Draft and Final EIS are encouraged to submit a comment that includes their name and email or postal mailing address.

FOR FURTHER INFORMATION CONTACT:

Mr. Austin Naranjo, AFCEC/CZN, Attn: KC-46A MOB 5 EIS, 2261 Hughes Ave, Ste 155, JBSA Lackland, TX 78236-9853; Telephone: (478) 222-9225; or Email: afcec.czn.nepacenter@us.af.mil

Courier deliveries should be addressed to: Mr. Austin Naranjo, AFCEC/CZN, Attn: KC-46A MOB 5 EIS, 3515 General McMullen, Suite 155, San Antonio, TX 78226-2018.

SUPPLEMENTARY INFORMATION: On January 24, 2022, the DAF announced that March ARB, California, has been identified as the preferred alternative for the KC-46A MOB 5 Beddown. Grissom ARB, Indiana, and Tinker AFB, Oklahoma, were identified as the reasonable alternatives. Along with the No Action Alternative, all three bases will be equally evaluated in the EIS. The MOB 5 mission includes the beddown of 12 KC-46A aircraft at one installation. The KC-46A aircraft would recapitalize the KC-135 tanker fleet and would continue supporting the mission of providing worldwide refueling, cargo, and aeromedical evacuation support. The purpose of the MOB 5 beddown is to provide a fully capable, combat-operational AFRC KC-46A air refueling squadron or squadrons to accomplish aerial refueling and related missions. The KC-46A MOB 5 beddown is needed to support the recapitalization of the DAF's aging refueling aircraft fleet. The DAF needs bases to accomplish the required training and to field a fully operational force. A DAF base for the MOB 5 mission is needed to achieve a high state of operational mission readiness.

Resource areas being analyzed for impacts in the EIS include air quality, biological resources, cultural resources, environmental justice and other sensitive receptors, hazardous materials and wastes, infrastructure, noise, land use, safety, socioeconomics and soils and water resources. Primary impacts from the KC-46A MOB 5 beddown are expected to the air quality and noise resource areas. Potential impacts under the Proposed Action at Grissom ARB, March ARB and Tinker AFB are anticipated to be less than significant or mitigatable to less than significant. Permits required for the action may include revisions to or new permits associated with air quality, land disturbance, and hazardous wastes. The DAF will consult with appropriate resource agencies

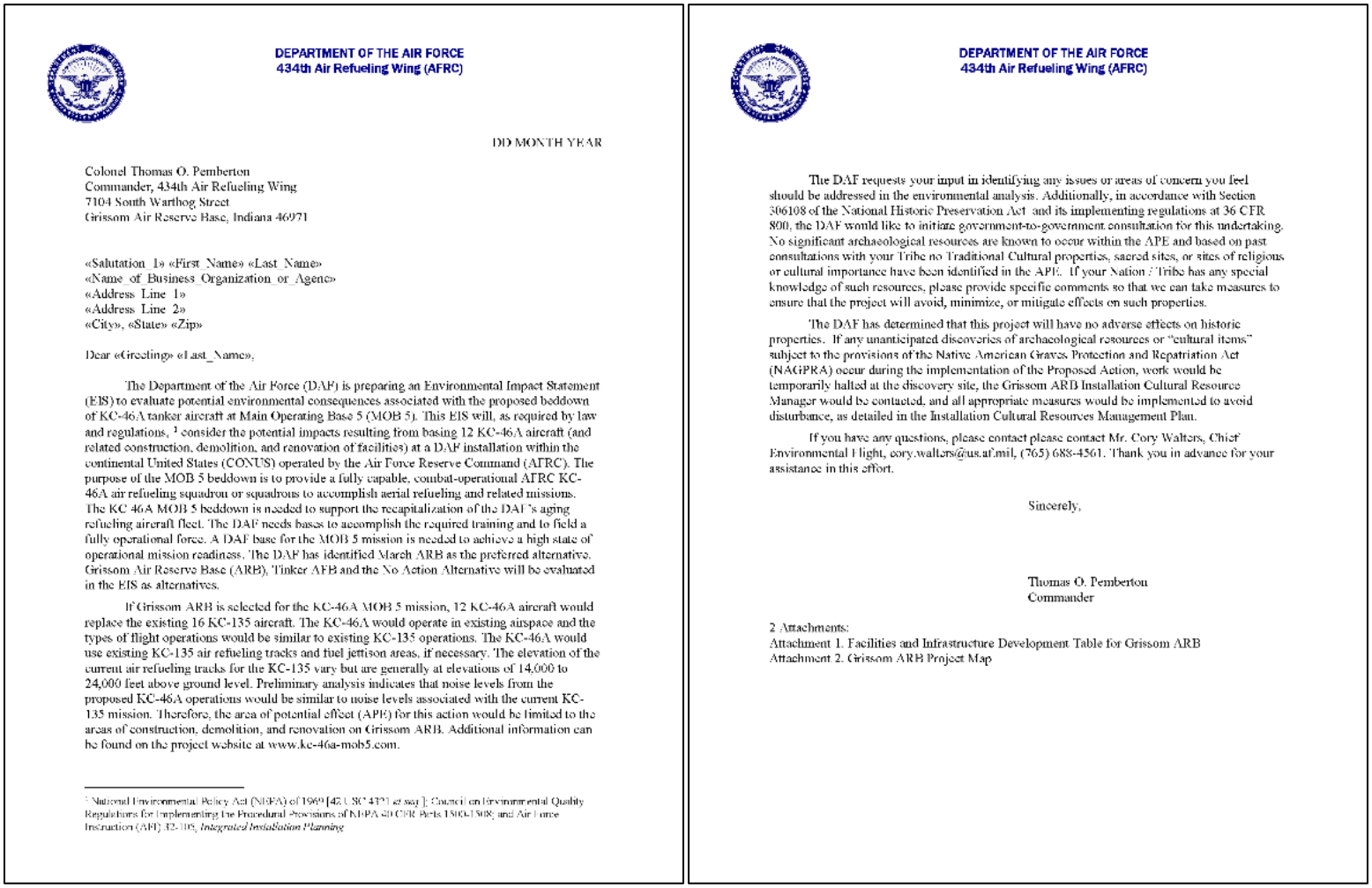
and Native American tribes to determine the potential for significant impacts. Consultation will be incorporated into the preparation of the EIS and will include, but not be limited to, consultation under Section 7 of the Endangered Species Act and consultation under Section 106 of the National Historic Preservation Act.

SCOPING AND AGENCY COORDINATION: To effectively define the full range of issues to be evaluated in the EIS, the DAF will determine the scope of the analysis by soliciting comments from interested local, state, and federal elected officials and agencies, Tribes, as well as interested members of the public and others.

Implementation of the KC -46A MOB 5 mission at Tinker AFB would potentially impact wetlands and/or floodplains and would therefore be subject to Executive Order (EO) 11990, "Protection of Wetlands," and EO 11988, "Floodplain Management". Regulatory agencies with special expertise in wetlands and floodplains, such as the U.S. Army Corps of Engineers will be contacted and asked to comment. Consistent with EO 11988 and EO 11990, this Notice of Intent initiates early public review of the Proposed Action and alternatives and invites public comments and identification of potential alternatives. Implementation of the KC-46A MOB 5 mission also has the potential to impact historic properties. Consultation with the appropriate State Historic Preservation Officers as well as Native American Tribes will occur as part of this process. Concurrent with the publication of this NOI, public scoping notices will be announced locally. The project website at **www.kc-46a-mob5.com** provides posters, a project brochure and downloadable comment forms to fill out and return by mail. Scoping meetings will be held in the local communities near the alternative bases. The scheduled dates, times, locations, and addresses for the scoping meetings will also be published in local media a minimum of 15 days prior to the scoping meetings.

A.2 Tribal Consultation (Example Letter and Attachments)

To support this Environmental Impact Statement, the Department of the Air Force is consulting on a government-to-government basis with potentially affected federally-recognized Native American tribes with historic cultural association to the areas around the three bases. Listed below is an example of the letter and attachments sent to the Native American tribes identified by base on Table A-2.



DEPARTMENT OF THE AIR FORCE
434th Air Refueling Wing (AFRC)

DD MONTH YEAR

Colonel Thomas O. Pemberton
Commander, 434th Air Refueling Wing
7104 South Warthog Street
Grissom Air Reserve Base, Indiana 46971

«Salutation_1» «First_Name» «Last_Name»
«Name_of_Business_Organization_or_Agenc»
«Address_Line_1»
«Address_Line_2»
«City», «State» «Zip»

Dear «Greeting» «Last_Name»,

The Department of the Air Force (DAF) is preparing an Environmental Impact Statement (EIS) to evaluate potential environmental consequences associated with the proposed beddown of KC-46A tanker aircraft at Main Operating Base 5 (MOB 5). This EIS will, as required by law and regulations, [1] consider the potential impacts resulting from basing 12 KC-46A aircraft (and related construction, demolition, and renovation of facilities) at a DAF installation within the continental United States (CONUS) operated by the Air Force Reserve Command (AFRC). The purpose of the MOB 5 beddown is to provide a fully capable, combat-operational AFRC KC-46A air refueling squadron or squadrons to accomplish aerial refueling and related missions. The KC-46A MOB 5 beddown is needed to support the recapitalization of the DAF's aging refueling aircraft fleet. The DAF needs bases to accomplish the required training and to field a fully operational force. A DAF base for the MOB 5 mission is needed to achieve a high state of operational mission readiness. The DAF has identified March ARB as the preferred alternative. Grissom Air Reserve Base (ARB), Tinker AFB and the No Action Alternative will be evaluated in the EIS as alternatives.

If Grissom ARB is selected for the KC-46A MOB 5 mission, 12 KC-46A aircraft would replace the existing 16 KC-135 aircraft. The KC-46A would operate in existing airspace and the types of flight operations would be similar to existing KC-135 operations. The KC-46A would use existing KC-135 air refueling tracks and fuel jettison areas, if necessary. The elevation of the current air refueling tracks for the KC-135 vary but are generally at elevations of 14,000 to 24,000 feet above ground level. Preliminary analysis indicates that noise levels from the proposed KC-46A operations would be similar to noise levels associated with the current KC-135 mission. Therefore, the area of potential effect (APE) for this action would be limited to the areas of construction, demolition, and renovation on Grissom ARB. Additional information can be found on the project website at www.kc-46a-mob5.com.

[1] National Environmental Policy Act (NEPA) of 1969 [42 U.SC 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) 32-7062, *Integrated Installation Planning*

DEPARTMENT OF THE AIR FORCE
434th Air Refueling Wing (AFRC)

The DAF requests your input in identifying any issues or areas of concern you feel should be addressed in the environmental analysis. Additionally, in accordance with Section 306108 of the National Historic Preservation Act and its implementing regulations at 36 CFR 800, the DAF would like to initiate government-to-government consultation for this undertaking. No significant archaeological resources are known to occur within the APE and based on past consultations with your Tribe no Traditional Cultural properties, sacred sites, or sites of religious or cultural importance have been identified in the APE. If your Nation / Tribe has any special knowledge of such resources, please provide specific comments so that we can take measures to ensure that the project will avoid, minimize, or mitigate effects on such properties.

The DAF has determined that this project will have no adverse effects on historic properties. If any unanticipated discoveries of archaeological resources or "cultural items" subject to the provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) occur during the implementation of the Proposed Action, work would be temporarily halted at the discovery site, the Grissom ARB Installation Cultural Resource Manager would be contacted, and all appropriate measures would be implemented to avoid disturbance, as detailed in the Installation Cultural Resources Management Plan.

If you have any questions, please contact please contact Mr. Cory Walters, Chief Environmental Flight, cory.walters@us.af.mil, (765) 688-4561. Thank you in advance for your assistance in this effort.

Sincerely,

Thomas O. Pemberton
Commander

2 Attachments:
Attachment 1. Facilities and Infrastructure Development Table for Grissom ARB
Attachment 2. Grissom ARB Project Map

DEPARTMENT OF THE AIR FORCE
434th Air Refueling Wing (AFRC)

Attachment 1: Facilities and Infrastructure Projects for the KC-46A MOB 5 Beddown at Grissom ARB

Project[a]	Facility Size (square feet)
Demolition	
Building 438 Demolition of Hangar 3 for the New 2-Bay Hangar	29,471
Building 439 Demolition of Hangar 1 for the New 2-Bay Hangar	31,738
Total Square Feet	**61,209**
Renovation	
Building 426 Renovation for Hydraulics, Brakes and Non-Destructive Testing Shop	7,500
Building 434 Renovation for the Composite Maintenance Shop	32,500
Building 435 Renovation for the Alternate Mission Equipment and Maintenance Operations Center	5,600
Building 436 Renovation for the Wheel and Tire Shop and Wing Air Refuel Pod and Engine Storage	10,200
Building 437 Renovation for the Fuselage Trainer	16,177
Building 453 Renovation for the Electric and Environmental Shop	7,700
Building 591 Renovation for Aerospace Ground Equipment Shop and Storage	9,435
Building 593 Renovation for Crash, Damaged, Disabled, Aircraft Recovery	6,500
Building 667 Renovation for the Mission Planning Cell	9,245
Building 668 Renovation for the Weapon System Trainer and Boom Operator Trainer Facility	17,390
Reposition Hydrant Fuel Pits and Overlay Aircraft Parking Ramp	Not applicable
Total Square Feet	**122,247**
New Construction	
Construct Covered AGE Storage Facility and Jack Stand Tester	10,010
Construct a New 2-Bay Hangar with Apron Access (Fuel Cell, Corrosion Control, Wash-Rack, Aircraft Maintenance Unit and Back-Shops)	200,000
Total Square Feet	**210,000**

[a] Potential relocation of underground cables, manholes, and duct work would be associated with these projects.

Key: AGE = Aerospace Ground Equipment; ARB = Air Reserve Base; MOB 5 = Main Operating Base 5.

DEPARTMENT OF THE AIR FORCE
434th Air Refueling Wing (AFRC)

Attachment 2: Grissom ARB Project Map

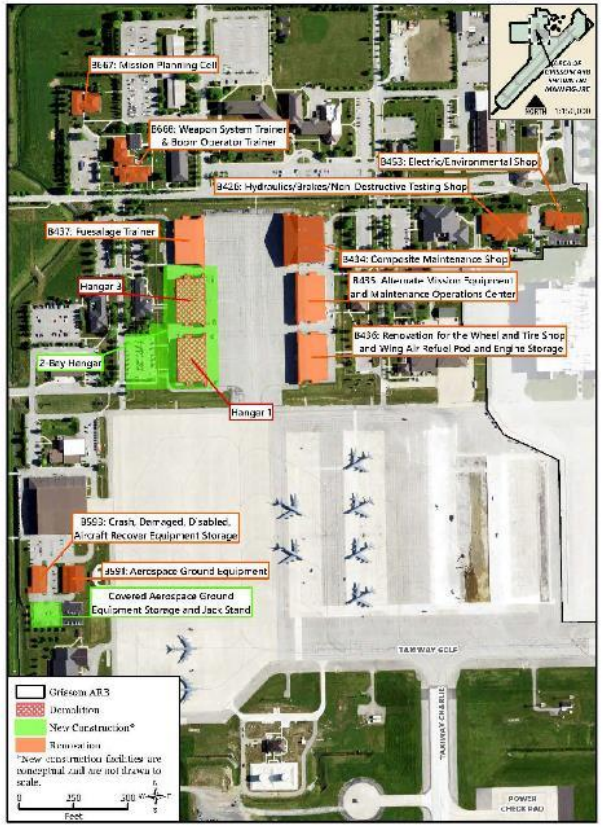


Table A-2. Native American Tribes Consultation Record

Tribe	Summary Response	NEPA Notification Letter	Section 106 Letter	Follow-Up Correspondence (email/phone calls)
March ARB				
Agua Caliente Band of Cahuilla Indians	At this time ACBCI has no comments, but please continue to provide our office with updates as the project progresses. Also, please inform our office if there are changes to the scope of this project.	10/31/22	Emailed 2/7/23	• Phone - 3/8/23 • Received letter closing consultation - 3/8/23
Cabazon Band of Mission Indians, California		10/31/22	Mailed 2/7/23	• Email - 3/9/23 • Phone and email - 4/11/23 • Concur closure of consultation
Cahuilla Band of Indians	Cultural Director responded and requested another copy of the letter be sent by email.	10/31/22	Emailed/Mailed 2/7/23	• Email - 3/9/23 (included additional copy of the letter) • Phone – 4/11/23 LM
Morongo Band of Mission Indians	Received acknowledgement receipt of the Scoping Letter on 4/10/23	10/31/22	Mailed 2/7/23	• Email - 3/9/23 • Phone - 4/11/23 LM
Pala Band of Mission Indians		10/31/22	Emailed 2/7/23	• Email - 3/9/23 • Phone - 4/11/23 LM
Pechanga Temecula Band of Luiseño Mission Indians	Email response received on 3/9/23. Chris is following up and working to schedule a meeting with the Tribe. Additional information was provided to the Tribe on 3/13/23. Discussions are ongoing. Chris proposed an agenda by email and called on 3/14/23 and sent additional information on 3/21/23. The SHPO report was provided on 4/5/23.	10/31/22	Emailed 2/7/23 Mailed 2/9/23	• Sent SHPO report and working on the cultural request • Received email - 4/9/23 • Requested consultation and wants to be notified of public hearings. March ARB is located in a Traditional Cultural Property; requested a face-to-face meeting.
Ramona Band of Cahuilla		10/31/22	Emailed 2/7/23	• Email - 3/9/23 • Phone and email - 4/11/23
Santa Rosa Band of Cahuilla Indians		10/31/22	Emailed 2/7/23	• Email - 3/9/23 • Phone - 4/11/23 LM (in meeting)
Soba Band of Luiseno			Emailed 2/7/23	• Email - 3/9/23 • Phone - 4/11/23 (will respond with a letter)

Table A-2. Native American Tribes Consultation Record (continued)

Tribe	Summary Response	NEPA Notification Letter	Section 106 Letter	Follow-Up Correspondence (email/phone calls)
Twenty Nine Palms Band of Mission Indians			Emailed 2/7/23	• Email - 3/9/23 • Phone and email - 4/11/23 LM
Grissom ARB				
Citizen Potawatomi Nation	The Citizen Potawatomi Nation THPO office has determined that the undertaking referenced in your letter will not impact any known Potawatomi sites. In the event of an inadvertent discovery during construction, please cease all activities and notify my office immediately.	10/31/22	Emailed 3/6/23	• Phone - 3/16/23 • Phone - 4/3/23 • Response received - 4/6/23 • Consultation is complete.
Forest County Potawatomi	No Historic Properties affected of significance to the FCPC, however, we request to remain as a consulting party for this project	10/31/22	Emailed 3/6/23 Confirmed receipt	• Response received - 3/7/23
Hannahville Indian Community		10/31/22	Emailed 3/6/23 Confirmed receipt	• Phone - 3/16/23 • Letter mailed - 3/21/23 • Email - 4/20/23
Kickapoo Tribe in Kansas		10/31/22	Emailed 3/6/23 Confirmed receipt;	• Tribal website email - 3/16/23 • Letter mailed - 3/21/23 • Email - 4/20/23
Kickapoo Tribe of Oklahoma		10/31/22	Emailed 3/6/23; Confirmed receipt	Tribal website email - 3/16/23 • Additional emails - 3/30/23 • Email - 4/20/23
Miami Tribe of Oklahoma	This Tribe has concerns with the project's proximity to at least 4 historically known Miami houses, one historical Miami Village, one of our reservations and a precontact village. Requested 48 hour notification if any materials found during construction. Requested to serve as a consulting party. Grissom ARB followed up on the location of resources. Specific locations are not available, all resources appear to be outside the base boundary.	10/31/22	Emailed 3/6/23 Confirmed receipt	• Email - 3/24/23 • Response received - 4/19/23 • Tribe will continue to be included in public notifications.

Table A-2. Native American Tribes Consultation Record (continued)

Tribe	Summary Response	NEPA Notification Letter	Section 106 Letter	Follow-Up Correspondence (email/phone calls)
Peoria Tribe of Indians of Oklahoma		10/31/22	Emailed 3/6/23 Confirmed receipt	• Email - 3/24/23 • Email - 4/20/23
Pokagon Band of Potawatomi Indians		10/31/22	Emailed 3/6/23	• Email - 3/24/23 • Email - 4/20/23
Prairie Band of Potawatomi Nation		10/31/22	Emailed 3/6/23 Confirmed receipt	• Email - 3/24/23 • Email - 4/20/23
Osage Nation	This base is located outside of the Osage ancestral territory, and the Osage Nation will not need to provide comment on future projects that are located in Peru, Indiana.	10/31/22	Emailed 3/6/23, Confirmed receipt	• Phone - 3/16/23 • Phone - 3/31/23 • Request for CR Survey and estimated soil disturbance • Email - 4/3/23 (as follow up) • Email - 4/20/23 • Consultation is complete.
Tinker AFB				
Caddo Nation of Oklahoma	Project does not affect known cultural, traditional or sacred sites of interest to the Caddo Nation. The Caddo Nation has no objection to the project at this time.	10/31/22	Mailed 2/22/23	• Received email - 2/28/23 • Consultation is complete.
Muscogee (Creek) Nation		10/31/22	Mailed 2/22/23	• Phone - 3/10/23 LM • Email - 3/29/23 • Email - 5/4/23
Osage Nation		10/31/22	Mailed 2/22/23	• Phone - 3/10/23 LM • Email - 3/29/23 • Email - 5/4/23
Seminole Nation	No significant effects on historic properties. The last paragraph of the letter states "work would be temporarily halted at the discovery site." If the word "will" replaced it I will be very satisfied and concur fully with the project.	10/31/22	Mailed 2/22/23	• Received email - 3/2/23 • Consultation is complete.
Wichita and Affiliated Tribes		10/31/22	Mailed 2/22/23	• Phone - 3/10/23 • Email - 3/29/23 • Email - 5/4/23

Key: ACBCI = Agua Caliente Band of Cahuilla Indians; AFB = Air Force Base; ARB = Air Reserve Base; CR = Cultural Resources; FCPC = Forest County Potawatomi Community; LM = left message; NEPA = National Environmental Policy Act; SHPO = State Historic Preservation Office; THPO – Tribal Historic Preservation Office.

A.3 National Historic Preservation Act Section 106 Consultation

Consultation with California, Indiana and Oklahoma State Historic Preservation Offices (SHPOs) is being completed in accordance with Section 106 of the National Historic Preservation Act. Listed below are the Section 106 letters and associated attachments sent to each of the SHPOs.

A.3.1 Section 106 SHPO Consultation Letter for March Air Reserve Base (ARB)

DEPARTMENT OF THE AIR FORCE
AIR FORCE RESERVE COMMAND

23 January 2023

Mr. David N. Shaw
452d MSG/CE
610 Meyer Drive, Building 2403
March ARB CA 92518-2188

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
Department of Parks & Recreation
1725 23rd Street, Suite 100
Sacramento CA 95816

Dear Ms. Polanco,

1. BACKGROUND: The 452nd Air Mobility Wing (AMW) of the United States Air Force Reserve Command (AFRC), March Air Reserve Base (ARB), proposes to potentially modify the mission of March ARB since the base has been identified as the preferred location for the *KC-46A main Operating Base 5 (MOB 5) Beddown*. This mission will support a squadron of twelve new KC-46A Pegasus aerial refueling tankers as a replacement to 12 KC-135 aerial refueling tankers.

The 452nd AMW has determined that the proposed beddown is a federal undertaking subject to compliance with Section 106 (codified at 54 United States Code [USC] 306108) of the National Historic Preservation Act (NHPA) of 1966, as amended (54 USC 300101 et seq.: Historic Preservation). The 452nd AMW is complying section 106 using the implementing regulations (Title 36 Code of Federal Regulations [CFR] Part 800). Per 36 CFR §800.3, the 452nd AMW is consulting the California State Historic Preservation Officer (SHPO) and the [*tribe(s)*]. Tribal letters are being sent in conjunction with this letter to determine tribal resources or concerns.

The 452nd AMW will coordinate review pursuant to section 106 of the NHPA with analyses pursuant to the National Environmental Policy Act of 1969 (NEPA). The NEPA Environmental Assessment will analyze potential impacts to cultural resources and other environmental consequences associated with the *KC-46A MOB 5 Beddown* at March ARB in accordance with the provisions of CFR Title 32, Part 989, and 40 CFR Parts 1500 through 1508 (Council on Environmental Quality NEPA implementing regulations).

2. PROJECT DESCRIPTION. If approved, the proposed *KC-46A MOB 5 Beddown* would base 12 KC-46A Pegasus aircraft at March ARB which would require the construction of a new hangar, demolition of an existing facility, and renovation or modification of eleven facilities. Table 1 in Attachment 1 and the project map in Attachment 2 identify the specific facilities that are included as part of the *KC-46A MOB 5 Beddown* at March ARB.

In addition to the construction, demolition and renovation of facilities, aircraft operations would be conducted by the KC-46A aircraft. Aircraft activity near March ARB would consist of aircraft operations similar to the existing KC-135 mission, which include take offs, landings, and flying patterns in the local airspace allocated to March ARB. Preliminary analysis indicates that noise levels from these operations would be less than or similar to noise levels associated with the existing KC-135 mission at March ARB.

3. AREA OF POTENTIAL EFFECTS. The Area of Potential Effects (APE) includes three buildings that would be renovated for the proposed undertaking which are contributing elements to the March Field Historic District (MFHD) These facilities include: building 429, building 452, and building 479. No the other buildings in the *KC-46 MOB 5 Beddown* program are eligible for the National Registry of Historic Places (NRHP) (see attachment 2).

Additionally, building 1246 would be demolished in order to accommodate the construction of a new KC-46A maintenance hangar. This area of new construction, including the proposed demolished building, are entirely outside the MFHD (see attachment 2) but would be considered an undertaking due to excavation and would require tribal consultation.

Table 1 in Attachment 1 lists all buildings in the APE and their NRHP eligibility status.

4. PREVIOUSLY RECORDED CULTURAL RESOURCES. Based on March ARB's Integrated Cultural Resources Management Plan (ICRMP, March ARB 2011), the entirety of March ARB has been surveyed for surface archaeological resources. No known prehistoric, sacred sites, or Traditional Cultural Properties are located within the current boundaries of March ARB. Additionally, consultation with Native American tribes was initiated in February 2020 and no resources or concerns were identified during consultation.

March ARB has been fully surveyed for historic architectural resources. The March Field Historic District was listed in the NRHP in 1994 and represents the only NRHP-listed historic property within the current boundaries of March ARB.

Building 429

Building 429 is a contributing element of the MFHD. Building 429 was originally constructed in 1929 (see attachment 3, figure 2). Additional wings on each side of this building were constructed between 1930 and completed circa 1940 (see attachment 3, figure 3). This hanger retains many of the original features, primarily on the external surfaces of this structure. Noteworthy historic contributions include the original lighting fixtures in the easternmost room, a large number of original windows and doors, and an intact "vault" in the southernmost room. The interior of this hanger has been modified in the past, mostly prior to 1966, but with some modifications that post-date 1966 that are easily reversible.

The *KC-46A MOB 5 Beddown* proposes to renovate interior portions of the building to transform current office space into industrial shop areas. The proposed new mission would utilize two portions of this structure. The first portion, as shown in attachment 3, figure 4, is the warehouse portion as labeled with "ATGLs," "CTK," "LSAS" and "PARTS." The warehouse portion would not require any modifications as is it already established as a warehouse for storage and this use would continue with the *KC-46A MOB 5 Beddown*.

for some restoration. The only other modifications would include the installation of proper interior lighting and painting.

The 452nd AMW has determined that the proposed *KC-46A MOB 5 Beddown* at March ARB would result in no adverse effect to Building 479, and therefore no adverse effect to the MHFD.

No other facilities identified on Table 1 are eligible for the NRHP and all of the areas proposed for construction, demolition and renovation are heavily disturbed and in areas where the Integrated Cultural Resources Management Plan (ICRMP) indicates a lack of archaeological sites.

5. DRAFT ICRMP UPDATE. The most recent updated ICRMP was signed September of 2021 and has completed additional field surveys for archaeological and architectural resources located within the boundaries of March ARB. This project does not reduce any of the known historic elements established in the ICRMP.

6. FINDINGS. The 452nd AMW carried out a reasonable and good-faith cultural resources investigation that fulfills federal agency responsibilities pursuant to 36 CFR §800.4(a)-(d). The 452nd AMW has identified the APE include: building 1246 that would be demolished, the construction of a new maintenance hangar, and buildings 429, 452, and 479 that would all be renovated/modified.

The undertaking within the MFHD, and its subsequent viewshed, only applies to buildings 429, 452, and 479 (see attachment 3, Figures 1-1 and 1-2). The proposed modifications to these buildings only affect the interior of the buildings and include minor restorations. These modifications would not result in an adverse effect to the MFHD.

The demolition of building 1246 and the construction of the new maintenance hangar is an undertaking outside of the MFHD, and its subsequent viewshed. This portion of the *KC-46A MOB 5 Beddown* is only an undertaking due to excavation which will be consulted with the tribes.

The 452nd AMW determined the proposed undertakings would result in no adverse effect to historic properties. The 452nd AMW requests concurrence with the delineation of the APE and assessment of effects as written. The 452nd AMW has fulfilled its Section 106 responsibilities for this undertaking.

If you have any questions, please do not hesitate to contact Ms. Chris Wagner, Cultural Resources Manager, at (951) 655-3653 or email christhild.wagner@us.af.mil.

Sincerely

SHAW.DAVID.NATHANIEL.1132134053 Digitally signed by SHAW.DAVID.NATHANIEL.1132134053 Date: 2023.01.23 16:43:21 -08'00'

DAVID N. SHAW, GS-13, DAF
452d Base Civil Engineer

Attachments:
Attachment 1. Facilities and Infrastructure Development Table for March ARB
Attachment 2, March ARB Project Map and Construction APE
Attachment 3, Photographs and Plans for Buildings 429, 452 and 479

Although the proposed plans would not modify anything on the outside of the existing structure, there is an opportunity to improve/restore the existing historic windows on the southwest side of the building. The original chicken wire windows on the hangar doors that are broken would be replaced in-kind with the original historic style. In addition, a modern floating ceiling inside the warehouse would be removed to restore the historic look and feel of the building.

The 452nd AMW has determined that the proposed *KC-46A MOB 5 Beddown* at March ARB would result in no adverse effect to Building 429, and therefore no adverse effect to the MFHD.

Building 452

Building 452 is a contributing element of the MFHD. Building 452 is also a historic hanger that is different from all the other hangers on base, particularly the southwest side. This building was originally constructed in 1929 and completed in 1930 (see attachment 3, figure 5). The wings on this building, constructed between 1930 and completed circa 1940, were originally intended for offices. On the inside of the hanger, the original windows from 1929 are still present and have not been removed. Most of the doors on the building are original with original doorknobs.

The renovations proposed for this building are also all interior renovations (see attachment 3, figure 6). Renovations would include removing non-original interior walls to create approximately 10,000 square feet of storage area. A non-original, wood-framed mezzanine would be removed from the interior of the building and a non-original, wood-framed wall would be removed to expose the original board-formed, poured- concrete walls and windows (see attachment 3, figure 7). Additional repairs to the interior of the building would include in-kind door replacements, removal of asbestos mastic linoleum flooring and repainting of lead based painted walls. Both the asbestos removal and lead based paint removal (or encapsulation) would require an abatement plan that would fall under an Environmental Protection Plan (Non-Resource Conservation and Recovery Act "California Standards). To further facilitate the original historic nature of this structure, a non-original modern floating ceiling near the windows would be removed to expose the original windows that are currently half covered.

The 452nd AMW has determined that the proposed *KC-46A MOB 5 Beddown* at March ARB would result in no adverse effect to Building 452, and therefore no adverse effect to the MFHD.

Building 479

Building 479 is a contributing element of the March Field Historic District. Building 479 was originally constructed in 1938 as a salvage warehouse and lumber yard (see attachment 3, figure 8) and later converted to a storage area at an unknown date and is currently used as a storage facility (see attachment 3, figure 9). The original structure contained accordion doors for the three storage areas of the building. These doors have since been removed and the three bays currently serve as an open-air storage areas. For the *KC-46A MOB 5 Beddown*, this building would be utilized for Independent Storage Units (ISUs). Currently there are no longer any doors on the building. New doors would be installed that would be roll up but fabricated to look like the original doors. Fabricated doors back to the original accordion doors is not a feasible option as this would hinder access in and out of the building as needed and render this building not usable for the mission needs. Although the doors would be replaced with roll up doors made to look like original accordion doors with windows, this was a compromise to be able to re-use the building and allow

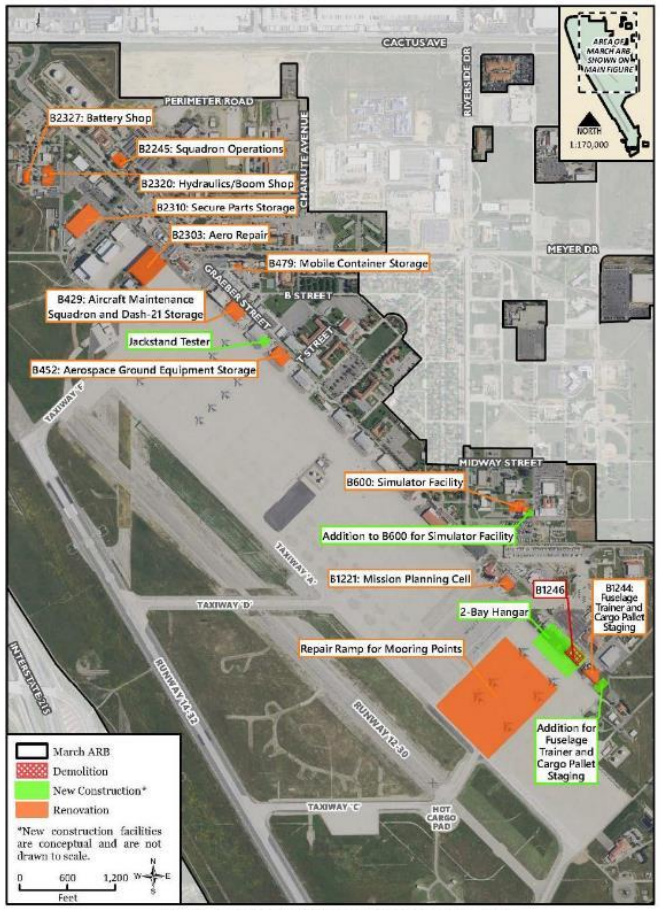
ATTACHMENT 1
FACILITIES AND INFRASTRUCTURE DEVELOPMENT TABLE FOR MARCH ARB

Table 1. Facilities and Infrastructure Development Table for March ARB

Project	Construction Year	NRHP Status
Demolition		
Building 1246 Demolition for the New 2-Bay Hangar	1967	Not eligible
Renovation		
Building 2327 Renovation for the Battery Shop	1993[a]	Not eligible
Building 2320 Renovation for the Hydraulics/Boom Shop	1989[a]	Not eligible
Building 2310 Renovation for Secure Parts Storage	1968	Not eligible
Building 2245 Renovation for Squadron Operations	2005[a]	Not eligible
Building 2303 Renovation for Aero Repair	1955	Not eligible
Building 429 Renovation for Aircraft Maintenance Squadron and Storage	1929	Listed on the NRHP
Building 479 Renovation for Mobile Container Storage	1929	Listed on the NRHP
Building 452 Renovation for Aerospace Ground Equipment Storage	1938	Listed on the NRHP
Building 600 Renovation for Simulator Facility	1986[a]	Not eligible
Building 1221 Renovation for the Mission Planning Cell	1956	Not eligible
Building 1244 Renovation for the Fuselage Trainer	1963	Not eligible
New Construction		
Construct a new 2-Bay Hangar with Apron Access (Fuel Cell, Corrosion Control, Wash-Rack, AMU, Back-Shops)	Not applicable	Not applicable
Jack Stand Tester	Not applicable	Not applicable
Addition to Building 600	Not applicable	Not applicable
Addition to Building 1244 for Cargo Pallet Staging	Not applicable	Not applicable

[a] Not eligible based on the recent construction date and the lack of significant cultural context
[b] Not eligible based on finding of attached historical building evaluation

ATTACHMENT 2
MARCH ARB PROJECT MAP AND CONSTRUCTION APE



March ARB Project Map and Construction APE

ATTACHMENT 3

PHOTOGRAPHS AND PLANS FOR BUILDINGS 429, 452 AND 479



Figure 1. Hangers in 1932 (from top down) 429, 440, 452 and 457. Wings were slowly added as office space.

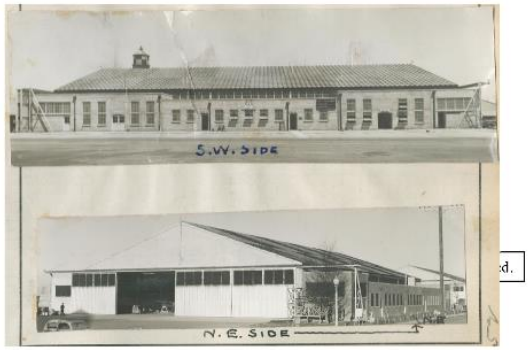


Figure 2. Building 429 showing southwest and northeast sides of the hanger.



Figure 3. Original hanger structure with additional wings added.



Figure 4. Interior of Building 429 showing the various areas proposed for renovation.



Figure 5. Building 452 showing southwest and northeast sides of the hanger with partial construction of one of the wings for office space in the northeast view.

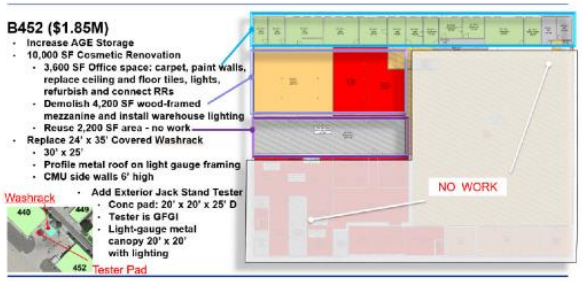


Figure 6. Building 452 showing the areas proposed for renovation.





Figure 7. Building 452 showing original board pressed concrete walls and original windows. Photo on right shows the concrete wall with black substance. Photo on left shows the only 2 windows visible on the East side of the building.



Figure 8. Building 479 circa 1938.



Figure 9. Building 479 modern day.

March ARB Section 106 SHPO Response Letter

State of California • Natural Resources Agency
Gavin Newsom, *Governor*
DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION
Armando Quintero, *Director*
Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

February 7, 2023

Reply in Reference to: USAF_2023_0124_001

Mr. David N. Shaw
452d MSG/CE
610 Meyer Drive, Building 2403
March ARB CA 92518-2188

VIA ELECTRONIC MAIL

Re: Notification of KC-46A Main Operating Base 5 Beddown, March Air Reserve Base, Riverside County

Dear Mr. Shaw:

In a January 23, 2023 letter, the United States Air Force (USAF) notified the State Historic Preservation Officer (SHPO) that the USAF is proposing to "potentially modify the mission of March ARB since the base has been identified as the preferred location for the KC-46A main Operating Base 5 (MOB 5) Beddown." The USAF's letter mentions the following regulatory information pertaining to this consultation:

- "The 452nd AMW has determined that the proposed beddown is a federal undertaking subject to compliance with Section 106 (codified at 54 United States Code [USC] 306108) of the National Historic Preservation Act (NHPA) of 1966, as amended (54 USC 300101 et seq.: Historic Preservation). The 452nd AMW is complying section 106 using the implementing regulations (Title 36 Code of Federal Regulations [CFR] Part 800)."
- "The 452nd AMW will coordinate review pursuant to section 106 of the NHPA with analyses pursuant to the National Environmental Policy Act of 1969 (NEPA). The NEPA Environmental Assessment will analyze potential impacts to cultural resources and other environmental consequences associated with the KC-46A MOB 5 Beddown at March ARB in accordance with the provisions of CFR Title 32, Part 989, and 40 CFR Parts 1500 through 1508 (Council on Environmental Quality NEPA implementing regulations)."
- "The 452nd AMW determined the proposed undertakings would result in no adverse effect to historic properties. The 452nd AMW requests concurrence with the delineation of the APE and assessment of effects as written. The 452nd AMW has fulfilled its Section 106 responsibilities for this undertaking."

After reviewing the information provided, the SHPO has the following comments:

1. Please provide confirmation of the USAF's intended consultation method and specify the regulatory stipulations under which the USAF are proposing to consult.
2. The SHPO cannot comment or concur on the adequacy of the USAF's documentation standards or finding of effect until the consultation framework is established and all required information pursuant to 36 CFR Part 800.11 is provided for review and comment.
3. The SHPO objects to the proposed finding of effect and **does not concur** with the USAF's declaration that "The 452nd AMW has fulfilled its Section 106 responsibilities for this undertaking."
4. The SHPO suggests the USAF review the regulations found in 36 CFR Part 800 and the additional guidance found here: https://ohp.parks.ca.gov/pages/1071/files/Section106_Checklist.pdf

This letter is being sent in electronic format only. Please confirm receipt of this letter. Please notify Ed Carroll, Historian II, at Ed.Carroll@parks.ca.gov or (619) 678-2609 if there are any questions or to request a hard copy of this letter.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

March ARB Response to the Section 106 SHPO Letter

DEPARTMENT OF THE AIR FORCE
AIR FORCE RESERVE COMMAND

13 March 2023

Mr. David N. Shaw, Base Civil Engineer
452d Mission Support Group/Civil Engineer Squadron
610 Meyer Drive
March ARB CA 92518-2166

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
P.O. Box 942896
Sacramento CA 94296-0001

RE: USAF_2023_0124_001, KC-46A Main Operating Base 5 Beddown

Dear Ms Polanco

The 452d Air Mobility Wing (AMW) of the United States Air Force Reserve Command (USAF), March Air Reserve Base (ARB), in Riverside County, California, is continuing consultation with the California State Historic Preservation Officer (SHPO) on the proposed *KC-46A Main Operating Base (MOB) 5 Beddown* (OHP file reference # USAF_2023_0124_001). USAF initiated Section 106 consultation for the proposed undertaking with the SHPO in a letter dated 23 January 2023. In reply, the SHPO:

1. Requested confirmation on the USAF's intended consultation framework
2. Stated no comment could be offered on USAF findings until the consultation framework is established and information pursuant to Title 36 Code of Federal Regulations (CFR) Part 800.11 is received
3. Objected to USAF's fulfillment of federal responsibilities pursuant to Section 106, and
4. Suggested USAF review the Section 106 implementing regulations.

Continuing consultation, USAF offers the following to address the SHPO's comments:

1. USAF is consulting the SHPO pursuant to the Section 106 implementing regulations found at Title 36 CFR Part 800
2. USAF is providing the SHPO with its reasonable and good faith investigation within a report that conforms to the requirements set forth in Title 36 CFR Part 800.11, Documentation standards, as well as *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* (Jackson 1990), and
3. USAF has reviewed the Section 106 implementing regulations as Title 36 CFR Part 800 as suggested.

USAF carried out a reasonable and good-faith cultural resources investigation that fulfills federal agency responsibilities pursuant to Title 36 CFR §800.4(a)-(d) and Title 36 CFR §800.5(a)-(d). Details of the investigation are provided in the attachment. USAF identified the Area of Physical Impacts and then identified the Area of Potential Effects (APE) in accordance with Title 36 Part 800.4(a)(1).

USAF requests concurrence from the SHPO that the APE for the *KC-46A Pegasus MOB 5 Bed-down* is adequately delineated.

The APE contains 13 cultural resources, 5 of which are less than 50 years old and do not possess exceptional significance, and 4 of which have been determined not eligible for listing in the National Register of Historic Places by consensus. Four historic properties are within the APE: three contributing elements to the March Field Historic District (MFHD), and the MFHD itself. Pursuant to 36 CFR 800.5, USAF applied the criteria of adverse effect provided at 36 CFR 800.5(1)(a) to the 4 historic properties and, as described in Chapter 6 of the attachment, determined that all 4 historic properties would not be adversely affected by the proposed *KC-46A Pegasus MOB 5 Bed-down*.

USAF requests concurrence from the SHPO that the *KC-46A Pegasus MOB 5 Bed-down* would not adversely affect three contributing elements to the MFHD and the MFHD itself.

Pending SHPO concurrence with the delineation of the APE and assessment of effects, pursuant to 36 CFR 800.4(d)(1), USAF determined the proposed undertaking would result in no adverse effect to historic properties. Barring objection to this finding by the SHPO, USAF has fulfilled its Section 106 responsibilities for this undertaking and no further consultation is required. If project implementation results in a discovery during construction, USAF would re-open Section 106 consultation. If you have any questions or require additional information, please contact Ms. Chris Wagner, Cultural Resource Manager, via email at: christhild.wagner@us.af.mil. Thank you for your assistance with this undertaking.

Sincerely

SHAW.DAVID.NATHANIEL.1132134053 Digitally signed by SHAW.DAVID.NATHANIEL.1132134053 Date: 2023.03.20 14:36:23 -07'00'

DAVID N. SHAW, GS-13, DAF
452d Base Civil Engineer

Attachment: Identification of Historic Properties and Finding of No Adverse Effect

Identification of Historic Properties
and
Finding of No Adverse Effect

KC-46A Pegasus Main Operating Base 5 Bed-down

March Air Reserve Base
Riverside County, California

Prepared By: Christhild Wagner
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610 Meyer Drive
March Air Reserve Base CA 92518-2166

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Submitted To: Ms. Julianne Polanco
State Historic Preservation Officer
Department of Parks and Recreation
Office of Historic Preservation
P.O. Box 942896
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March 2023

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Chapter 1. Summary

§ 800.3: Initiation of the Section 106 Process

The 452d Air Mobility Wing (AMW) of the United States Air Force Reserve Command (AFRC), March Air Reserve Base (ARB), proposes to cease operations relating to the existing fleet of twelve Boeing KC-135 Stratotanker aerial refueling planes. In place of the existing KC-135 mission, the 452d AMW proposes to bed-down a fleet of twelve Boeing KC-46A Pegasus aerial refueling tankers. The proposed *KC-46A Pegasus Main Operating Base 5 (MOB 5) Bed-down* project would include demolition of one existing facility, construction of one new facility at the location of the demolished facility, and modification of eleven existing facilities.

The 452d AMW determined that the proposed bed-down is a federal undertaking subject to compliance with Section 106 (codified at 54 United States Code [USC] 306108) of the National Historic Preservation Act (NHPA) of 1966, as amended (54 USC 300101 et seq.: Historic Preservation). The 452d AMW is complying with Section 106 using the implementing regulations (Title 36 Code of Federal Regulations [CFR] Part 800). Per 36 CFR §800.3, the 452d AMW is consulting the California State Historic Preservation Officer (SHPO) and ten federally-recognized tribes.

§ 800.4: Identification of Historic Properties

The 452d AMW cultural resources manager worked closely with AFRC personnel to delineate the footprint of the proposed undertaking (Figure 1, Figure 2). Based on the footprint of proposed demolition, new construction, facility renovations, temporary laydown areas, and utility installation areas, 452d AMW cultural resources manager Christhild Wagner delineated the Area of Physical Impacts (API)(Figure 2), and then delineated the Area of Potential Effects (APE)(Figure 3) in accordance with §800.4(a)(1).

A reasonable and good faith effort to identify historic properties in the API included a review of previous surveys and cultural resources recorded in the area, review of the 2021 update to the Integrated Cultural Resources Management Plan (ICRMP), review of the Office of Historic Preservation's (OHP) Built Environment Resource Directory (BERD), the NRHP listings (online), review of the cultural resources layers within the March ARB geographic information system, and supplemental fieldwork. The cultural resources records search revealed that all areas within the API had been systematically surveyed for cultural resources. To augment previous surface surveys, Ms. Wagner revisited areas where project-related ground-disturbing construction activities are anticipated to see if conditions had changed since the previous survey.

In total, 13 built-environment resources are within the API. Of those, five resources are categorically ineligible for listing on the National Register of Historic Places (NRHP) because they are less than 50 years old. Table 1-1 lists the five resources that are less than 50 years old and do not possess extraordinary significance and thus do not merit further consideration within the Section 106 review process for the proposed *KC-46A Pegasus MOB 5 Bed-down*.

Table 1-1: Built-Environment Resources in the API less than 50 Years Old (n=5)

Building #	Date Constructed	Building Description
600	1986	Simulator Facility
1224	1980	Fuselage Trainer
2320	1989	Hydraulics/Boom Shop
2327	1993	Battery Shop
2245	2005	Squadron Operations

Of the remaining nine built-environment resources within the API, four of those resources were previously determined ineligible for the NRHP. Table 1-2 lists the four resources along with the OHP reference number associated with the consensus determinations.

Table 1-2: Ineligible Cultural Resources in the APE, Previously Determined (n=4)

Building #	Description	Year Constructed	NRHP Status	OHP File #
1221	Aircraft Maintenance Hangar	1956	Not Eligible (6Y)	USAF950818A
1246	Maintenance Dock	1967	Not Eligible (6Y)	USAF950818A
2303	Maintenance Hangar, Avionic Shop	1955	Not Eligible (6Y)	USAF950818A
2310	Secure Parts Storage	1968	Not Eligible (6Z)	USAF_2020_0714_001

The remaining four built-environment resources within the API consist of the March Field Historic District (MFHD) and three of the historic district's contributing elements. Table 1-3 lists the four historic properties with a description, year constructed, and the National Park Service (NPS) and OHP reference numbers associated with the consensus determinations.

Table 1-3: Historic Properties within the API, Previously Determined (n=4)

Facility	Description	Year Constructed	NRHP Status	NPS & OHP Ref #s
Multiple	March Field Historic District	Multiple	1D,	94001420 / USAF950818A
Building 429	Hangar	1929	1D, 2D2	94001420-0144 / USAF920428A
Building 452	Hangar	1929	1D, 2D2	94001420-0092 / USAF920428A
Building 479	Lumber Yard	1938	1D, 2D2	94001420-0134 / USAF920428A

§ 800.5: Assessment of Adverse Effects

Using results from the investigation, the 452d AMW cultural resources manager worked with personnel from AFRC to assess whether project-related physical impacts would result in adverse effects to historic properties. Pursuant to 36 CFR 800.5(d)(1), the 452d AMW determined the proposed undertaking would result in no adverse effects to any of the four historic properties.

Chapter 2. Project Description

2.1. The Proposed Undertaking

The proposed *KC-46A Pegasus MOB 5 Bed-down* would base a fleet of 12 Boeing KC-46A Pegasus aerial refueling aircraft at March ARB as a replacement to the outgoing fleet of 12 Boeing KC-135 aerial refueling aircraft. Project elements required to support that bed-down include demolition of one existing facility and, in its place, construction of one new hangar, plus modifications of eleven other facilities. New construction would include the two-bay hanger, a jack stand tester, an addition onto Building 600, and an addition onto Building 1244 for cargo pallet staging. Table 2.1 lists specific facilities that are part of the *KC-46A Pegasus MOB 5 Bed-down* at March ARB and the associated actions at each facility.

Table 2-1: Facilities Proposed for Renovations and Demolition (n=12)

Building #	Project Activity	NRHP Status
429	Transfer from the KC-135 program to the KC-46A program	Listed on the NRHP
452	Renovation for Aerospace Ground Equipment Storage	Listed on the NRHP
479	Renovation for Mobile Container Storage	Listed on the NRHP
600	Renovation for Simulator Facility, addition	Not eligible
1221	Renovation for the Mission Planning Cell	Not eligible
1244	Renovation for the Fuselage Trainer	Not eligible
1246	Demolition for the New 2-Bay Hangar	Not eligible
2245	Renovation for Squadron Operations	Not eligible
2303	Renovation for Aero Repair	Not eligible
2310	Renovation for Secure Parts Storage	Not eligible
2320	Renovation for the Hydraulics/Boom Shop	Not eligible
2327	Renovation for the Battery Shop	Not eligible

Building 1246 would be demolished to accommodate construction of a KC-46A maintenance hangar. The Building 1246 is entirely outside the MFHD.

To support maintenance of the KC-46A aircraft, the proposed project also would install an aircraft jack stand tester adjacent to the flight line apron and Building 452. Aircraft axle hydraulic jacks are placed directly under aircraft landing gear and used to lift the aircraft during inspections of the landing gear, repair and replacement of tires, servicing and replacing brakes,

and other maintenance. The integrity of axle jacks is routinely tested using a jack stand tester. The proposed installation of the jack stand tester would not be permanent; as such, installation of the jack stand tester would be reversible. Additionally, installation would not require modification of any buildings or structures, and would not require ground disturbance other than constructing anchor points in existing concrete surfaces.

In addition to demolition, construction and renovation activities, KC-46A aircraft would conduct air operations out of March ARB that would be similar to the existing air operations associated with the KC-135 mission, which includes take offs, landings, and flying patterns in the local airspace allocated to March ARB. Preliminary analysis indicates that noise levels from these operations would be less than or similar to noise levels associated with the existing KC-135 mission at March ARB.

2.2. Area of Physical Impacts

The API for the proposed project is the footprint for all foreseeable project-related ground-disturbing and built-environment modifying activities (Figure 2). Surface ground disturbance would result from demolishing one existing building, constructing one new building and additions onto two other buildings, and creating anchor points for the hydraulic jack stand tester. Multiple spatially separated polygons comprise the API.

2.3. Area of Potential Effects

The APE for the project is the API plus the full extent of cultural resources that overlap the API (Figure 3). As such, the entirety of the MFHD is included within the APE. Although 83 buildings, structures, and objects comprise the MFHD as contributing elements, this document focuses on just three of the 83 contributing elements plus the MFHD itself by analyzing the ground-disturbing and building modification activities that factor into the delineation of the API. As such, 80 contributing elements of the MFHD will not be counted as individual historic properties within the APE, just the larger district of which they are part and parcel. Thus, the APE is made up of multiple spatially separated polygons plus, where the API overlaps the MFHD, the entirety of the historic district.

Chapter 3. Summary of Identification Efforts

3.1. Records Search

The 452d AMW cultural resources manager performed a cultural resources records search using files housed at the environmental offices of the 452d Civil Engineer Squadron, including the files pertaining to the MFHD, the recently updated Integrated Cultural Resources Management Plan (ICRMP) for March ARB (March Air Reserve Base 2020), which includes Department of Parks and Recreation 523 forms for all known cultural resources on base, and the base's Comprehensive Plan Geographic Information System (GIS). Additional sources consulted include the OHP's online Built Environment Resource Directory (Office of Historic Preservation, n.d.), and the online NRHP listings (National Park Service, n.d.).

3.2. Fieldwork

The cultural resources records search revealed that all areas within the API had been systematically surveyed for archaeological and historic built-environment resources. The entirety of March ARB has been surveyed during the course of 28 archaeological and historic built-environment surveys and other investigations. The results of all previous investigations are summarized in the recently updated ICRMP (March Air Reserve Base 2020).

To augment previous surface surveys, Ms. Wagner revisited areas where project-related ground-disturbing construction activities are anticipated to see if conditions had changed, as well as resurveyed the interiors of three buildings that are part of the historic district to confirm that the integrity of those contributing elements was still intact.

3.3. Reporting

Results of the investigation and analysis are reported herein. This report conforms to the requirements set forth in 36 CFR Part 800.11, Documentation standards, as well as *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* (Jackson 1990), as applicable.

10. Mr. Darrell Mike, Tribal Chairman, **Twenty-Nine Palms Band of Mission Indians**, with additional Ms. Sarah Bliss, Cultural Resources Manager, THPO

The 452d AMW is consulting with the Tribes by submitting a tribal letter to the Tribes that was sent in January. A copy of the transmittal letters to the Tribes is included in Appendix B. The 452d AMW will continue consultation with the Tribes for the life of the project. Disagreements between the 452d AMW and any of the Tribes and other substantive comments will be brought to the attention of the Office of Historic Preservation.

Chapter 5. Resources Identified

The API for the *KC-46A Pegasus Main Operating Base 5 (MOB 5) Bed-down* project contains 13 cultural resources, 9 of which are not eligible for listing on the NRHP. Of the 9 ineligible resources, 5 resources are less than 50 years old and do not possess extraordinary significance. There are 4 historic properties within the API.

Table 5-1 lists the five resources that are less than 50 years old and do not possess extraordinary significance and thus do not merit further consideration within the Section 106 review process for the proposed *KC-46A Pegasus MOB 5 Bed-down*.

Table 5-1: Built-Environment Resources in the API less than 50 Years Old (n=5)

Building #	Date Constructed	Building Description	Eligibility
600	1986	Simulator Facility	Less than 50 years
1224	1980	Fuselage Trainer	Less than 50 years but Not eligible
2320	1989	Hydraulics/Boom Shop	Less than 50 years
2327	1993	Battery Shop	Less than 50 years
2245	2005	Squadron Operations	Less than 50 years

5.1. Resources Previously Determined Ineligible for the NRHP

Four built environment resources within the APE have been previously determined to be ineligible for listing the National Register (Table 5-2).

Table 5-2: Built Environment Resources in the APE Previously Determined Ineligible (n=4)

Building #	Description	Year Constructed	NRHP Status	OHP File #
1221	Aircraft Maintenance Hangar	1956	Not Eligible (6Y)	USAF950818A
1246	Maintenance Dock	1967	Not Eligible (6Y)	USAF950818A
2303	Maintenance Hangar and Shop Avionic	1955	Not Eligible (6Y)	USAF950818A
2310	Secure Parts Storage	1968	Not Eligible (6Z)	USAF_2020_0714_001

5.2. Resources Previously Determined Eligible for the NRHP

There are four historic properties within the API. All four resources were previously determined to be eligible for listing on the NRHP (Table 5-3).

Table 5-3: Historic Properties within the API, Previously Determined (n=4)

Facility	Description	Year Constructed	NRHP Status	NPS & OHP Ref #s
Multiple	March Field Historic District	Multiple	1D,	94001420 / USAF950818A
Building 429	Hangar	1929	1D, 2D2	94001420-0144 / USAF920428A
Building 452	Hangar	1929	1D, 2D2	94001420-0092 / USAF920428A
Building 479	Lumber Yard	1938	1D, 2D2	94001420-0134 / USAF920428A

These historic properties will be described in Chapter 6, along with an assessment of potential project effects upon each property.

Chapter 6. Historic Properties: No Adverse Effect

Of the 13 cultural resources within the API, 4 are historic properties. Pursuant to 36 CFR 800.5, 452d AMW applied the criteria of adverse effect provided at 36 CFR 800.5(1)(a) and determined that all 4 historic properties within the API would not be adversely affected by the proposed *KC-46A Pegasus MOB 5 Bed-down* project; those 4 historic properties are listed in Table 6-1 and described below, along with an assessment of potential project effects.

Table 6-1: Historic Properties within the API with No Adverse Effects (n=4)

Facility	Description	Year Constructed	NRHP Status	NPS & OHP Ref #s
Multiple	March Field Historic District	Multiple	1D	94001420 / USAF950818A
Building 429	Hangar	1929	1D, 2D2	94001420-0144 / USAF920428A
Building 452	Hangar	1929	1D, 2D2	94001420-0092 / USAF920428A
Building 479	Lumber Yard	1938	1D, 2D2	94001420-0134 / USAF920428A

The March Field Historic District

The MFHD includes 83 contributing elements mostly built between 1928 and 1943 within approximately 158 acres. In addition to buildings, structures and objects, contributing elements of the district include the plan (i.e., the formal layout of streets and buildings), as well as landscaping elements. The district is a tightly-organized cluster of buildings laid out in a right triangular plan, with the hypotenuse formed by the 1928 flight line. The other edges of the triangle are lined with small-scale Mission Revival officers' quarters. The flightline is edged by a row of hangars with the expansive asphalt and concrete runways beyond. The district is easily recognizable by its lush and mature vegetation. The plan of March Field exhibits its origin in the City Beautiful and city planning movements in three respects: careful segregation of buildings into functional sectors; layout of streets and buildings along formal geometric configurations; and the use of a unified architectural program – in this case, Mission Revival. The 1928 plan for March Field may be seen as comprising seven functional sectors—hangars; industrial buildings; the hospital complex; barracks for enlisted personnel; recreational buildings, chiefly for enlisted personnel; officers' quarters; and recreational buildings for officers. Each functional group occupies an identifiable sector of the base and is oriented in a unique way toward the triangular plan. Each functional group also includes repetitive building types unique to that sector. The plan

for the base is visually powerful because it emphasizes all elements—architectural, functional, and locational - which unite buildings within each of the various sectors.

The hangar sector includes 10 buildings, 8 of which contribute to the significance of this historic district. The 7 hangars in the sector are essentially intact and are regarded as contributing to the significance of this historic district, though each has been modified to one degree or another. The 8th building is the Reserve Headquarters which also has retained his historic elements and is regarded as contributing. Building 429 and Building 452 are both hangars that are part of the hangar sector.

The industrial sector includes 30 buildings that contribute to the significance of the historic district, from the smallest to some of the largest buildings within the district and have a broad variety of purposes and uses. Nearly all buildings within the industrial sector are unique; only two repetitive building types exist. As utilitarian structures, these buildings have been modified as uses changed. Building 479 is part of the industrial sector.

6.1. Building 429

Building 429 (Figure 6-1, Figure 6-2) was constructed in 1929 as a hangar with an open floor plan; wings on each side of the building were constructed between 1930 and circa 1940 within the period of significance (Figure 3). This hanger retains many of the original features, primarily on the external surfaces of this structure. Noteworthy character defining features include the original lighting fixtures in the easternmost room, a majority of the original windows and doors, and an intact "vault" in the southernmost room. The interior of the hanger has been modified in the past, mostly prior to 1966, but with some modifications that post-date 1966 that are easily reversible.



Figure 6-1: Building 429 – Southwest side of the hanger



Figure 6-2: Hangers in 1932 – Building 429 top left, Building 452 bottom center

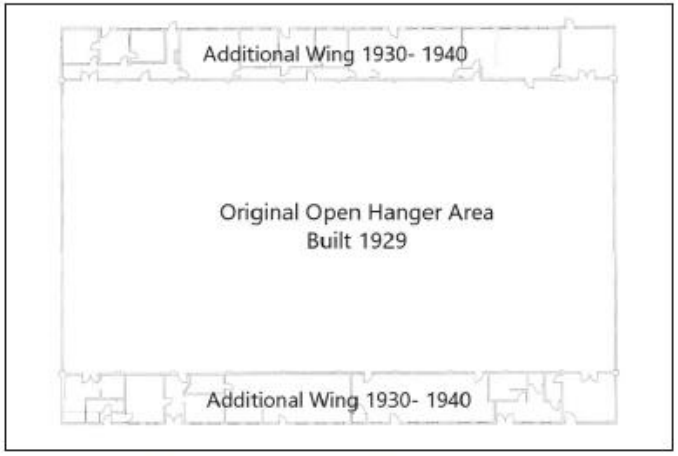


Figure 6-3: Building 429 – Original hanger floor plan including wing additions

Proposed Project Activities

The 452d AMW proposes simply to transfer areas within Building 429 that are currently used for the KC-135 Stratotanker program to the KC-46A Pegasus program; Minor renovation to the interior portions of Building 429 include extending the existing shop environment for tools and parts storage and taking out the cubicle offices to support the *KC-46A Pegasus MOB 5 Bed-down*. No modification to the existing structure with contributing elements will be disturbed. The warehouse area denoted by the polygon labeled in figure 6-4 with ATGLs, CTK, LSAS and PARTS would simply transfer from the KC-135 Stratotanker mission to the KC-46A Pegasus mission. The warehouse portion would not require any modifications as is it already established as a warehouse for storage and this use would continue. Regarding the exterior wall of this area, the original exterior wall, chicken wire glass panels and hanger doors are still intact and continue to be contributing elements. No modification to the exterior of the building is proposed. Second, the current industrial shops and office space denoted by the polygon CTK would transfer from KC-135 to KC-46A use. No physical modifications are proposed at this time.



Figure 6-4: Building 429 – Present-day interior showing the areas proposed for re-alignment

Assessment of Effects

In Building 429, the proposed *KC-46A Pegasus MOB 5 Bed-down* would utilize existing warehouse space that is not from the period of significance and utilize existing industrial shops. Re-alignment from the KC-135 Stratotanker Program to the KC-46A Pegasus Program would result in no changes to Building 429's integrity of materials, design, workmanship and feeling. As such, the 452d AMW determined that the proposed *KC-46A Pegasus MOB 5 Bed-down* at March ARB would result in no adverse effect to Building 429.

6.2. Building 452

Building 452 is a hangar constructed in 1929-30. It differs from other hangers on base in that the southwest wing on this building, constructed between 1930 and completed circa 1940 and originally intended to be offices, has a different and asymmetric configuration of doors, windows, and double-height windows than the other six hangars. All other hangars have four double-height windows at each end of the southwest elevation, nine shorter windows across the center, and four symmetrically placed doors (compare Figure 6-1 to Figure 6-5, top).

In Building 452, most of the original windows from 1929 are still present and in excellent condition. However, some of the windows were removed and filled in with concrete blocks, and others have been covered over. Several original doors have been replaced with modern doors at some unknown point in time in the past. Two additional modifications are the conversion of two double-height windows into a roll-up door and conversion of one window into a set of double doors. Most of the interior doors are original with original hardware. Almost all modifications could be reversed.



Figure 6-5: Building 452–Southwest elevation (top); northeast side (bottom) showing in-progress construction



Figure 6-6: Building 452–Southwest elevation today

Proposed Project Activities

The 452d AMW proposes to renovate and upgrade interior portions of Building 452 to support the *KC-46A Pegasus MOB 5 Bed-down* (see Figure 6-6). Within the hangar area, renovations would address features that do not date to the period of significance, including:

- Removing a non-original, wood-framed 4,200 square foot mezzanine and installing new warehouse lighting
- Utilizing a 2,200 square foot work area for storage and operations.

Within the 3,600 square foot wing of offices, cosmetic renovations would address multiple intrusive elements (see Figure 6-7), including:

- Removing asbestos linoleum flooring and asbestos mastic adhesive
- Removing non-original interior wood-framed walls to expose the original board-formed, poured-concrete walls and windows
- Overpainting lead-based painted as a means to encapsulate it
- Installing new carpet and floor tiles
- Installing new lighting

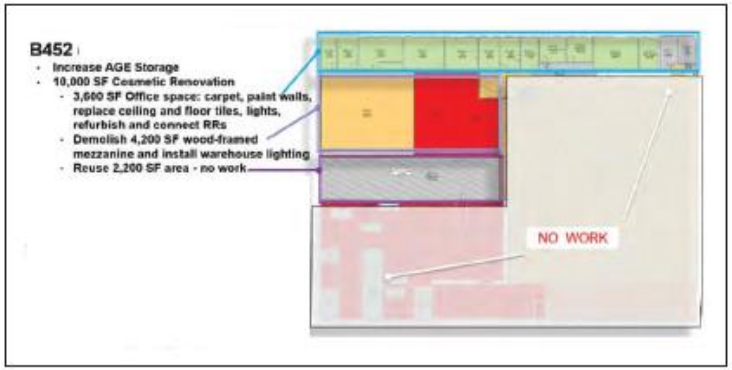


Figure 6-6: Building 452–Present-day interior showing the areas proposed for renovations



Figure 6-7: Building 452–Intrusive interior wood framing to be removed

The project elements within the wing of offices would be carried out in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties: Restoration. Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. Regarding restoration of the wing of offices, six Standards for Restoration apply:

Standard #2: Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces and spatial relationships that characterize the period will not be undertaken.

Standard #3: Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection and properly documented for future research.

Standard #5: Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.

Standard #6: Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials.

Standard #7: Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be

created by adding conjectural features, features from other properties, or by combining features that never existed together historically.

Standard #8: Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

Assessment of Effects

In Building 452, the proposed *KC-46A Pegasus MOB 5 Bed-down* would remove asbestos tiles and mastic flooring, encapsulate lead-based paint and remove non-original interior wood framing in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties, Restoration, as applicable. These project elements would amount to an improvement to Building 452's integrity of materials, design, workmanship and feeling. As such, the 452d AMW determined that the proposed *KC-46A Pegasus MOB 5 Bed-down* at March ARB would result in no adverse effect to Building 452.

6.3. Building 479

Building 479 was constructed in 1938 as a salvage warehouse and lumber yard. Originally, the structure had three bays, each with a set of two accordion doors, one set for the ground floor and one set for the second floor. In figure 6-8, the second floor accordion doors for the bay on the left are closed; all other sets of accordion doors are open. At some point in time all three sets of accordion doors were removed; today, Building 479 functions as an open bay storage facility (Figure 6-9).



Figure 6-8: Building 479 – Photo circa 1938



Figure 6-9: Building 479 – Present Day

Proposed Project Activities

The 452d AMW does not propose to renovate interior portions of Building 479 to support the *KC-46A Pegasus MOB 5 Bed-down* other than to upgrade the existing interior lighting. This building would be utilized for Independent Storage Units (ISUs). Currently there are no longer any of the original accordion doors on the building. New doors would be installed that would be roll up doors but that would "mimic" appearance of original accordion doors when they are closed. Fabricating replacement doors to match the original accordion doors is not a feasible option as this would hinder access into and out of the building per the storage needs of the KC-46A program.

Assessment of Effects

In Building 479, the proposed *KC-46A Pegasus MOB 5 Bed-down* would add roll up doors that match the appearance of the original accordion doors in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties, Restoration, as applicable. These project elements would amount to an improvement to Building 452's integrity of materials, design, workmanship and feeling. As such, the 452d AMW determined that the proposed *KC-46A Pegasus MOB 5 Bed-down* at March ARB would result in no adverse effect to Building 452.

6.4. March Field Historic District

Assessment of Effects

Four actions are proposed within the MFHD in support of the proposed *KC-46A Pegasus MOB 5 Bed-down:*

1. Building 429—interior areas currently used for the KC-135 Stratotanker program would be transferred to the KC-46A Pegasus program with minor renovation on internal equipment and use but would have no modifications done to the original structure and contributing elements;

2. Building 452—interior areas currently used for the KC-135 Stratotanker program would be transferred to the KC-46A Pegasus program with the following renovations:
   - removal of a non-original, wood-framed 4,200 square foot mezzanine
   - installation of new warehouse lighting
   - removal of asbestos linoleum flooring and asbestos mastic adhesive from office areas
   - removal of wood-framed walls to expose the original board-formed, poured-concrete walls and windows
   - overpainting of lead-based painted surfaces as a means to encapsulate it, and
   - installation of new carpet and floor tiles;

3. Building 479—the entire building would be transferred to the KC-46A Pegasus program with the following renovation:
   - installation of roll up doors that would be fabricated to appear, when closed, to mimic original accordion doors when they are closed, which are no longer extant; and

4. Hydraulic Jack Stand Tester—emplacement of a jack stand tester adjacent to the flight line apron and Building 452, which would include establishing anchor points into the existing concrete surface, but would not include modification of any buildings or structures, and which would not be a permanent, fixed structure.

Based on the determinations that the proposed project would not result in adverse effects to any of the contributing elements to the historic district, correspondingly, the 452d AMW determined that the proposed *KC-46A Pegasus MOB 5 Bed-down* at March ARB would result in no adverse effect to the MFHD.

Chapter 7. Findings

7.1. Historic Properties with No Adverse Effects

Of the 13 cultural resources within the APE, 4 are historic properties. Pursuant to 36 CFR 800.5, 452d AMW applied the criteria of adverse effect provided at 36 CFR 800.5(1)(a) and determined that all 4 historic properties within the APE would not be adversely affected by the proposed *KC-46A Pegasus MOB 5 Bed-down*. The 452d AMW requests concurrence from the SHPO the following 4 historic properties would not be adversely affected:

Facility	Description	Year Constructed	NRHP Status	NPS & OHP Ref #s
Multiple	March Field Historic District	Multiple	1D	94001420 / USAF950818A
Building 429	Hangar	1929	1D, 2D2	94001420-0144 / USAF920428A
Building 452	Hangar	1929	1D, 2D2	94001420-0092 / USAF920428A
Building 479	Lumber Yard	1938	1D, 2D2	94001420-0134 / USAF920428A

7.2. Finding of No Adverse Effect

As such, pursuant to 36 CFR 800.5(d)(2), 452d AMW has determined that the appropriate federal agency Section 106 finding for the proposed *KC-46A Pegasus MOB 5 Bed-down* is no adverse effect to historic properties.

Barring objection to this finding by the SHPO, 452d AMW has fulfilled its federal agency responsibilities pursuant to Section 106 of the NHPA, as amended, for the proposed *KC-46A Pegasus MOB 5 Bed-down*.

Chapter 8. References

California Office of Historic Preservation
n.d. *Built Environment Resource Directory, Riverside County*. Online. Sacramento, California. <https://ohp.parks.ca.gov/?page_id=30338>

Jackson, Robert M.
1990 *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format*. Online. California Office of Historic Preservation, Sacramento, California. <https://ohp.parks.ca.gov/pages/1069/files/armr-remediated.pdf>

March Air Reserve Base
2020 *U.S. Air Force, Integrated Cultural Resources Management Plan, March Air Reserve Base, Vols I and II*. Riverside County, California.

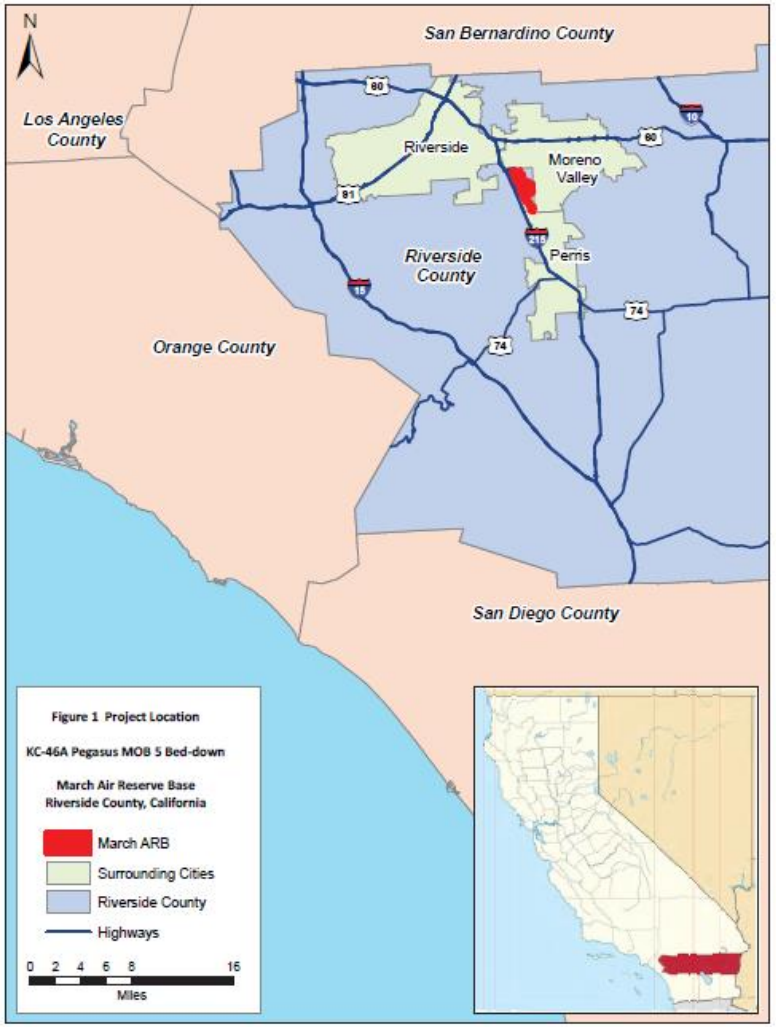
National Park Service
n.d. *National Register Database and Research*. Online. <https://www.nps.gov/subjects/nationalregister/database-research.htm>

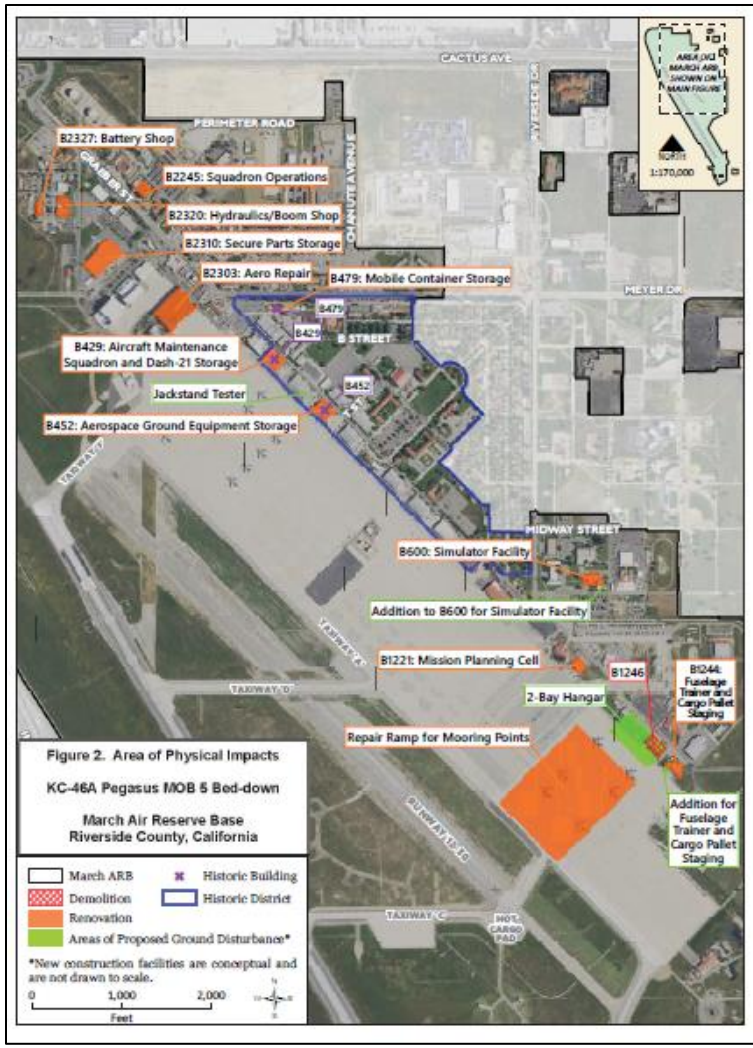
Chapter 9. Figures

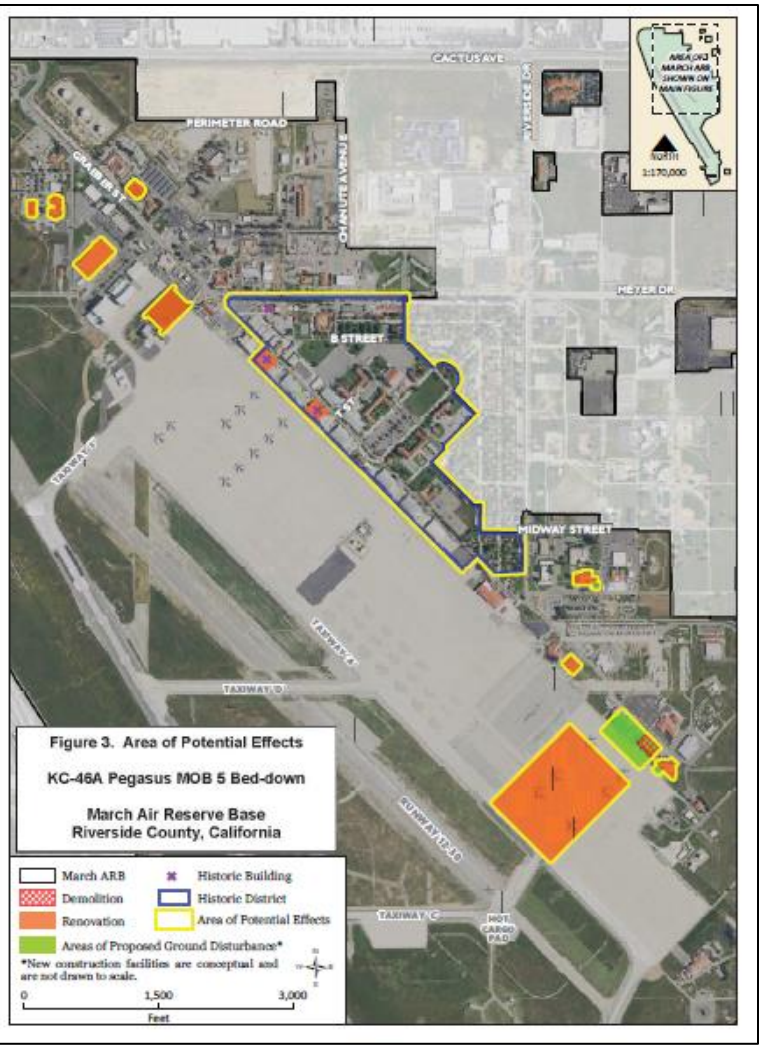
Figure 1: Project Location

Figure 2: Area of Physical Impacts

Figure 3: Area of Potential Effects




CACTUS AVE
PERIMETER ROAD
B2327: Battery Shop
B2245: Squadron Operations
B2320: Hydraulics/Boom Shop
B2310: Secure Parts Storage
B2303: Aero Repair
B479: Mobile Container Storage
B429: Aircraft Maintenance Squadron and Dash-21 Storage
Jackstand Tester
B452: Aerospace Ground Equipment Storage
B600: Simulator Facility
Addition to B600 for Simulator Facility
B1221: Mission Planning Cell
B1246
2-Bay Hangar
B1244: Fuselage Trainer and Cargo Pallet Staging
Repair Ramp for Mooring Points
Addition for Fuselage Trainer and Cargo Pallet Staging
B STREET
MIDWAY STREET
MEYER DR
TAXIWAY C
TAXIWAY D
RUNWAY 12-30
HOT CARGO PAD
Figure 2. Area of Physical Impacts
KC-46A Pegasus MOB 5 Bed-down
March Air Reserve Base
Riverside County, California
March ARB
Historic Building
Demolition
Historic District
Renovation
Areas of Proposed Ground Disturbance*
*New construction facilities are conceptual and are not drawn to scale.
0
1,000
2,000
Feet


CACTUS AVE
PERIMETER ROAD
B STREET
MIDWAY STREET
MEYER DR
TAXIWAY C
TAXIWAY D
RUNWAY 12-30
HOT CARGO PAD
Figure 3. Area of Potential Effects
KC-46A Pegasus MOB 5 Bed-down
March Air Reserve Base
Riverside County, California
March ARB
Historic Building
Demolition
Historic District
Renovation
Area of Potential Effects
Areas of Proposed Ground Disturbance*
*New construction facilities are conceptual and are not drawn to scale.
0
1,500
3,000
Feet

Appendix A Native American Correspondence

DEPARTMENT OF THE AIR FORCE
AIR FORCE RESERVE COMMAND

Colonel Erik L. Aufderheide
Commander, 452nd Air Mobility Wing
2145 Graeber Street
March Air Reserve Base, CA 92518

Chairman Jeff Grubbe
Agua Caliente Band of Cahuilla Indians
5401 Dinah Shore Rd
Palm Springs, CA 92264

Dear Chairman Grubbe,

The purpose of this letter is twofold: to give the Agua Caliente Band of Cahuilla Indians an opportunity to review the proposed action and provide information on properties of religious and cultural significance in the area of potential effect (APE) described below and to invite the Agua Caliente Band of Cahuilla Indians to participate in government-to-government consultation with March Air Reserve Base (ARB) pursuant to Section 106 of the National Historic Preservation Act (NHPA). [1]

The Department of the Air Force (DAF) is preparing an Environmental Impact Statement (EIS) to assess the potential environmental consequences associated with the beddown of KC-46A tanker aircraft at Main Operating Base 5 (MOB 5). This EIS will, as required by law and regulations, [2] consider the potential impacts resulting from basing 12 KC-46A aircraft (and related construction, demolition, and renovation of facilities) at a DAF installation within the continental United States (CONUS) operated by the Air Force Reserve Command (AFRC). The DAF has identified March ARB in Riverside County CA as the preferred base in this endeavor.

The KC-46A MOB 5 beddown is intended to replace the existing KC-135 tanker aircraft mission and would operate in existing KC-135 airspace with similar types of flight operations. The KC-46A tanker aircraft would use existing KC-135 air refueling tracks and airspace procedures. Preliminary analysis indicates that noise levels from the KC-46A tanker aircraft operations would be similar to the current KC-135 envelope. The new mission would require modifications to several buildings, demolition of one existing hanger, and the construction of a new KC-46A hanger. Construction of the new hangar would involve some excavation on southern portion of the current aircraft parking apron. The APE for this action would be limited to the areas of construction, demolition, and renovation on March ARB installation.

March ARB has been surveyed for American Indian cultural resources in its entirety. No artifacts or sites have been documented and no subsurface archaeological deposits have been encountered during previous ground disturbing activities. In the event cultural resources are unearthed during construction activities for the proposed undertaking, all operations would cease within 50 feet of the discovery and an archaeological investigation would be carried out, including additional consultation with the tribe.

[1] 54 U.S.C. § 306108, as implemented by 36 CFR Part 800.
[2] National Environmental Policy Act (NEPA) of 1969 [42 USC 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 452nd Air Mobility Wing (AMW) is seeking your comments regarding issues or concerns the proposed undertaking may have on American Indian cultural resources on March ARB. Although no cultural resources have been identified on March ARB in previous archeological studies, the 452nd AMW realizes the tribe may possess special knowledge regarding sacred landscapes or features, ceremonial areas, traditional cultural properties, and/or landscapes. In compliance with the National Environmental Policy Act, the 452nd AMW also invites the tribe to offer comments regarding any general issues, specific issues, or areas of concern pertaining to the proposed undertaking itself.

To ensure the 452nd AMW has sufficient time to consider your input in its efforts to comply with Section 106 and with the NEPA for the proposed KC-46A MOB 5 beddown, please contact Ms. Chris Wagner, Cultural Resource Manager, via e-mail at christhild.wagner@us.af.mil or by mail at 452 MSG/CEV, Attn: Chris Wagner, 610 Meyer Drive, Building 2403, March ARB, California, 92518.

Sincerely

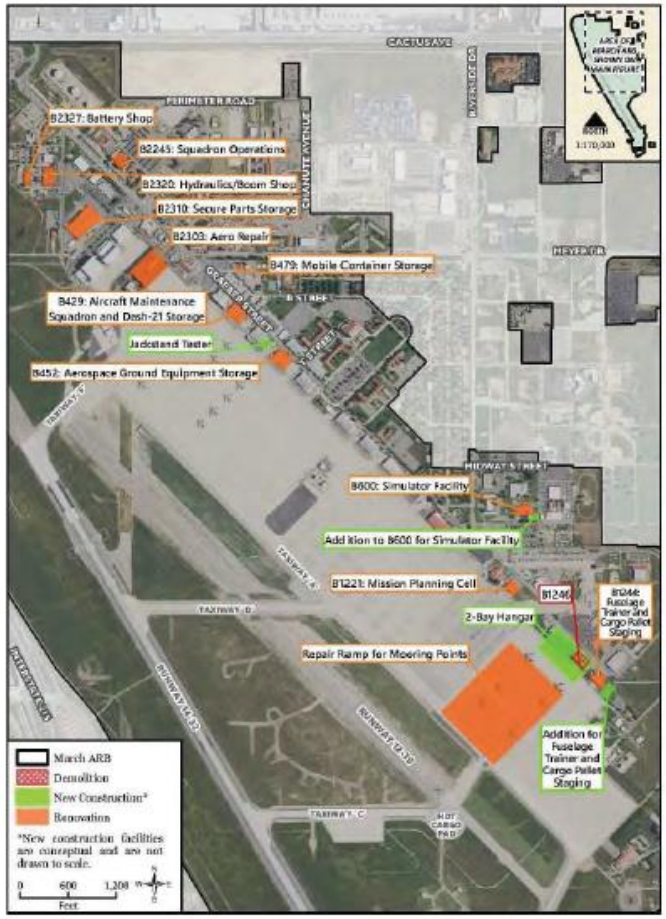
ERIK L. AUFDERHEIDE, Colonel, USAF
Commander

2 Attachments:
1. Facilities and Infrastructure Projects for KC-46 MOB 5 Beddown at March ARB
2. ARB/AFB Project Map and Construction APE

Attachment 1: Facilities and Infrastructure Projects for KC-46 MOB 5 Beddown at March ARB

Project	Facility Size (square feet)
Demolition	
Building 1246 Demolition for the New 2-Bay Hangar	26,716
Total Square Feet	26,716
Renovation	
Building 2327 Renovation for the Battery Shop	7,700
Building 2320 Renovation for the Hydraulics/Boom Shop	7,500
Building 2310 Renovation for Secure Parts Storage	18,000
Building 2245 Renovation for Squadron Operations	19,000
Building 2303 Renovation for Aero Repair	6,500
Building 479 Renovation for Mobile Container Storage	1,245
Building 429 Renovation for Aircraft Maintenance Squadron and Storage	30,400
Building 452 Renovation for Aerospace Ground Equipment Storage	14,400
Building 600 Renovation for Simulator Facility	7,061
Building 1221 Renovation for the Mission Planning Cell	22,900
Building 1244 Renovation for the Fuselage Trainer and Cargo Pallet Staging	14,939
Repair Ramp for 16 Mooring Points (including striping)	Not applicable
Total Square Feet	**149,645**
New Construction	
Construct a new 2-Bay Hangar with Apron Access (Fuel Cell, Corrosion Control, Wash-Rack, AMU, Back-Shops)	200,000
Jack Stand Tester	240
Addition to Building 600	2,550
Addition for the Fuselage Trainer and Cargo Pallet Staging	2,600
Total Square Feet	**205,390**

Attachment 2: March ARB Project and Construction APE



Appendix B SHPO Correspondence

DEPARTMENT OF THE AIR FORCE
AIR FORCE RESERVE COMMAND

13 March 2023

Mr. David N. Shaw, Base Civil Engineer
452d Mission Support Group/Civil Engineer Squadron
610 Meyer Drive
March ARB CA 92518-2166

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
P.O. Box 942896
Sacramento CA 94296-0001

RE: USAF_2023_0124_001, KC-46A Main Operating Base 5 Beddown

Dear Ms Polanco

The 452d Air Mobility Wing (AMW) of the United States Air Force Reserve Command (USAF), March Air Reserve Base (ARB), in Riverside County, California, is continuing consultation with the California State Historic Preservation Officer (SHPO) on the proposed *KC-46A Main Operating Base (MOB) 5 Beddown* (OHP file reference # USAF_2023_0124_001). USAF initiated Section 106 consultation for the proposed undertaking with the SHPO in a letter dated 23 January 2023. In reply, the SHPO:

1. Requested confirmation on the USAF's intended consultation framework
2. Stated no comment could be offered on USAF findings until the consultation framework is established and information pursuant to Title 36 Code of Federal Regulations (CFR) Part 800.11 is received
3. Objected to USAF's fulfillment of federal responsibilities pursuant to Section 106, and
4. Suggested USAF review the Section 106 implementing regulations.

Continuing consultation, USAF offers the following to address the SHPO's comments:

1. USAF is consulting the SHPO pursuant to the Section 106 implementing regulations found at Title 36 CFR Part 800
2. USAF is providing the SHPO with its reasonable and good faith investigation within a report that conforms to the requirements set forth in Title 36 CFR Part 800.11, Documentation standards, as well as *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* (Jackson 1990), and
3. USAF has reviewed the Section 106 implementing regulations as Title 36 CFR Part 800 as suggested.

USAF carried out a reasonable and good-faith cultural resources investigation that fulfills federal agency responsibilities pursuant to Title 36 CFR §800.4(a)-(d) and Title 36 CFR §800.5(a)-(d). Details of the investigation are provided in the attachment. USAF identified the Area of Physical Impacts and then identified the Area of Potential Effects (APE) in accordance with Title 36 Part 800.4(a)(1).

USAF requests concurrence from the SHPO that the APE for the *KC-46A Pegasus MOB 5 Bed-down* is adequately delineated.

The APE contains 13 cultural resources, 5 of which are less than 50 years old and do not possess exceptional significance, and 4 of which have been determined not eligible for listing in the National Register of Historic Places by consensus. Four historic properties are within the APE: three contributing elements to the March Field Historic District (MFHD), and the MFHD itself. Pursuant to 36 CFR 800.5, USAF applied the criteria of adverse effect provided at 36 CFR 800.5(1)(a) to the 4 historic properties and, as described in Chapter 6 of the attachment, determined that all 4 historic properties would not be adversely affected by the proposed *KC-46A Pegasus MOB 5 Bed-down*.

USAF requests concurrence from the SHPO that the *KC-46A Pegasus MOB 5 Bed-down* would not adversely affect three contributing elements to the MFHD and the MFHD itself.

Pending SHPO concurrence with the delineation of the APE and assessment of effects, pursuant to 36 CFR 800.4(d)(1), USAF determined the proposed undertaking would result in no adverse effect to historic properties. Barring objection to this finding by the SHPO, USAF has fulfilled its Section 106 responsibilities for this undertaking and no further consultation is required. If project implementation results in a discovery during construction, USAF would re-open Section 106 consultation. If you have any questions or require additional information, please contact Ms. Chris Wagner, Cultural Resource Manager, via email at: christhild.wagner@us.af.mil. Thank you for your assistance with this undertaking.

Sincerely

SHAW.DAVID.NATHANIEL.1132134053 Digitally signed by SHAW.DAVID.NATHANIEL.1132134053 Date: 2023.03.20 14:36:23 -07'00'

DAVID N. SHAW, GS-13, DAF
452d Base Civil Engineer

Attachment: Identification of Historic Properties and Finding of No Adverse Effect

March ARB Section 106 SHPO Response Letter

State of California • Natural Resources Agency
Gavin Newsom, *Governor*
DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION
Armando Quintero, *Director*
Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

April 10, 2023

Reply in Reference to: USAF_2023_0124_001

Mr. David N. Shaw
452d MSG/CE
610 Meyer Drive, Building 2403
March ARB CA 92518-2188

VIA ELECTRONIC MAIL

Re: Notification of KC-46A Main Operating Base 5 Beddown, March Air Reserve Base, Riverside County

Dear Mr. Shaw:

In their March 13, 2023 letter, the United States Air Force (USAF) confirmed it is initiating consultation with the State Historic Preservation Officer (SHPO) regarding its effort to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. 306108), as amended, and its implementing regulation found at 36 CFR Part 800.

The USAF defined the undertaking as basing a fleet of 12 Boeing KC-46A Pegasus aerial refueling aircraft at March Air Reserve Base. Project activities include:

- Demolition of Facility 1246;
- Construction of a two-bay hangar; and
- Structural modifications to 11 facilities as identified in Table 2:1 of the following report: *Identification of Historic Properties and Finding of No Adverse Effect KC-46A Pegasus Main Operating Base 5 Bed-down March Air Reserve Base Riverside County, California* (March 2023) (report).

Having notified the Native American tribes identified through the NAHC, the USAF have received no comments to date. Some undertaking components will occur within the boundaries of the March Air Field Historic District, a listed National Register property. Specifically, the USAF intend to modify three historic district contributors as follows:

- Building 429 (hangar, constructed 1929)-interior modifications to non-historic features;
- Building 452 (hangar, constructed 1929)-interior modifications to non-historic features (as described in report:6.2); and

- Building 479 (Warehouse/Lumber yard constructed in 1938)-in-kind replacement of roll up doors and addition of interior lighting.

The USAF are requesting concurrence with their APE delineation and a finding of no adverse effect to historic properties. After reviewing the information provided, the SHPO does not object to the USAF's APE definition and concurs with their finding of effect. Be advised that under certain circumstances, such as an unanticipated discovery or a change in project description, the USAF may have future responsibilities for this undertaking under 36 CFR Part 800.

This letter is being sent in electronic format only. Please confirm receipt of this letter. Please notify Ed Carroll, Historian II, at Ed.Carroll@parks.ca.gov or (619) 678-2609 if there are any questions or to request a hard copy of this letter.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

A.3.2 Section 106 SHPO Consultation Letter for Grissom ARB

DEPARTMENT OF THE AIR FORCE
AIR FORCE RESERVE COMMAND
GRISSOM AIR RESERVE BASE

Mr. David A. Hughes
Base Civil Engineer
7104 S. Warthog Street
Grissom ARB, IN 46971-1632

Ms. Beth McCord
Deputy State Historic Preservation Officer
Indiana Department of Natural Resources
Division of Historic Preservation and Archaeology
402 W. Washington Street, Room W274
Indianapolis, Indiana 46204

Dear Ms. McCord,

The Department of the Air Force (Air Force) is preparing an Environmental Impact Statement (EIS) to assess the potential environmental consequences associated with the proposed beddown of the KC-46A Main Operating Base 5 (MOB 5) mission. Grissom Air Reserve Base (ARB) is proposed as a reasonable alternative for the MOB 5 mission along with Tinker Air Force Base (AFB), OK. March ARB, CA has been identified as the Preferred Alternative for this mission.

The proposed MOB 5 action would base 12 KC-46A aircraft at one of the three installations. Basing the aircraft at Grissom ARB would require the construction, demolition and renovation of facilities to accommodate the new personnel and aircraft associated with the mission. Table 1 (Attachment 1) and the project map (Attachment 2) identify specific facilities that are included as part of this project.

Pursuant to 54 U.S.C. § 306108 (commonly referred to as Section 106 of the National Historic Preservation Act) and 36 CFR 800 (Protection of Historic Properties), the Air Force, requests to enter into Section 106 consultation regarding the proposed undertaking. Grissom ARB has defined the APE as the viewshed for historic facilities and areas of ground disturbance associated with construction, demolition and renovation on Grissom ARB (See Attachment 1 and 2).

Based on the facilities identified on Table 1 (See Attachment 1 and 2) and the lack of archaeological sites in the area, Grissom ARB has determined that there are no historic properties affected within the APE. Grissom ARB requests concurrence on both the APE for this project and this finding of no effect on historic properties.

In addition to the construction, demolition and renovation of facilities, aircraft operations would be conducted by the KC-46A aircraft. Aircraft activity near Grissom ARB would consist of aircraft operations similar to the existing KC-135 mission. The existing operations include take offs, landings, and flying patterns in the local airspace at Grissom ARB. Refueling operations would be conducted at altitudes above 14,000 feet above the ground surface. Preliminary analysis indicates that noise levels from these operations would be less than or similar to noise levels associated with the existing KC-135 mission at Grissom ARB.

In 2012, Grissom ARB submitted a determination package of its potentially historic and cultural resources to your office. Based on the information contained in the determination package, Grissom ARB determined and your office confirmed that there were no sites listed in or eligible for inclusion in the National Register of Historic Places at Grissom ARB. The concurrence letter is included for reference. Based on the lack of historic and cultural resources, Grissom ARB has determined that this project has no potential to cause effects to cultural resources at Grissom ARB.

The following documentation, as detailed in 36 CFR 800.11(d), is included for your review:

- A description of the KC-46A MOB 5 project (see Attachment 1 and 2)
- A summary of the efforts made to identify historic properties in the project's APE, including, as appropriate, efforts to seek information pursuant to 36 CFR 800.4(b), identification of historic properties (See Attached Table 1).
- 2012 Letter from the Indiana SHPO confirming that there are no sites listed in or eligible for inclusion in the National Register of Historic Places at Grissom ARB.

Grissom ARB is currently conducting consultations with representatives of Native American tribes as required under the NHPA. The purpose of these consultations are to comply with 36 CFR 800.4(a)(3). The Native American tribes consulted are listed in Attachment 4.

Please review the material enclosed and contact Mr. Cory Walters, Chief Environmental Flight, at (765) 688-4561 if you have any questions. If we do not hear from you within 30 days after you receive this letter, we will assume that you concur with the finding of no historic properties affected determination. We then will proceed with the NEPA process, subject to the provisions of 36 CFR 800.13 for treating historic properties inadvertently discovered during an undertaking.

Sincerely

DAVID A. HUGHES, GS-13 P.E.
Base Civil Engineer

4 Attachments:
1. Table 1. Facilities and Infrastructure Development Table for Grissom ARB
2. Grissom ARB Project Map
3. 2012 Letter from the IN SHPO
4. List of Federally Recognized Tribes Contacted

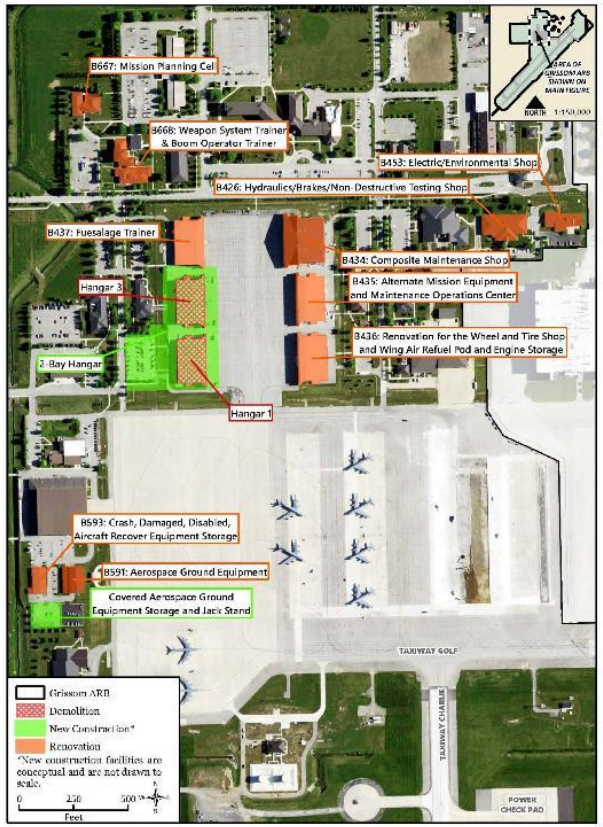
Attachment 1: Table 1. Facilities and Infrastructure Projects for the KC-46A MOB 5 Beddown at Grissom ARB

Project[a]	Facility Size (square feet)
Demolition	
Building 438 Demolition of Hangar 3 for the New 2-Bay Hangar	29,471
Building 439 Demolition of Hangar 1 for the New 2-Bay Hangar	31,738
Total Square Feet	**61,209**
Renovation	
Building 426 Renovation for Hydraulics, Brakes and Non-Destructive Testing Shop	7,500
Building 434 Renovation for the Composite Maintenance Shop	32,500
Building 435 Renovation for the Alternate Mission Equipment and Maintenance Operations Center	5,600
Building 436 Renovation for the Wheel and Tire Shop and Wing Air Refuel Pod and Engine Storage	10,200
Building 437 Renovation for the Fuselage Trainer	16,177
Building 453 Renovation for the Electric and Environmental Shop	7,700
Building 591 Renovation for Aerospace Ground Equipment Shop and Storage	9,435
Building 593 Renovation for Crash, Damaged, Disabled, Aircraft Recovery	6,500
Building 667 Renovation for the Mission Planning Cell	9,245
Building 668 Renovation for the Weapon System Trainer and Boom Operator Trainer Facility	17,390
Reposition Hydrant Fuel Pits and Overlay Aircraft Parking Ramp	Not applicable
Total Square Feet	**122,247**
New Construction	
Construct Covered AGE Storage Facility and Jack Stand Tester	10,000
Construct a New 2-Bay Hangar with Apron Access (Fuel Cell, Corrosion Control, Wash-Rack, Aircraft Maintenance Unit and Back-Shops)	200,000
Total Square Feet	**210,000**

[a] Potential relocation of underground cables, manholes, and duct work would be associated with these projects

Key: AGE = Aerospace Ground Equipment; ARB = Air Reserve Base; MOB 5 = Main Operating Base 5.

Attachment 2: Grissom ARB Project Map



DNR Indiana Department of Natural Resources

Mitchell E. Daniels, Jr., Governor
Robert E. Carter, Jr., Director

Division of Historic Preservation & Archaeology • 402 W. Washington Street, W274 • Indianapolis, IN 46204-2739
Phone 317-232-1646 • Fax 317-232-0693 • dhpa@dnr.IN.gov

July 25, 2012

David A. Hughes, P.E.
Department of the Air Force
Air Force Reserve Command
434 MSG/CEV
7104 South Warthog Street
Grissom ARB, IN 46971-1632

Federal Agency: Department of the Air Force

Re: Request for SHPO concurrence regarding Grissom historic and cultural resources inventory (DHPA #13604)

Dear Mr. Hughes:

Pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f) and 36 C.F.R. Part 800, the staff of the Indiana State Historic Preservation Officer ("Indiana SHPO") has conducted an analysis of the materials dated June 20, 2012 and received on June 25, 2012 for the above indicated project in Grissom Air Reserve Base, Miami County, Indiana.

Thank you for your recent submission. Based on the results of the previously conducted cultural resource surveys and the current information provided to our office, we see no reason to disagree with the Department of the Air Force's assessment that there are no sites listed in or eligible for inclusion in the National Register of Historic Places within Grissom ARB.

If any archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations.

A copy of the revised 36 C.F.R. Part 800 that went into effect on August 5, 2004 may be found on the Internet at www.achp.gov for your reference. If you have questions about archaeological issues please contact Cathy Draeger-Williams at (317) 234-3791 or cdraeger-williams@dnr.IN.gov. If you have questions about buildings or structures please contact Chad Slider at (317) 234-5366 or cslider@dnr.IN.gov. Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA #13604.

Very truly yours,

James A. Glass, Ph.D.
Deputy State Historic Preservation Officer

JAG:CWS:CDW:cdw

www.DNR.IN.gov

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Attachment 4: List of Federally Recognized Tribes Contacted

Citizen Potawatomi Nation

Forest County Potawatomi

Hannahville Indian Community

Kickapoo Tribe in Kansas

Kickapoo Tribe of Oklahoma

Miami Tribe of Oklahoma

Peoria Tribe of Indians of Oklahoma

Pokagon Band of Potawatomi Indians

Prairie Band of Potawatomi Nation

Osage Nation

Section 106 SHPO Response Letter for Grissom ARB

DNR Indiana Department of Natural Resources

Eric Holcomb, Governor
Daniel W. Bortner, Director

Division of Historic Preservation & Archaeology·402 W. Washington Street, W274·Indianapolis, IN 46204-2739
Phone 317-232-1646·Fax 317-232-0693·dhpa@dnr.IN.gov

HISTORIC PRESERVATION AND ARCHAEOLOGY

February 22, 2023

David A. Hughes
Base Civil Engineer
7104 S. Warthog Street
Grissom ARB, IN 46971-1632

Federal Agency: Department of the Air Force

Re: Project information and the Department of the Air Force's finding of "no historic properties affected" for the proposed beddown of the KC-46A Main Operating Base 5 mission at Grissom Air Reserve Base (DHPA #30295)

Dear Mr. Hughes:

Pursuant to Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108) and 36 C.F.R. Part 800, the staff of the Indiana State Historic Preservation Officer ("Indiana SHPO") has conducted an analysis of the materials received on January 31, 2023, for the above indicated project in Grissom Joint Air Reserve Base, Miami County, Indiana.

We concur with the Department of the Air Force's January 31, 2023 finding that there are no historic buildings, structures, districts, objects, or archaeological resources within the area of potential effects that will be affected by the above indicated project.

If any prehistoric or historic archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations, including but not limited to 36 C.F.R. 800.

If you have questions about archaeological issues please contact Amy Johnson at (317) 232-6982 or ajohnson@dnr.IN.gov. If you have questions about buildings or structures please contact Kim Marie Padgett at (317) 234-6705 or kpadgett@dnr.IN.gov.

Very truly yours,

Beth K. McCord
Deputy State Historic Preservation Officer

BKM:KMP:ALJ:aj

emc: Trisha McClain, USAF

The DNR mission: Protect, enhance, preserve and wisely use natural, cultural and recreational resources for the benefit of Indiana's citizens through professional leadership, management and education.

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A.3.3 Section 106 SHPO Consultation Letter for Tinker Air Force Base (AFB)

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 72D AIR BASE WING (AFMC)
TINKER AIR FORCE BASE OKLAHOMA

Brad Beam
Deputy Base Civil Engineer
7535 5th Street
Tinker AFB, OK 73145

6 February 2023

Lynda Ozan, Deputy State Historic Preservation Officer
Oklahoma State Historic Preservation Office
800 Nazih Zuhdi Drive
Oklahoma City, OK 73105-7917

Dear Ms. Ozan,

The United States Air Force (Air Force) is preparing an Environmental Impact Statement (EIS) to assess the potential environmental consequences associated with the beddown of the KC-46A Main Operating Base 5 (MOB 5) mission. Tinker Air Force Base (AFB) is proposed as a reasonable alternative for the MOB 5 mission along with Grissom Air Reserve Base (ARB), IN. March ARB, CA has been identified as the Preferred Alternative for this mission.

The proposed MOB 5 project would base 12 KC-46A aircraft at one of the three installations. Basing the aircraft at Tinker AFB would require the construction, demolition and renovation of facilities to accommodate the new personnel and aircraft associated with the mission. Table 1 (Attachment 1) and the project map (Attachment 2) identify specific facilities that are included as part of this project.

Pursuant to 54 U.S.C. § 306108 (commonly referred to as Section 106 of the National Historic Preservation Act) and 36 CFR 800, the Air Force, requests to enter into Section 106 consultation regarding the proposed undertaking. At Tinker AFB the beddown would occur at the 507th Air Refueling Wing Complex.

Currently there have been no eligible historic buildings identified in this area. The closest eligible historic building is approximately a mile from the complex, Building 230. There are no eligible archeological sites in the area. The nearest eligible archeological site is approximately 1.3 miles away. Tinker AFB has defined the APE as the viewshed for historic facilities and areas of ground disturbance associated with construction, demolition and renovation on Tinker AFB (See attached Table 1). Based on the facts that the facilities identified on Table 1 are not eligible for the National Register of Historic Places and that all of the areas proposed for construction, demolition and renovation on Tinker AFB are heavily disturbed and in areas lacking archaeological sites, Tinker AFB has determined that there are no historic properties affected within the APE.

Tinker AFB requests concurrence on both the APE for this project and this finding of no effect on historic properties.

In addition to the construction, demolition and renovation of facilities, aircraft operations would be conducted by the KC-46A aircraft. Aircraft activity near Tinker AFB would consist of aircraft operations similar to the existing KC-135 mission. The existing operations include take offs, landings, and flying patterns in the local airspace at Tinker AFB. Refueling operations would be conducted at altitudes above 14,000 feet above the ground surface. Preliminary analysis indicates that noise levels from these operations would be less than or similar to noise levels associated with the existing KC-135 mission at Tinker AFB.

The following documentation, as detailed in 36 CFR 800.11(d), is included for your review:

- A description of the KC-46A MOB 5 project (see above)
- A summary of the efforts made to identify historic properties in the project's APE, including, as appropriate, efforts to seek information pursuant to 36 CFR 800.4(b), identification of historic properties (See Attached Table 1).

Tinker AFB is currently conducting consultations with representatives of Native American groups as required under the NHPA. The purpose of these consultations is to comply with 36 CFR800.4(a)(3). The Native American groups consulted are listed in Attachment 3.

Please review the material enclosed and contact Ms. Heartsong Turnbull at (405) 734-2074 if you have any questions. If we do not hear from you within 30 days after you receive this letter, we will assume that you concur with the finding of no historic properties affected determination. We then will proceed with the NEPA process, subject to the provisions of 36 CFR 800.13 for treating historic properties inadvertently discovered during an undertaking.

Sincerely

BEAM.BRAD.C.1230957645 Digitally signed by BEAM.BRAD.C.1230957645 Date: 2023.02.06 16:32:01 -06'00'

BRAD BEAM, 72 ABW/CE
Deputy Base Civil Engineer

3 Attachments:
1. Table 1. Facilities and Infrastructure Development Table for Tinker AFB
2. Tinker AFB Project Map
3. List of Federally Recognized Tribes Contacted

3

Attachment 1: Table 1. Facilities and Infrastructure Projects for the KC-46A MOB 5 Beddown at Tinker AFB

Project[a]	Facility Size (square feet)
Demolition	
Building 1030 [a] (to make room for new 2-Bay Hangar with Apron Access)	99,184
Building 1067 (to make room for new 2-Bay Hangar with Apron Access)	11,460
Building 1068 [a] (to make room for new 2-Bay Hangar with Apron Access)	19,775
Building 1069 (to make room for new 2-Bay Hangar with Apron Access)	250
Deicing Detention Basin	7,330
Total Square Feet	**137,999**
Renovation	
Hangar 1053, Weapon System Trainer, Boom Operator Trainer and Fuselage Trainer Facility	10,000
Building 1059, Squadron Operations and Mission Planning Cell	10,000
Building 1082, Alternate Mission Equipment/Maintenance Operations Center	15,000
Building 1112, Aircrew Flight Equipment	35,000
Hydrant Pit repositioning	Not Applicable
Total Square Feet	**TBD**
New Construction	
2-Bay Hangar with Apron Access (Fuel Cell, Corrosion Control, Wash-Rack, AMU, Back-Shops)	200,000
Install Additional Pump in POL Facility	NA
Concrete Paving and Covered AGE Shelter-Building 1070 and 1058 area	10,500
Ramp and Shoulder expansion	114,000
Total Square Feet	**324,500**

[a] Potential relocation of underground cables, manholes, and duct work would be associated with these projects

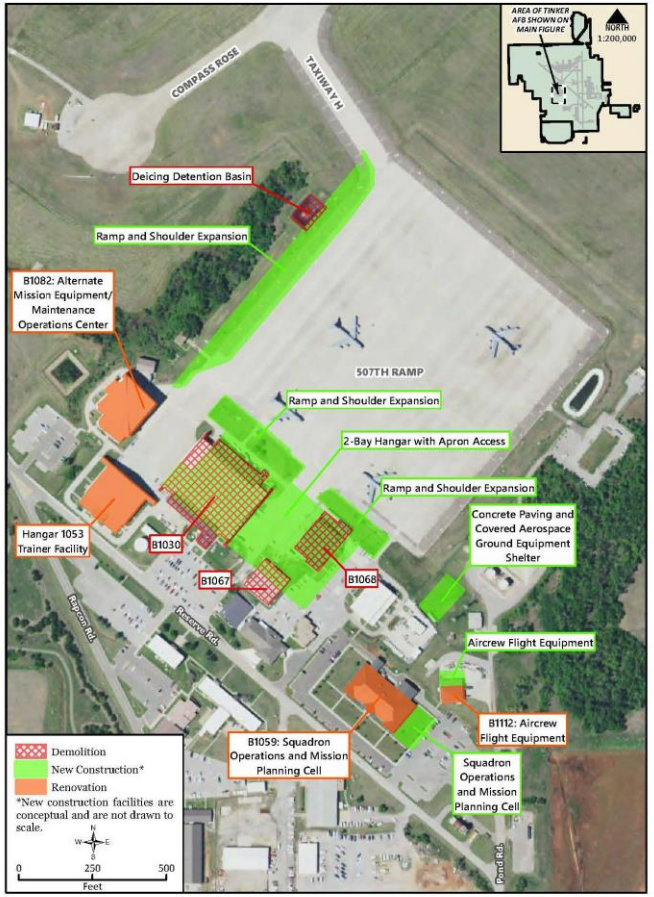
5

Attachment 3: List of Federally Recognized Tribes Contacted

Caddo Nation of Oklahoma
Muscogee (Creek) Nation
Osage Nation
Seminole Nation
Wichita and Affiliated Tribes

4

Attachment 2: Tinker AFB Project Map



Section 106 SHPO Response Letter for Tinker AFB

Oklahoma Historical Society
State Historic Preservation Office

March 3, 2023

Mr. Brad Beam (72-ABW/CE)
Deputy Base Civil Engineer
7535 5th Street
Tinker AFB, OK 73145

RE: File #0384-23; DAF Proposed EIS for KC-46A MOB-5-Beddown Project

Dear Mr. Beam:

We have received and reviewed the documentation submitted on the referenced project in Oklahoma County. Additionally, we have examined the information contained in the Oklahoma Landmarks Inventory (OLI) files and other materials on historic resources available in our office. We find that there are no known historic properties affected within the referenced project's area of potential effect.

In addition to our review, you must contact the Oklahoma Archeological Survey (OAS), 111 East Chesapeake, #102, Norman OK 73019-5111 (#405/325-7211, FAX #405/325-7604), to obtain a determination about the presence of prehistoric resources that may be eligible for the National Register of Historic Places. Should the OAS conclude that there are no prehistoric archaeological sites or other types of "historic properties," as defined in 36 CFR Part 800.16(l), which are eligible for inclusion in the National Register of Historic Places within the project area and that such sites are unlikely to occur, we concur with that opinion.

The OAS may conclude that an on-site investigation of all or part of the project impact area is necessary to determine the presence of archaeological resources. In the event that such an investigation reveals the presence of prehistoric archaeological sites, we will defer to the judgment of the OAS concerning whether or not any of the resources should be considered "historic properties" under the Section 106 review process. If sites dating from the historic period are identified during the survey or are encountered during implementation of the project, additional assessments by the State Historic Preservation Office will be necessary.

Should further correspondence pertaining to this project be necessary, please reference the above underlined file number. If you have any questions, please contact Kristina Wyckoff, Historical Archaeologist, at 405/521-6381. Thank you.

Sincerely,

Lynda Ozan
Deputy State Historic
Preservation Officer

LO:jr

800 Nazih Zuhdi Drive, Oklahoma City, OK 73105-7917
405-521-6249 | Fax 405-522-0816 | www.okhistory.org/shpo

OKLAHOMA

Section 106 Oklahoma Archeological Survey Response Letter for Tinker AFB

Oklahoma Archeological Survey

THE UNIVERSITY OF OKLAHOMA

November 2, 2022

Tinker Air Force Base
Attn: Brad Beam
Deputy Base Civil Engineer
7535 5th St.
Tinker AFB, OK 73145

Re: OAS FY23-0894 USAF Proposes to Construct MOB 5 Project for 12KC-46A Base.
Legal Description: S ½ Section 22, T11N, R2W, Oklahoma County, Oklahoma.

Dear Mr. Beam:

The Community Assistance Program staff of the Oklahoma Archeological Survey has reviewed the above referenced project in order to identify areas that may potentially contain prehistoric or historic archeological materials (historic properties). The location of your project has been crosschecked with the state site files containing approximately 26,000 archaeological sites, which are currently recorded for the state of Oklahoma. No Sites are listed as occurring within your project area, and based on the topographic and hydrologic setting, no archaeological materials are likely to be encountered. Thus, an archaeological field inspection is not considered necessary. Please contact this office at (405) 325-7211 if buried archaeological materials such as chipped stone tools, pottery, bone, historic crockery, glass, metal items or building materials are exposed during construction activities.

This environmental review and evaluation is done in cooperation with the State Historic Preservation Office, Oklahoma Historical Society. The responsible federal agency or their official delegate must also have a letter from that office to document consultation pursuant to Section 106 of the National Historic Preservation Act.

In addition to our review comments, under 36CFR Part 800.3 you are reminded of your responsibility to consult with the appropriate Native American tribe/groups to identify any concerns they may have pertaining to this undertaking and potential impacts to properties of traditional and/or ceremonial value.

Sincerely,

Alice Ma
Staff Archaeologist

Kary L. Stackelbeck, Ph.D.
State Archaeologist

cc: SHPO

111 Chesapeake, Room 102, Norman, Oklahoma 73019-5111 PHONE: (405) 325-7211 FAX: (405) 325-7604
A UNIT OF ARTS AND SCIENCES SERVING THE PEOPLE OF OKLAHOMA

A.4 Endangered Species Act (ESA) Section 7 Consultation

A.4.1 ESA Section 7 Consultation for March ARB

DEPARTMENT OF THE AIR FORCE
AIR FORCE RESERVE COMMAND

07 March 2023

Mr. David Shaw
452d Base Civil Engineer
452d MSG/CE
610 Meyer Drive, Bldg 2403
March ARB CA 92518

Mr. Scott Sobieck
Field Supervisor, Carlsbad Palm Springs Offices Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad CA 92008

Dear Mr. Sobieck,

The Department of the Air Force (DAF) is preparing an Environmental Impact Statement (EIS) to evaluate potential environmental consequences associated with the proposed beddown of KC-46A tanker aircraft at Main Operating Base 5 (MOB 5). This EIS will, as required by law and regulations, consider the potential impacts resulting from basing 12 KC-46A aircraft (and related construction, demolition, and renovation of facilities) at a DAF installation within the continental United States operated by the Air Force Reserve Command (AFRC). The purpose of the MOB 5 beddown is to provide a fully capable, combat-operational AFRC KC-46A air refueling squadron or squadrons to accomplish aerial refueling and related missions. The KC 46A MOB 5 beddown is needed to support the recapitalization of the DAF's aging refueling aircraft fleet. The DAF needs bases to accomplish the required training and to field a fully operational force. A DAF base for the MOB 5 mission is needed to achieve a high state of operational mission readiness. The DAF has identified March Air Reserve Base (ARB) as the preferred alternative. Grissom ARB, Tinker Air Force Base, and the No Action Alternative will be evaluated in the EIS as alternatives.

The action area under each alternative is defined as where the facilities and infrastructure projects for the proposed KC 46A MOB 5 Mission would occur at each individual installation (Attachments 1 and 2) and the areas surrounding the installation that are currently exposed to noise greater than 65 decibels A-weighted day-night average sound level. Additional information can be found on the project website at www.kc-46a-mob5.com.

March ARB carefully reviewed the U.S. Fish and Wildlife Service's (USFWS's) Information for Planning and Conservation (IPaC) online system on January 12, 2023, to identify current USFWS trust resources, defined as: threatened, endangered, proposed and candidate species; proposed and final designated critical habitat; migratory birds; and wetlands that may occur within the boundary of the proposed project and/or may be affected by the proposed project. Results of the official IPaC query (Project Code: 2023-0033154) identified seventeen (17) federally listed species (please see Table 1). There are no critical habitats within the Proposed Action area under

the Carlsbad Fish and Wildlife Office's jurisdiction. Please refer to Attachment 3 for a copy of the IPaC Report (USFWS, 2023a).

Table 1. Potential for Impacts from the Proposed Action to USFWS Species Known to or with Potential to Occur in the March ARB ROI

Common Name	Scientific Name	Federal Listing Status	Habitat	Historically Observed at March ARB?	Potential for Impacts from the Proposed Action/ Effects Determination
Mammals					
San Bernardino Merriam's Kangaroo Rat	*Dipodomys merriami parvus*	Endangered	Inhabits scattered, isolated patches of alluvial sage-scrub. Present day populations of this species are limited to three disjunct areas in San Bernardino and Riverside counties, which contain the largest remaining areas of suitable habitat.	No	*No effect*. Suitable habitat is not present within the proposed action area.
Stephens' Kangaroo Rat	*Dipodomys stephensi (incl. D. cascus)*	Threatened	Occupied habitat is present on the small arms range west of Interstate 215. Targeted species surveys were conducted in areas within and adjacent to March ARB. Results of the surveys indicate that Stephen's kangaroo rat is absent on the main March ARB property.	Yes	*No effect*. Suitable habitat is not present within the proposed action area.
Birds					
Coastal California Gnatcatcher	*Polioptila californica californica*	Threatened	Occurs in or near coastal sage scrub, a habitat characterized by relatively low growing, dry-season deciduous, and succulent plants.	No	*No effect*. Suitable nesting and foraging habitats are not present within the proposed action area.
Least Bell's Vireo	*Vireo bellii pusillus*	Endangered	Winter in southern Baja California, where they occupy a variety of habitats, including mesquite scrub within arroyos, palm groves, and hedgerows bordering agricultural and residential areas.	No	*No effect*. Suitable nesting and foraging habitats are not present within the proposed action area.
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Endangered	Long-distance neotropical migrant. Breeding habitat in California is in riparian habitat. They usually nest in shrubs.	No	*No effect*. Suitable nesting and foraging habitats are not present within the proposed action area.
Fish					
Santa Ana Sucker	*Catostomus santaanae*	Threatened	Rely on perennial flows with suitable water quality and substrate to support breeding, feeding and sheltering.	No	*No effect*. Suitable habitat not present onsite.

Common Name	Scientific Name	Federal Listing Status	Habitat	Historically Observed at March ARB?	Potential for Impacts from the Proposed Action/ Effects Determination
Insects					
Monarch butterfly	*Danaus plexippus*	Candidate	Adult monarchs feed on the nectar of many flowering plants, but only breed where milkweeds are found (fields, roadside areas, urban gardens, etc.).	Yes	*No effect*. Suitable habitat is not present within the proposed action area.
Quino Checkerspot Butterfly	*Euphydryas editha quino (=E. e. wrighti)*	Endangered	Habitat is characterized by patchy shrub or small tree landscapes with openings of several meters between large plants, or a landscape of open swales alternating with dense patches of shrubs; such habitats are often collectively termed "scrublands. There are anecdotal observations of transient use, but no documentation of reproduction on March ARB.	Yes	*No effect*. Suitable habitat is not present within the proposed action area.
Crustaceans					
Riverside Fairy Shrimp	*Streptocephalus woottoni*	Endangered	Deep, long-lived vernal pools/seasonal depressional wetlands, ephemeral ponds and human derived depressions.	Yes	*No effect*. Suitable habitat is not present within the proposed action area.
Vernal Pool Fairy Shrimp	*Branchinecta lynchi*	Threatened	Vernal pools/seasonal depressional wetlands, ephemeral ponds and human derived depressions.	Yes	*No effect*. Suitable habitat is not present within the proposed action area.
Flowering Plants					
Munz's Onion	*Allium munzii*	Endangered	Prefers very thick, mesic clay soils at an altitude of 400 to 900 meters. It is usually found in open grasslands, coastal scrub, and juniper woodlands.	No	*No effect*. Suitable habitat is not present within the proposed action area.
Nevin's Barberry	*Berberis nevinii*	Endangered	Found in a variety of different topographical conditions ranging from nearly flat sandy washes, terraces, and canyon floors to ridges and mountain summits. Nevin's barberry is also associated with mesic habitats and plant communities such as alluvial scrub, chamise chaparral, coastal sage scrub, oak woodland, and riparian scrub or woodland.	No	*No effect*. Suitable habitat is not present within the proposed action area.
San Diego Ambrosia	*Ambrosia pumila*	Endangered	Occurs in open habitats in coarse substrates near drainages and in upland areas on clay slopes. San Diego ambrosia also occurs in a variety of associations dominated by sparse grasslands or marginal wetlands, such as river terraces, pools, and alkali playas.	No	*No effect*. Suitable habitat is not present within the proposed action area.

Common Name	Scientific Name	Federal Listing Status	Habitat	Historically Observed at March ARB?	Potential for Impacts from the Proposed Action/ Effects Determination
San Jacinto Valley Crownscale	*Atriplex coronata var. notatior*	Endangered	Restricted to highly alkaline, silty-clay soils. Most populations are associated with the Willows soil series. It occurs in alkali sink scrub, alkali playa, vernal pools, and, to a lesser extent, in annual alkali grassland communities.	No	*No effect*. Suitable habitat is not present within the proposed action area.
Santa Ana River Woolly-star	*Eriastrum densifolium ssp. sanctorum*	Endangered	Open areas that receive a lot of sun and where there are infrequent flood events that contribute to seed dispersal. Santa Ana River woolly-star grows in sandy areas and is a pioneer species, meaning that it will take over previously unutilized habitat. It requires periodic flooding along with scouring and sediment deposition to persist.	No	*No effect*. Suitable habitat is not present within the proposed action area.
Spreading Navarretia	*Navarretia fossalis*	Threatened	Primarily associated with vernal pools, alkali playas, and alkali sinks. It sometimes is found in ditches and other artificial depressions, which occur in degraded vernal pool habitat. It lives in elevations between sea level and 4,250 feet.	No	*No effect*. Suitable habitat is not present within the proposed action area.
Thread-leaved Brodiaea	*Brodiaea filifolia*	Threatened	Typically grows in herbaceous plant communities such as grassland communities, alkali playa, vernal pools, and open areas associated with coastal sage scrub.	No	*No effect*. Suitable habitat is not present within the proposed action area.

Sources: CBD 2023; CDFW 2013a, b; 2014, 2015; March ARB 2020a, b; March ARB 2021; NPS 2017; USFWS 2021, 2023a-h, Wagner 2023
Notes: ARB = Air Reserve Base; ROI = region of influence; USFWS = U.S. Fish and Wildlife Service

Of the seventeen federally listed species identified by the USFWS IPaC (Table 1), five are known to occur at March ARB (March ARB, 2021). Historical species observations for these species, as documented by the Natural Resource Manager and in the March ARB *Integrated Natural Resource Management Plan* (INRMP) (March ARB, 2021), are provided below:

MAMMALS

- Stephens' Kangaroo Rat (*Dipodomys stephensi* [incl. *D. cascus*]) – Occupied habitat is present on the small arms range west of Interstate-215. Targeted species surveys were conducted in areas within and adjacent to March ARB. Results of the surveys indicate that Stephen's kangaroo rat is absent on the main March ARB property (March ARB, 2020a; March ARB, 2021).

INVERTEBRATES

- Vernal pool fairy shrimp (*Branchinecta lynchi*) – Although, federally listed vernal pool fairy shrimp have not been identified onsite during focused surveys, its absence has not been able to be confirmed through surveys (March ARB, 2020b; March ARB, 2021). Habitat for this species occurs on March ARB and there are vernal pools on the airfield that may support federally listed fairy shrimp. However, these pools are located off the runways and taxiways away from flight exercises. Common versatile fairy shrimp (*Branchinecta lindahli*), also of the same genus *Branchinecta*, have been documented on base.

- Riverside fairy shrimp (*Streptocephalus woottoni*) – Although surveys in 1997, 2009, and 2019 documented cysts of fairy shrimp of the genus *Streptocephalus* on March ARB, an emerged fairy shrimp of this species has not been detected (March ARB, 202b; Wagner, 2023). March ARB is unlikely to support the life cycle of this species due to existing habitat disturbance and the limited inundation time of the ponded areas on the installation.

- Quino checkerspot butterfly (*Euphydryas editha quino*) – Minimal suitable habitat for this species occurs on March ARB. There are anecdotal observations of transient use, but no documentation of reproduction on March ARB (March ARB, 2021).

- Monarch butterfly (*Danaus plexippus*) – Monarch butterflies arrive in California around mid-October and stay until early February. Minimal suitable habitat for this species occurs on March ARB. There are incidental observations of transient use, but no documentation of reproduction on March ARB (Wagner, 2023).

In addition to the above listed species, avian species protected under the Migratory Bird Treaty Act (MBTA) (16 United States Code [U.S.C.] §§ 703–712) occur as residents or migrants at the installation such as passerines, diurnal raptors (hawks, eagles, and falcons), and nocturnal raptors (owls). All bird species occurring on March ARB are protected under the MBTA and Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, except for nonnative species (i.e., rock pigeon [*Columba livia*], European starling [*Sturnus vulgaris*], and house sparrow [*Passer domesticus*]). Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat.

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*), both of which are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), are also known to occur. Both bald and golden eagles have been observed as transients, soaring over the base (March ARB, 2021).

California Department of Fish and Wildlife state-listed Species of Special Concern (SSC), State Endangered (SE), State Threatened (ST), and Fully Protected (FP) species are also known to occur or have been historically observed on base. These species include the burrowing owl (*Athene cunicularia*) – SSC; coastal whiptail (*Aspidoscelis tigris stejnegeri*) – SSC; loggerhead shrike (*Lanius ludovicianus*) – SSC; mountain plover (*Charadrius montanus*) – SSC; northern harrier (*Circus hudsonius*) – SSC; peregrine falcon (*Falco peregrinus anatum*) – SE, FP; tricolored blackbird (*Agelaius tricolor*) – ST; white-tailed kite (*Elanus leucurus*) – FP; San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) – SSC; and Stephens' kangaroo rat – ST. These ten species are addressed in the EIS as well as the March ARB INRMP.

Special status species, including federal- and state-listed species, known to occur at March ARB are not likely to be impacted from implementation of the proposed KC-46A MOB 5 mission. None of the five federally listed threated or endangered species known to occur have habitat within the areas proposed for construction, demolition, and renovation. Stephens' kangaroo rat is presumed absent on the main March ARB property. Additionally, the areas proposed for construction, demolition, and renovation are outside of the potential suitable habitats (ponds located to the north at the installation) for the Vernal pool fairy shrimp and Riverside fairy shrimp. The quino checkerspot butterfly and monarch butterfly may transiently pass through the site, however, there has been no documentation of reproduction at the installation for either species (March ARB, 2021; Wagner, 2023). Under the natural resources management program, management actions for all special status species would continue through the March ARB INRMP (March ARB, 2021). Species known to occur on base would continue to be annually monitored and managed by the installation Natural Resource Manager (Wagner, 2023). Under the March ARB Alternative, there would be ***no effect*** to federally listed species as there is no suitable habitats within the areas proposed for facilities and infrastructure projects.

Federally protected bird species (including eagles) could occur in the airspace. However, aircraft operations associated with the proposed KC-46A MOB 5 mission at March ARB would substantially decrease, thus decreasing the aircraft strike potential for birds (including migratory species) and other wildlife. At March ARB, aircraft strike potential for birds and other wildlife is managed through the Bird Aircraft Strike Hazard Program. The procedures and actions to minimize bird/wildlife-aircraft strikes at the installation (including but not limited to include abating nuisance avian species, pyrotechnics, and depredation when necessary) would continue to be implemented at the installation (March ARB, 2017). To lessen the danger of wildlife strikes with aircraft, March ARB holds a federal Migratory Bird Depredation Permit that authorizes the take, temporary possession, and transportation of specified numbers and species of migratory birds and eagles to relieve or prevent injurious situations impacting human safety.

In accordance with Section 7 of the Endangered Species Act (16 U.S.C. §§ 1531–1544, as amended), the Sikes Act (16 U.S.C. 670a-670o, 74 Stat. 1052), and as part of the DAF's Environmental Impact Analysis Process, we request your input in identifying any additional species of concern, general or specific issues, or areas of concern you feel should be addressed in the EIS. The DAF requests your agency's concurrence with the species list and effects determinations contained herein. If your agency has any new or additional information other than that contained in Table 1, we request that you please provide your comments by 30 days of receiving this letter.

If you have any questions, please contact Ms. Chris Wagner at christhild.wagner@us.af.mil, or by phone: Office # (951) 655-3653, Cell # (503) 758-3268. Thank you in advance for your assistance in this effort.

Sincerely

SHAW.DAVID.NATHANIEL.1132134053 Digitally signed by SHAW.DAVID.NATHANIEL.1132134053 Date: 2023.03.14 14:47:59 -07'00'

DAVID N. SHAW, GS-13, DAF
452d Base Civil Engineer

3 Attachments:
1. Facilities and Infrastructure Development Table for March ARB
2. March ARB Project Map
3. IPaC Report (Project Code: 2023-0033154)

cc:
Mr. Mike Fris, Assistant Regional Director, Ecological Services

From: Cleary-Rose, Karin <Karin_Cleary-Rose@fws.gov>
Sent: Wednesday, May 10, 2023 4:00 PM
To: SMITH, THOMAS G II Lt Col USAF AFRC 922 CEF/CEO; WAGNER, CHRISTHILD L CIV USAF AFRC 452 MSG/CEV
Cc: Hendron, Jane; Sobiech, Scott; White, Rollie; Petersen, Kristine K
Subject: [Non-DoD Source] Endangered Species Determinations for the proposed bed down of KC-46A tanker aircraft at Main Operating Base 5 March Air Reserve Base

Good Afternoon Colonel,

We are responding to your request for input regarding species of concern or issues that may need to be addressed in the Environmental Impact Statement (EIS) to evaluate potential environmental consequences associated with the proposed beddown of KC-46A tanker aircraft at Main Operating Base 5. You also requested our concurrence with the species list and effects determinations included in your letter. We have reviewed your approach to the assessment of USFWS trust resources. You considered 17 listed species, critical habitat, migratory birds, bald and golden eagles, and wetlands. We do not have any information to add to or concerns regarding your assessment of USFWS resources in the project area. Further, while by policy we do not concur with "no effect" determinations, we have no concerns about the "no effect" determinations or species list in your letter.

We appreciate the thoroughness of your approach and the opportunity to comment. Please let me know if you have any other questions.

Sincerely,

Karin Cleary-Rose (she/her)
Inland Division Supervisor
Palm Springs Fish and Wildlife Office
777 East Tahquitz Canyon Way, Suite 208
Palm Springs, CA 92262
(760) 322 2070 ext 406

A.4.2 ESA Section 7 United States Fish and Wildlife Consultation for Grissom ARB

DEPARTMENT OF THE AIR FORCE
434TH AIR REFUELING WING (AFRC)

February 27, 2023

Mr. David A. Hughes
Base Civil Engineer
7104 S. Warthog Street
Grissom ARB, IN 46971-1632

Mr. Scott Pruitt, Field Supervisor
U.S. Fish and Wildlife Service
Bloomington Indiana Field Office
620 S. Walker Street Bloomington, Indiana 47403-2121

Dear Mr. Pruitt,

The Department of the Air Force (DAF) is preparing an Environmental Impact Statement (EIS) to evaluate potential environmental consequences associated with the proposed beddown of KC-46A tanker aircraft at Main Operating Base 5 (MOB 5). This EIS will, as required by law and regulations, consider the potential impacts resulting from basing 12 KC-46A aircraft (and related construction, demolition, and renovation of facilities) at a DAF installation within the continental United States (CONUS) operated by the Air Force Reserve Command (AFRC). The purpose of the MOB 5 beddown is to provide a fully capable, combat-operational AFRC KC-46A air refueling squadron or squadrons to accomplish aerial refueling and related missions. The KC 46A MOB 5 beddown is needed to support the recapitalization of the DAF's aging refueling aircraft fleet. The DAF needs bases to accomplish the required training and to field a fully operational force. A DAF base for the MOB 5 mission is needed to achieve a high state of operational mission readiness. The DAF has identified March ARB as the preferred alternative. Grissom Air Reserve Base (ARB), Tinker AFB and the No Action Alternative will be evaluated in the EIS as alternatives.

If Grissom ARB is selected for the KC-46A MOB 5 mission, 12 KC-46A aircraft would replace the existing 16 KC-135 aircraft. The KC-46A would operate in existing airspace and the types of flight operations would be similar to existing KC-135 operations. The KC-46A would use existing KC-135 air refueling tracks and fuel jettison areas, if necessary. The elevation of the current air refueling tracks for the KC-135 vary but are generally at elevations of 14,000 to 24,000 feet above ground level. Preliminary analysis indicates that noise levels from the proposed KC-46A operations would be similar to noise levels associated with the current KC-135 mission.

The action area under each alternative is defined as where the facilities and infrastructure projects for the proposed KC 46A MOB 5 Mission would occur at each individual installation (Attachment 1) and the areas surrounding the installation that are currently exposed to noise greater than 65 decibels A-weighted day-night average sound level (L_{Adn}). Additional information can be found on the project website at www.kc-46a-mob5.com.

Grissom ARB carefully reviewed the U.S. Fish and Wildlife Service's (USFWS's) Information for Planning and Conservation (IPaC) online system on January 12, 2023, to identify current USFWS trust resources, defined as: threatened, endangered, proposed and candidate species; proposed and final designated critical habitat; migratory birds; and wetlands that may occur within the boundary of the proposed project and/or may be affected by the proposed project.

DEPARTMENT OF THE AIR FORCE
434TH AIR REFUELING WING (AFRC)

Results of the official IPaC quarry (Project Code: 2023-0033179) identified the following resources:

- Three (3) federally listed species (please see Table 1);
- No critical habitats within the project area under the Indiana Field Office's jurisdiction;
- Eleven (11) migratory birds/ birds of particular concern/birds of conservation concern species; and
- No wetlands within the project area.

Please refer to Attachment 3 for a copy of the IPaC Report (USFWS 2023).

Table 1. Potential for Impacts from the Proposed Action to USFWS Species Known to or Believed to Occur with Potential to Occur in the Grissom ROI

Common Name	Scientific Name	Federal Listing Status	Habitat	Historically Observed at Grissom Air Reserve Base?	Potential for Impacts from the Proposed Action/ Effects Determination
Mammals					
Indiana Bat	*Myotis sodalis*	Endangered	Found over most of the eastern half of the United States. Almost half of them hibernate in caves in southern Indiana.	No	*No effect*. Suitable roosting habitat not present onsite. Low quality foraging habitat may be present in surrounding areas. Species occurrences would be limited to transient flyovers during summer months. No effects to Indiana or Northern-long eared bat will occur as a result of the Proposed Action.
Northern Long-eared Bat	*Myotis septentrionalis*	Threatened	Summer roosting habitat includes underneath bark, in cavities, or in crevices of both live and dead trees, caves and mines. Opportunistic in roost selection, using tree species based on suitability to retain bark or provide cavities or crevices. Winter hibernacula include caves and mines. Large caves or mines with large passages and entrances; constant temperatures; and high humidity with no air currents are preferred.	No	
Insects					
Monarch butterfly	*Danaus plexippus*	Candidate	Adult monarchs feed on the nectar of many flowering plants, but only breed where milkweeds are found (fields, roadside areas, urban gardens, etc.).	No	*No effect*. Installation does not support large populations of milkweed.

Sources: NPS, 2017; USFWS 2023a, b, c

In addition to the above species listed in Table 1, Grissom ARB previously consulted with the USFWS for federally listed species at the base for the Third Main Operating Base (MOB 3) of KC-46A Tanker Aircraft. In a letter dated 15 April 2016, the USFWS identified the upland sandpiper (*Bartramia longicauda*), a federal species of conservation concern and Indiana State endangered species, as a successful nesting grassland bird at Grissom ARB (USFWS, 2016). Additionally, the USFWS identified the following grassland and shrubland species of conservation concern as successful nesting birds on Grissom ARB: bobolink (*Dolichonyx oryzivorus*), brown thrasher (*Toxostoma rufum*), dickcissel (*Spiza americana*), field

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sparrow (*Spizella pusilla*), eastern meadowlark (*Sturnella magna*), and grasshopper sparrow (*Ammodramus savannarum*) (USFWS, 2016) Another federal species of conservation concern and Indiana State endangered species, the northern harrier (*Circus cyaneus*), was observed soaring at Grissom ARB, once in July of 2015 and once in October of 2022; however, this species forages over large areas and breeding has not been confirmed at the base. None of the above listed avian species have been observed again during visual surveys conducted between 2019 and 2023 by the current Natural Resource Program Manager at Grissom ARB (DAF, 2021; DAF, 2023; McClain, 2023). The proposed construction, demolition and renovation would not occur in potential suitable nesting habitat for the upland sandpiper.

No ferally listed species are known to occur at Grissom ARB. As such, *no effects* to federally listed species (Table 1) would occur under implementation of the proposed new mission. Due to the urbanized and developed nature of land on Grissom ARB, there is a lack of suitable roost habitat and low-quality potential foraging habitat for both the Indiana and northern long-eared bat species. Species occurrences for these bats would likely be limited to transient occurrences during the summer months between preferred habitats outside of Grissom ARB. Additionally, the host food for the monarch butterfly, milkweed, does not occur in populations large enough to support the species during migrations at Grissom ARB. The monarch is a federally listed candidate species, thus consultation with the USFWS under Section 7 of the ESA is not required.

Avian species protected under the MBTA may occur as residents or migrants on and near the installation. The IPaC identified eleven migratory birds with potential to occur within the Grissom ARB ROI (USFWS, 2023). Included in this list was the bald eagle (*Haliaeetus leucocephalus*), which is protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d).

No conflicts between special-status species or migratory birds with aircraft are currently known to occur on base (McClain, 2023). Federally and state-protected bird species (including eagles) could occur in the airspace. A decrease in air operations associated with the proposed new mission is anticipated, thus decreasing the aircraft strike potential for birds (including migratory species) and other wildlife. At Grissom ARB, aircraft strike potential for birds and other wildlife is managed through the Bird Aircraft Strike Hazard (BASH) Program. Under the Grissom ARB Alternative, the procedures and actions to minimize bird/wildlife-aircraft strikes at the installation would continue to be employed (Grissom ARB, 2021).

In accordance with Section 7 of the ESA (16 U.S.C. §§ 1531–1544, as amended), the Sikes Act (16 U.S.C. 670a-670o, 74 Stat. 1052), and as part of the DAF's Environmental Impact Analysis Process (EIAP), we request your input in identifying any additional species of concern, general or specific issues, or areas of concern you feel should be addressed in the EIS. The DAF requests your agency's concurrence with the species list and effects determinations contained herein. If your agency has any new or additional information other than that contained in Table 1, we request that you please provide your comments by April 3, 2023.

If you have any questions, please contact Mr. Cory Walters, Chief Environmental Flight, cory.walters@us.af.mil, (765) 688-4561. Thank you in advance for your assistance in this effort.

Sincerely,

HUGHES.DAVID.ALEXANDER.1007633528 Digitally signed by HUGHES.DAVID.ALEXANDER.1007633528 Date: 2023.02.27 08:23:00 -05'00'

DAVID A. HUGHES, GS-13 P.E.
Base Civil Engineer

DEPARTMENT OF THE AIR FORCE
434TH AIR REFUELING WING (AFRC)

4 Attachments:
1. Facilities and Infrastructure Development Table for Grissom ARB
2. Grissom ARB Project Map
3. IPaC Report (Project Code: 2023-0033179)
4. USFWS 2016 – Section 7 Response Letter

DEPARTMENT OF THE AIR FORCE
434TH AIR REFUELING WING (AFRC)

References:

DAF 2021. Memorandum for the Record: Annual Threatened and Endangered Species Survey (Grissom Air Reserve Base). T. McClain, Biologist, Department of the Air Force, Air Force Reserve Command, August 9.

DAF 2023. Memorandum for the Record: Annual Threatened and Endangered Species Survey (Grissom Air Reserve Base). T. McClain, Biologist, Department of the Air Force, Air Force Reserve Command, January 6.

Grissom ARB 2021. *434 Bird-Aircraft Strike Hazard Plan*. OPR: 434 ARW/SE. 434th Air Refueling Wing (AFRC) Grissom Air Reserve Base, IN.

McClain 2023. Personal communication (via teleconference) between Trisha McClain, Biological Scientist/Grissom's ARB Natural Resource Program Manager and Sarah Bresnan Rauch, Leidos Senior Ecologist regarding Wildlife and Annual Threatened and Endangered Species Survey

NPS 2017. U.S. National Park Service. Pollinators – Monarch Butterfly. Accessed online: https://www.nps.gov/articles/monarch-butterfly.htm#:~:text=Monarch%20butterflies%20live%20mainly%20in,long%20proboscis%20to%20sip%20food on February 1, 2023.

USFWS 2016. U.S. Fish and Wildlife Service. Bloomington Field Office. Project: Third Main Operating Base (MOB 3) of KC-46A Tanker Aircraft. Location: Grissom Air Reserve Base, Miami and Cass Counties, Indiana. Subject: Special Status Species. Section 7 Response Letter to Grissom Air Reserve Base dated 15 April 2016.

USFWS 2023a. U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) for KC-46A Main Operating Base (MOB 5) Beddown EIS. Indiana Ecological Field Services Office.

USFWS 2023b. U.S. Fish and Wildlife Service (USFWS) Indiana Bat (*Myotis sodalis*) Species Profile. Accessed online: https://www.fws.gov/species/indiana-bat-myotis-sodalis on February 1, 2023.

USFWS 2023c. U.S. Fish and Wildlife Service (USFWS) Northern Long-eared Bat (*Myotis septentrionalis*) Species Profile. Accessed online: https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis on February 1, 2023.

DEPARTMENT OF THE AIR FORCE
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ATTACHMENT 1. FACILITIES AND INFRASTRUCTURE DEVELOPMENT TABLE FOR GRISSOM ARB

DEPARTMENT OF THE AIR FORCE
434TH AIR REFUELING WING (AFRC)

Attachment 1: Table 1. Facilities and Infrastructure Projects for the KC-46A MOB 5 Beddown at Grissom ARB

Project[a]	Facility Size (square feet)
Demolition	
Building 438 Demolition of Hangar 3 for the New 2-Bay Hangar	29,471
Building 439 Demolition of Hangar 1 for the New 2-Bay Hangar	31,738
Total Square Feet	**61,209**
Renovation	
Building 426 Renovation for Hydraulics, Brakes and Non-Destructive Testing Shop	7,500
Building 434 Renovation for the Composite Maintenance Shop	32,500
Building 435 Renovation for the Alternate Mission Equipment and Maintenance Operations Center	5,600
Building 436 Renovation for the Wheel and Tire Shop and Wing Air Refuel Pod and Engine Storage	10,200
Building 437 Renovation for the Fuselage Trainer	16,177
Building 453 Renovation for the Electric and Environmental Shop	7,700
Building 591 Renovation for Aerospace Ground Equipment Shop and Storage	9,435
Building 593 Renovation for Crash, Damaged, Disabled, Aircraft Recovery	6,500
Building 667 Renovation for the Mission Planning Cell	9,245
Building 668 Renovation for the Weapon System Trainer and Boom Operator Trainer Facility	17,390
Reposition Hydrant Fuel Pits and Overlay Aircraft Parking Ramp	Not applicable
Total Square Feet	**122,247**
New Construction	
Construct Covered AGE Storage Facility and Jack Stand Tester	10,000
Construct a New 2-Bay Hangar with Apron Access (Fuel Cell, Corrosion Control, Wash-Rack, Aircraft Maintenance Unit and Back-Shops)	200,000
Total Square Feet	**210,000**

[a] Potential relocation of underground cables, manholes, and duct work would be associated with these projects

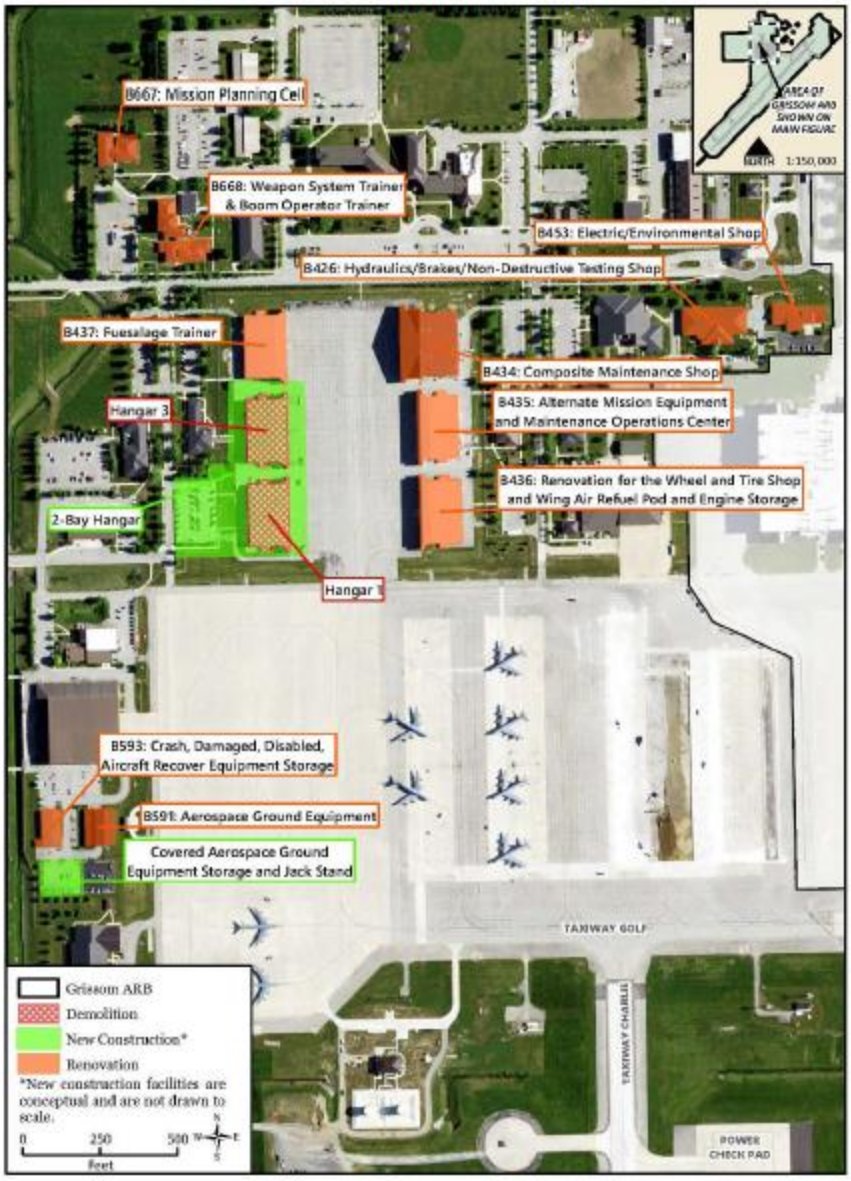
Key: AGE = Aerospace Ground Equipment; ARB = Air Reserve Base; MOB 5 = Main Operating Base 5.

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ATTACHMENT 2. GRISSOM ARB PROJECT MAP

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434TH AIR REFUELING WING (AFRC)

Attachment 2: Grissom ARB Project Map



-----Original Message-----
From: Harrison, Sarah A <sarah_harrison@fws.gov>
Sent: Monday, February 27, 2023 4:51 PM
To: MCCLAIN, TRISHA A CIV USAF AFRC 434 MSG/CEV <trisha.mcclain@us.af.mil>
Subject: [Non-DoD Source] Fw: [EXTERNAL] KC-46A MOB 5 USFWS Consultation Letter - Grissom ARB

At this time the Service has no additional comments. If the project undergoes significant changes to impacts to the natural environment you can reach out to our office for additional guidance.

Sarah Harrison

Sarah Harrison

Fish & Wildlife Biologist

USFWS Indiana Field Office

620 South Walker St

Bloomington, IN 47403

Phone: 812-334-4261 ext. 206

NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.

A.4.3 ESA Section 7 United States Fish and Wildlife Consultation for Tinker AFB

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 72D AIR BASE WING (AFMC)
TINKER AIR FORCE BASE OKLAHOMA

April 12, 2023

Stephanie P. Wilson
Base Civil Engineer
7535 5th Street Tinker AFB, OK 73145

Mr. Kenneth Collins, Field Supervisor
U.S. Fish and Wildlife Service
Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, Oklahoma 74129

Dear Mr. Collins,

The Department of the Air Force (DAF) is preparing an Environmental Impact Statement (EIS) to evaluate potential environmental consequences associated with the proposed beddown of KC-46A tanker aircraft at Main Operating Base 5 (MOB 5). This EIS will, as required by law and regulations, consider the potential impacts resulting from basing 12 KC-46A aircraft (and related construction, demolition, and renovation of facilities) at a DAF installation in the continental United States (U.S.) operated by the Air Force Reserve Command (AFRC). The purpose of the MOB 5 beddown is to provide a fully capable, combat-operational AFRC KC-46A air refueling squadron or squadrons to accomplish aerial refueling and related missions. The KC-46A MOB 5 beddown is needed to support the recapitalization of the DAF's aging refueling aircraft fleet. The DAF needs bases to accomplish the required training and to field a fully operational force. The DAF has identified March Air Reserve Base (ARB) in California as the preferred alternative for the proposed KC-46A MOB 5 mission. Grissom ARB, Tinker Air Force Base (AFB), and the No Action Alternative will be evaluated in the EIS as alternatives.

The Proposed Action area under each alternative is defined as where the facilities and infrastructure projects for the proposed KC-46A MOB 5 mission would occur at each individual installation (Attachments 1 and 2) and the areas surrounding the installation that are currently exposed to noise greater than 65 decibels A-weighted day-night average sound level. Additional information is available on the project website at www.kc-46a-mob5.com.

Tinker AFB carefully reviewed the U.S. Fish and Wildlife Service's (USFWS's) Information for Planning and Conservation (IPaC) online system on January 10, 2023, to identify current USFWS trust resources, defined as: threatened, endangered, proposed and candidate species; proposed and final designated critical habitat; migratory birds; and wetlands that may occur within the boundary of the Proposed Action and/or may be affected by the proposed project.

Results of the official IPaC query (Project Code: 2023-0032376) identified the following resources:

- Seven (7) species: 2 federally listed endangered, 3 federally listed threatened, 1 candidate species, and 1 proposed federally endangered (Table 1);
- No critical habitats within the Proposed Action area under the Oklahoma Ecological Service's Field Office's jurisdiction;
- Seven migratory birds/ birds of particular concern/birds of conservation concern species; and
- No wetlands within the Proposed Action area.

Please refer to Attachment 3 for a full copy of the IPaC Report (USFWS, 2023).

Table 1. Federally Listed or Proposed Listed Species with Potential to Occur on Tinker AFB

Common Name	Scientific Name	Federal Listing Status	Preferred Habitat	Historically Observed at Tinker AFB?
Mammals				
Tricolored bat	*Perimyotis subflavus*	Proposed Endangered	Tricolored bats are known to occur in most of the eastern half of the U.S. Preferred daytime roost habitat includes caves, rock crevices, and tree foliage. At Tinker AFB, this species has been documented roosting in four buildings on base. Tricolored bats were detected at five different acoustic survey locations in 2016. Deciduous woodland habitat at Tinker AFB and surrounding areas likely support summer roosting and foraging habitats.	Yes
Birds				
Whooping crane	*Grus americana*	Endangered	Nesting habitat consists of open areas close to large amounts of water and vegetation. This species nests in wetland and marsh areas or by shallow ponds or lakes. Habitats include willow, sedge meadows, mudflats, and bulrush and cattail (*Typha latifolia*) marshes. During migration, whooping cranes seek similar habitats in wetlands, submerged sandbars and agricultural fields. In winter, wet habitats are also sought out in the form of brackish bays and coastal marshes. No suitable habitat for this species is on Tinker AFB. Low quality foraging habitat may be present in surrounding areas.	No
Piping plover	*Charadrius melodus*	Threatened	Feeding areas include inter-tidal portions of ocean beaches, wash over areas, mudflats, sand flats, wrack lines, and shorelines of coastal ponds, lagoons, or salt marshes. Plovers also occur in grasslands with scattered trees or scattered clumps of trees, a type of community intermediate between grassland and forest. There is no suitable habitat for this species on Tinker AFB.	Yes
Red knot	*Calidris canutus rufa*	Threatened	Migrates through Oklahoma. Wintering and migration habitats consist of large, sandy tidal flats and coastlines near inlets of bays and estuaries that have remained undeveloped. There is no suitable habitat for this species on Tinker AFB; rare species sightings would be limited to transient occurrences	No

Table 1. Federally Listed or Proposed Listed Species with Potential to Occur on Tinker AFB (Continued)

Common Name	Scientific Name	Federal Listing Status	Preferred Habitat	Historically Observed at Tinker AFB?
Fish				
Arkansas river shiner	*Notropis girardi*	Threatened	Inhabits wide and shallow prairie rivers with sandy bottoms, though it seems to use various microhabitats within these systems throughout its life cycle. There is no suitable specialized aquatic habitat at Tinker AFB to support this species.	No
Peppered chub	*Macrhybopsis tetranema*	Endangered	Habitat consists of the main channels of wide, shallow, sandy bottomed rivers and larger streams of the Arkansas River basin. There is no suitable specialized aquatic habitat at Tinker AFB to support this species.	No
Insects				
Monarch butterfly	*Danaus plexippus*	Candidate	Adults feed on the nectar of flowering plants, but only breed where milkweeds are found (fields, roadside areas, urban gardens, etc.). During migration, monarch butterflies have been observed feeding throughout the installation. Wooded areas on base have been used as staging areas during migration.	Yes

Sources: Krupovage 2023; Moody 2023; ODWC 2023a-g; Tinker AFB 2019; USFWS 2023

In addition to the IPaC query, Tinker AFB received a letter from the USFWS on 19 December 2022 in response to the EIS scoping notification letter from the DAF. With the exception of the two fish species, the same federally listed or proposed listed species contained in Table 1 were identified for inclusion in the EIS analysis, as required under sections 7(a)(1) and 7(a)(2) of the ESA (USFWS, 2022) (Attachment 4).

The DAF is currently in Formal Section 7 Programmatic Consultation (USFWS Programmatic Consultation #09E3000-2019-F0005) with the USFWS for airfield operations at 32 installations in the Continental U.S., including Tinker AFB (DAF, 2018). All of the bird species identified in Table 1 and the tricolored bat are included in the Programmatic Biological Assessment (BA) and potential impacts to these species resulting from airfield flight operations would be covered under the Programmatic Biological Opinion to be issued by the USFWS. The BA included a total of 36,527 annual aircraft operations for Tinker AFB which included 6,440 annual aircraft operations from the 2017 KC-46A MOB 3 EIS. Tinker AFB was not selected for the KC-46A MOB 3 mission and therefore, with the proposed increase of 8 annual operations for the KC-46A MOB 5 mission, there would be a buffer of 6,432 annual operations for Tinker AFB to increase before the number of operations in the BA would be exceeded. Regarding the fish species identified in Table 1, the Arkansas River Shiner and the Peppered Chub were not addressed under the Programmatic Consultation as habitat for these fishes does not occur on Tinker AFB.

Three of the seven species listed in Table 1 have been documented on Tinker AFB; the federally threatened piping plover, the proposed endangered tricolored bat, and the candidate monarch butterfly. Historical species observations for these species, as documented by the Natural Resource Manager and in the Tinker AFB *Integrated Natural Resource Management Plan* (Tinker AFB, 2019), are provided below:

- *Piping plover* – An individual piping plover was found dead on Runway 36/18 on May11, 2009, from a bird-aircraft strike. No other piping plovers have been observed since the 2009 incident. According to the USFWS-approved Oklahoma Comprehensive Wildlife Strategy, most records of the piping plover in Oklahoma are from birds migrating across the state from north to south or south to north (ODWC, 2016). The potential for the piping plover to nest or forage in this region is listed as low, with the species considered rare. Because the areas proposed for construction do not provide habitat for the piping plover, implementation of the proposed facilities and infrastructure projects listed in Attachments 1 and 2 would have *no effect* to the piping plover. The Programmatic Consultation would address the affects of ongoing operations at Tinker AFB on the piping plover (DAF, 2018) (USFWS Programmatic Consultation #09E3000-2019-F0005). The possible, but unlikely, beddown of the KC-46A at Tinker AFB is not anticipated to increase the likelihood of additional impacts to the piping plover (8 operations per year).
- *Tricolored bat* – Tricolored bats were detected at five echolocation survey stations on base during acoustic surveys in 2016 (CIRE, 2017) and at two locations on Crutcho Creek (Shaw 2013). The base has mature deciduous woodland habitat that is associated with summer foraging and roosting. Besides the minor ramp expansion, deciduous woodlands would not be cleared for any of the proposed facilities and infrastructure projects listed in Attachments 1 and 2. Expansion of the 507th Air Refueling Wing ramp to the west would impact approximately one acre of floodplain habitat. A minor number of transitional and immature trees along the eastern edge of this habitat would require clearing. The timing of tree clearing can have a variety of impacts on bats depending on the quality, amount, and location of the cleared habitat. To avoid potential effects to tricolored bats, tree clearing would not occur during the active and maternity season (1 April to 31 October) for bats. Tree clearing would be restricted to the inactive bat season to avoid potential direct impacts in the form of injury or death to individual bats that could be roosting in the deciduous forested areas. Additionally, tricolored bats have also been documented in four different buildings on base; however, none of the four buildings are included in the proposed facilities and infrastructure projects (Attachments 1 and 2) for the proposed KC-46A MOB 5 mission at Tinker AFB (Moody, 2023). Buildings with known roosts would not be affected. Prior to any exterior renovation or demolition, hangars in the project area would be surveyed to determine the presence of tricolored bats. As such, there would be *no effect* to the tricolored bat from construction activities at Tinker AFB and implementation of the Proposed Action at Tinker AFB would not jeopardize the continued existence of this species. The minor increase (8 operations per year), in KC-46A operations at Tinker AFB would be covered under the Programmatic Biological Opinion currently being developed between the DAF and the USFWS for airfield flight operations at 32 installations in the Continental U.S., including Tinker AFB (DAF, 2018) (USFWS Programmatic Consultation #09E3000-2019-F0005).
- *Monarch butterfly* – Tinker AFB has patches of milkweed (*Asclepias* spp.) and other pollinating plants that support monarch populations during migration and breeding. Potential suitable habitat for the species host food (milkweed) and other large patches of pollinating plants would not be affected by the proposed facilities and infrastructure projects (Attachments 1 and 2) for the Proposed KC-46A MOB 5 mission at Tinker AFB. As such, there would be *no effect* to the monarch butterfly. However, the monarch

butterfly is a federal candidate species, thus consultation with the USFWS under Section 7 of the ESA is not currently required.

In addition to the above listed species, avian species protected under the Migratory Bird Treaty Act (MBTA) (16 United States Code [U.S.C.] §§ 703–712) occur as residents or migrants at the installation such as passerines, diurnal raptors (hawks, eagles, and falcons), and nocturnal raptors (owls). All migratory bird species occurring on Tinker AFB are protected under the MBTA and Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. The IPaC identified seven migratory birds with potential to occur on Tinker AFB, including the bald eagle (*Haliaeetus leucocephalus*), which is protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). Bald eagles have been observed as transients through the Tinker AFB airspace and have been sighted in recent years at Lake Stanley Draper located approximately a half of a mile south of the base's runway (Krupovage, 2023). Tinker AFB is located near the middle part of the Central Flyway for migratory birds and a variety of different species that are protected under the MBTA are known to migrate through this area. Federally and state-protected bird species (including eagles) could occur in the airspace. Aircraft operations associated with the proposed KC-46A MOB 5 mission at Tinker AFB would minimally (8 operations per year) increase. The potential for bird/wildlife-aircraft strikes could fluctuate because of the cyclical patterns of bird populations. Historically, one-half of one percent of all reported bird/wildlife-aircraft strikes involving DAF aircraft resulted in a serious mishap. As such, Tinker AFB implements a bird/wildlife-aircraft strike hazards (BASH) program and abides by the standard conditions as set through the Migratory Bird Depredation Permit (Permit No. MB710993). The goal of the BASH program is to reduce wildlife hazards to aircraft operations. Under the Tinker AFB Alternative, procedures to reduce bird/wildlife-aircraft strikes would continue to be implemented at the installation through the BASH program; Wildlife Damage Management Plan through a Memorandum of Understanding between Tinker AFB and the United States Department of Agriculture—Wildlife Services; and the Natural Resource Programs (Tinker AFB, 2019; 2020).

While there would be a minimal increase in operations, the proposed KC-46A MOB 5 mission would expose 9 fewer acres of off-base land to noise levels greater than 65 decibels. As such, noise impacts resulting from the slight increase in operations are anticipated to be negligible compared to the existing aircraft noise at the installation.

In accordance with Section 7 of the ESA (16 U.S.C. §§ 1531–1544, as amended), the Sikes Act (16 U.S.C. 670a-670o, 74 Stat. 1052), and as part of the DAF's Environmental Impact Analysis Process, we request your input in identifying any additional species of concern, general or specific issues, or areas of concern you feel should be addressed in the EIS. The DAF requests your agency's concurrence with the species list and effects determinations contained herein. If your agency has any new or additional information other than that contained in Table 1, we request that you please provide your comments by May 12, 2023

If you have any questions, please contact Mr. John Krupovage or Mr. Ray Moody, Tinker AFB Natural Resources Office, at (405) 739-7074 or (405) 739-7065, respectively. Thank you in advance for your assistance in this effort.

Sincerely,

WILSON.STEPHANIE.PETERENIA.1063234377 Digitally signed by WILSON.STEPHANIE.PETERENIA.1063234377 Date: 2023.04.07 11:16:04 -05'00'

STEPHANIE P. WILSON, NH-IV
Director, 72 ABW/CE

4 Attachments:
1. Facilities and Infrastructure Development Table for Tinker AFB
2. Tinker AFB Project Map
3. IPaC Report (Project Code: 2023-0032376)
4. USFWS 2022 Comment Letter

References:

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ODWC 2023c. Oklahoma Department of Wildlife Conservation (ODWC). Species Profile – Piping plover (*Charadrius melodus*).

ODWC 2023d. Oklahoma Department of Wildlife Conservation (ODWC). Species Profile – Red knot (*Calidris canutus rufa*).

ODWC 2023e. Oklahoma Department of Wildlife Conservation (ODWC). Species Profile – Arkansas river shiner (*Notropis girardi*).

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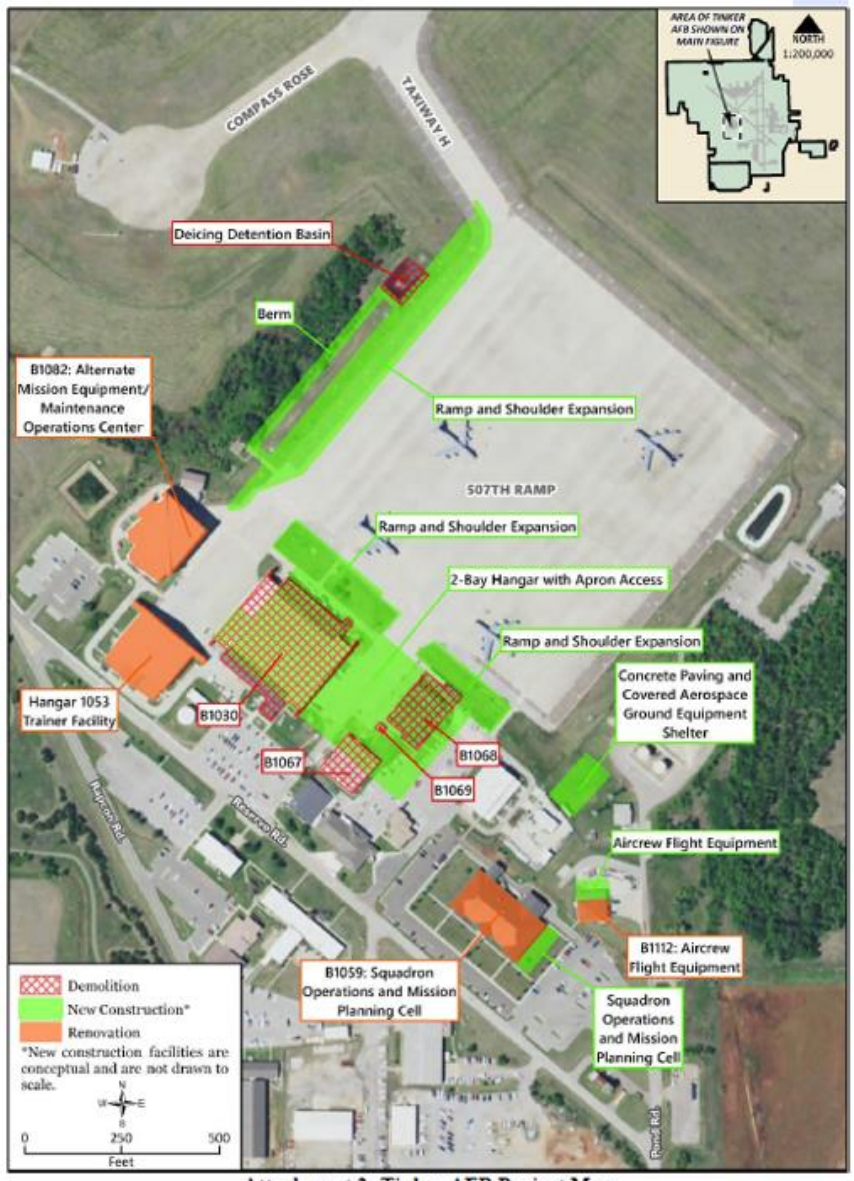
ATTACHMENT 1. FACILITIES AND INFRASTRUCTURE DEVELOPMENT TABLE FOR TINKER AFB

Attachment 1: Table 1. Facilities and Infrastructure Projects for the KC-46A MOB 5 Beddown at Tinker AFB

Project[a]	Facility Size (square feet)
Demolition	
Building 1030[a] (to make room for new 2-Bay Hangar with Apron Access)	99,184
Building 1067 (to make room for new 2-Bay Hangar with Apron Access)	11,460
Building 1068[a] (to make room for new 2-Bay Hangar with Apron Access)	19,775
Building 1069 (to make room for new 2-Bay Hangar with Apron Access)	250
Deicing Detention Basin	7,330
Total Square Feet	**137,999**
Renovation	
Hangar 1053, Weapon System Trainer, Boom Operator Trainer and Fuselage Trainer Facility	10,000
Building 1059, Squadron Operations and Mission Planning Cell	10,000
Building 1082, Alternate Mission Equipment/Maintenance Operations Center	15,000
Building 1112, Aircrew Flight Equipment	35,000
Hydrant Pit repositioning	Not Applicable
Total Square Feet	**TBD**
New Construction	
2-Bay Hangar with Apron Access (Fuel Cell, Corrosion Control, Wash-Rack, AMU, Back-Shops)	200,000
Install Additional Pump in POL Facility	NA
Concrete Paving and Covered AGE Shelter-Building 1070 and 1058 area	10,500
Ramp and Shoulder expansion	114,000
Total Square Feet	**324,500**

[a] Potential relocation of underground cables, manholes, and duct work would be associated with these projects

ATTACHMENT 2. TINKER AFB PROJECT MAP



Attachment 2: Tinker AFB Project Map

Addendum to the April 12, 2023 Letter to Mr. Ken Collins, USFWS from Ms. Stephanie Wilson

- *Piping plover* – An individual piping plover was found dead on Runway 36/18 on May11, 2009, from a bird-aircraft strike. No other piping plovers have been observed since the 2009 incident. According to the USFWS-approved Oklahoma Comprehensive Wildlife Strategy, most records of the piping plover in Oklahoma are from birds migrating across the state from north to south or south to north (ODWC, 2016). The potential for the piping plover to nest or forage in this region is listed as low, with the species considered rare. ~~Because the areas proposed for construction do not provide habitat for the piping plover, As such,~~ implementation of the proposed ~~facilities and infrastructure projects listed in Attachments 1 and 2 would have no effect~~KC-46A MOB 5 mission may affect, but is not likely to adversely affect ~~to~~ the piping plover. The Programmatic Consultation would address the affects of ongoing operations at Tinker AFB on the piping plover (DAF, 2018) (USFWS Programmatic Consultation #09E3000-2019-F0005). ~~,~~The possible, but unlikely, beddown of the KC-46A at Tinker AFB is not anticipated to increase the likelihood of additional impacts to the piping plover (8 operations per year).
- *Tricolored bat* – Tricolored bats were detected at five echolocation survey stations on base during acoustic surveys in 2016 (CIRE, 2017) and at two locations on Crutcho Creek (Shaw 2013). The base has mature deciduous woodland habitat that is associated with summer foraging and roosting. Besides the minor ramp expansion, deciduous woodlands would not be cleared for any of the proposed facilities and infrastructure projects listed in Attachments 1 and 2. Expansion of the 507th Air Refueling Wing ramp to the west would impact approximately one acre of floodplain habitat. A minor number of transitional and immature trees along the eastern edge of this habitat would require clearing. The timing of tree clearing can have a variety of impacts on bats depending on the quality, amount, and location of the cleared habitat. To avoid potential effects to tricolored bats, tree clearing would not occur during the active and maternity season (1 April to ~~31 October~~15 November) for bats. Tree clearing would be restricted to the inactive bat season to avoid potential direct impacts in the form of injury or death to individual bats that could be roosting in the deciduous forested areas. Additionally, tricolored bats have also been documented in four different buildings on base; however, none of the four buildings are included in the proposed facilities and infrastructure projects (Attachments 1 and 2) for the proposed KC-46A MOB 5 mission at Tinker AFB (Moody, 2023). Buildings with known roosts would not be affected. Prior to any exterior renovation or demolition, hangars in the project area would be surveyed to determine the presence of tricolored bats. As such, implementation of the proposed KC-46A MOB 5 mission at Tinker AFB may affect, but is not likely to adversely affect ~~there would be no effect to~~ the tricolored bat ~~from construction activities at Tinker AFB and implementation of the Proposed Action at Tinker AFB would not jeopardize the continued existence of this species~~. The minor increase (8 operations per year), in KC-46A operations at Tinker AFB would be covered under the Programmatic Biological Opinion currently being developed between the DAF and the USFWS for airfield flight operations at 32 installations in the Continental U.S., including Tinker AFB (DAF, 2018) (USFWS Programmatic Consultation #09E3000-2019-F0005).
- *Monarch butterfly* – Tinker AFB has patches of milkweed (*Asclepias* spp.) and other pollinating plants that support monarch populations during migration and breeding. Potential suitable habitat for the species host food (milkweed) and other large patches of pollinating plants would not be affected by the proposed facilities and infrastructure projects (Attachments 1 and 2) for the Proposed KC-46A MOB 5 mission at Tinker AFB. As such, there would be *no effect* to the monarch butterfly. However, the monarch

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Ecological Services Program
Oklahoma Ecological Services Office
9014 East 21st Street
Tulsa, Oklahoma 74129
918/581-7458 / (FAX) 918/581-7467

May 2, 2023

Ms. Stephanie Wilson, NH-IV
Director, Civil Engineering (72 ABW/CE)
7535 5th Street, Building 400
Tinker Air Force Base, OK 73145-9010

Dear Ms. Wilson:

The U.S. Fish and Wildlife Service's Oklahoma Ecological Services Field Office (Service) has reviewed your April 10, 2023, informal consultation request under section 7(a)(2) of the Endangered Species Act (Act). This consultation concerns potential impacts associated with a proposal to utilize Tinker Air Force Base (Tinker) as an alternative site for the Air Force Reserve Command KC-46A Main Operating Base 5 beddown (Project). The Service understands that Tinker is not the preferred alternative in the associated Environmental Impact Statement evaluating the potential environmental consequences associated with the Project.

There are seven species listed on Tinker's Information for Planning and Consultation report (2023-0032376) for this Project: the endangered whooping crane *Grus americana* and peppered chub *macrhybopsis tetranema*, the threatened piping plover *Charadrius melodus*, rufa red knot *Calidris canutus rufa*, and Arkansas River shiner *Notropis girardi*, the proposed endangered tricolored bat *Perimyotis subflavus*, and the candidate Monarch butterfly *Danaus plexippus*. Tinker made no effect determinations for the whooping crane, red knot, peppered chub, Arkansas River shiner and Monarch butterfly. The Service concurs with those determinations based on no habitat being present within the action area for the proposed action.

On April 13, 2023, the Service requested additional information and clarification regarding the timing of the proposed action and the effects determinations made for the remaining species. Tinker responded, on April 20, 2023, by providing an addendum that clarified the timing and potential effects determinations.

Tinker made a may affect-not likely to adversely affect determination for the piping plover based on the presence of a deceased piping plover found on a runway in 2009 from a bird-aircraft strike. Tinker is currently involved in a larger programmatic consultation (09E3000-2019-F0005) between the Service and the Department of the Air Force that would address impacts of flight operations on birds throughout the United States, including the piping plover. Therefore, any impacts of future flight operations would be addressed under this larger programmatic consultation.

Tinker also made a may affect-not likely to adversely affect determination for tricolored bat using acoustic survey results and proposed timing of proposed tree removal activities. The acoustic surveys were positive for the tricolored bat but any tree removal to accommodate the expansion of a ramp would occur during the tricolored bat inactive season (November 16-March 31). Based on the information provided above, the Service concurs with Tinker's may affect-not likely to adversely affect determinations for the piping plover and tricolored bat.

This letter concludes informal consultation between Tinker and the Service regarding this proposed action. If available information changes or new species become listed, further consultation may be warranted. If you have any questions, please reach out to Laurence Levesque, Supervisory Fish and Wildlife Biologist, at the address on this letterhead or by e-mail at laurence_levesque@fws.gov. Thank you for the opportunity to review your proposed action.

Sincerely,

KENNETH COLLINS Digitally signed by KENNETH COLLINS Date: 2023.05.02 09:46:21 -05'00'

Kenneth Collins
Field Supervisor

APPENDIX B

AIR QUALITY ANALYSIS SUPPORTING DOCUMENTATION



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ACRONYMS AND ABBREVIATIONS

ACAM	Air Conformity Applicability Model
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFE	above airfield elevation
AGE	aerospace ground equipment
AGL	above ground level
APU	auxiliary power unit
AS	average air speed
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2e	carbon dioxide equivalents
CY	calendar year
EIAP	environmental impact analysis process
EIS	Environmental Impact Statement
ETR	engine thrust request
ft	foot/feet
ft^2	square foot/feet
ft^3	cubic foot/feet
fps	foot/feet per second
GCR	General Conformity Rule
HDDV	heavy duty diesel vehicle
HDGV	heavy duty gasoline vehicle
kts	knots
lb	pound(s)
LDDT	light duty diesel truck
LDDV	light duty diesel vehicle
LDGT	light duty gasoline truck
LDGV	light duty gasoline vehicle
LTO	landing and takeoff
MSL	mean sea level
NAAQS	National Ambient Air Quality Standards
NH_3	ammonia
NO_x	nitrogen oxide
Pb	lead
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
PM_{10}	particulate matter less than or equal to 10 microns in diameter
POV	privately owned vehicle
ROAA	Record of Air Analysis
ROCA	Record of Conformity Analysis
SO_2	sulfur dioxide
SO_x	sulfur oxide
TGO	touch-and-go
TIM	time in mode
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound
yd^3	cubic yard(s)

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APPENDIX B AIR QUALITY

B.1 Introduction

This appendix describes the methods used to estimate construction and operational air emissions for the KC 46A Main Operating Base 5 (MOB 5) Beddown EIS. The analysis includes emissions estimations for proposed activities at the following alternative basing locations: March ARB, California; Grissom ARB, Indiana; and Tinker AFB, Oklahoma. Each project alternative would require construction activities and would include aircraft operations within the base region.

B.2 Emission Calculation Methods

Emissions associated with the proposed m MOB 5 basing alternatives were evaluated in accordance with the tiered approach outlined in the *Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide – Fundamentals, Volume 1 of 2* (EIAP) (AFCEC 2019). The first step of this approach involved conducting an assessment to determine if a proposed action is exempt from air quality analyses. The proposed MOB 5 basing actions are not subject to any categorical exclusion or exemption identified in the General Conformity Rule (GCR). Therefore, this EIS analysis performs a quantitative assessment (Tier II). The Tier II assessment requires a formal evaluation of air impacts based on quantification of annual net total direct and indirect emissions of pollutants of concern.

The analysis used the USAF Air Conformity Applicability Model (ACAM), Version 5.0.18a, to estimate construction and operational emissions from the proposed MOB 5 basing alternatives (Solutio Environmental, Inc. 2022). The ACAM provides a level of consistency with respect to emissions factors and calculations. Emissions considered in the analysis include the following:

- Volatile organic compounds (VOCs),
- Carbon monoxide (CO),
- Nitrogen oxides (NO_x),
- Sulfur dioxide (SO_2),
- Particulate matter less than 10 microns in diameter (PM_{10}),
- Particulate matter less than 2.5 microns in diameter ($PM_{2.5}$),
- Lead (Pb), and
- Carbon dioxide equivalent (CO_2e).

The ACAM also identifies whether a project region of analysis is in nonattainment, maintenance, or attainment of the national ambient air quality standards (NAAQS) for purposes of defining emission indicator thresholds to determine the significance of projected air quality impacts.

The following sections provide details on the assumptions and methods used in the estimation of proposed construction and operational emissions. Attachments B-1 and B-2 of this appendix present documentation of these emissions estimates for each project basing alternative.

B.2.1 Calculations for Construction

The ACAM evaluates emissions from the following types of construction activities:

- Demolition,
- Site Grading,
- Trenching/Excavation,

- Building Construction,
- Architectural Coating, and
- Paving.

Sources of air emissions associated with these activities include nonroad construction equipment, on-road trucks and worker vehicles, fugitive dust, and VOCs from architectural coatings and asphalt pavement off-gassing.

Each project alternative would require the construction of operational, maintenance, and base support facilities, as identified in EIS Section 2. Construction activity data for each alternative in terms of building demolition/renovation/construction volumes, areas of pavement construction, and areas of disturbed ground for fugitive dust were used as inputs to the ACAM. The air quality analysis assumed that proposed construction activities would begin in year 2024 and would be completed in year 2025 at each alternative basing location.

B.2.2 Calculations for Operations

The MOB 5 action would replace an existing KC-135R mission with a KC-46A mission at one of the basing alternative locations. These missions would generate emissions due to (1) aircraft operations, (2) aircraft engine maintenance and testing, (3) aerospace ground equipment (AGE), (4) space and water heating, and (5) privately-owned vehicles (POVs) and government-owned vehicles (GOVs). The analysis employed the ACAM to estimate emissions from these activities. The ACAM evaluates emissions from a variety of stationary and mobile source activities associated with operation of a typical U.S. AFB. The air quality analysis assumed that the project alternatives would reach full operations and resulting emissions in calendar year 2025 and during the second year of required infrastructure improvements.

The analysis of aircraft operations is limited to operations that would occur within the lowest 3,000 feet of the atmosphere, because this is the typical depth of the atmospheric mixing layer where the release of aircraft emissions would affect ground-level pollutant concentrations. In general, aircraft emissions released above the mixing layer would not appreciably affect ground-level air quality. The ACAM takes this factor into consideration when estimating emissions from aircraft operations at a basing location, such as a landing and takeoff (LTO) cycle.

Flight operations (including arrivals, departures, and patterns) for project aircraft were derived by utilizing the same site-specific operational data as the project noise impact analysis. Both analyses (i.e., noise and air quality) factor in the number and type of operations, location-specific landing and takeoff patterns, aircraft engine power settings, and other relevant details of the affected environment, the proposed action(s), and alternatives necessary to produce a consistent determination of environmental consequences and anticipated mitigations. The air quality impacts analysis at each proposed basing location was evaluated based on the U.S. Environmental Protection Agency (USEPA) Time In Mode (TIM) Model and site-specific representative TIM cycles. Representative TIM cycles factored in weighted frequency and times in each mode of flight operations (i.e., TIMs) that occur at or below 3,000 feet above ground level (AGL), based on the site-specific flight profiles developed and the projected frequency of use of each flight profile.

Calculations for each project alternative showing the time-weighted average assigned to each flight pattern based on the TIM and its percentage of use, consistent with the operational data used throughout this analysis, are available on the project website at: http://www.kc-46a-mob5.com/index.aspx. The following section includes discussion of the methodologies and calculations used to derive the time

weighted average TIMs for each flight operation, consistent with the operational data used throughout this analysis.

B.2.2.1 Standardized Procedures for Deriving Landing and Takeoff Cycles from Noise Profiles

Dependent on the data collection methodology, a potential to create a substantial amount of error exists. Therefore, a technical/statistical evaluation of the collection method must be performed to demonstrate the validity of the calculated values. This evaluation must include identification and propagation of errors associated with the data collection methodology, extrapolation and interpolation methodologies, and calculations.

A flight profile describes altitude values in feet. These values sometimes are presented as above airfield elevation (AFE), AGL, or mean sea level (MSL). AFE and AGL values are equal, and MSL values can be adjusted to AFE values by subtracting the elevation of the airfield from the MSL value.

Step 1, Identify Flight Operations: In collecting noise data, several flight patterns are identified that are typical to the specific aircraft under evaluation. These typical patterns are usually summarized in a table that identifies parameters required to derive representative LTO and touch-and-go (TGO) cycles.

Example Table From a Noise Modeling Operational Data Description Document

Noise Modeling Operational Data Description
Davis-Monthan AFB F-35A EIS, October 2018

Estimated Annual Airfield Operations

Aircraft	Sorties at Full Unit Strength	Unit / Description	# of Flying Days	# of Flying Weeks per year	Basis of Sorties (Y for Year, M for Month, W for Weekk, or D for Day)	Patterns per Sortie	Annual Departures	Annual Arrivals	Annual Pattern Operations	Total Annual Operations
F-35A	4632	AFRC	365	52	Y	0.25	4632	4632	2316	11580

AFRC F-35A performs 4,632 sorties per year. 25% of arrivals will do a closed pattern (0.25 patterns per sortie).

Davis-Monthan AFB Operation Type Distribution

Operation	Type	AFRC F-35A
Arrivals	Overhead Break Arrival	15%
	Tactical Overhead Break Arrival	50%
	Tactical Straight-in (VFR)	
	Straight-in Arrival (ILS)	10%
	Straight-in Arrival (TACAN)	10%
	Straight-in Arrival (VFR)	5%
	PFO Arrival	10%
Departures	Military	95%
	Afterburner	5%
		good
Patterns	VFR (Visual) Pattern	87%
	VFR Outside Downwind Pattern	
	PFO Pattern	10%
	Re-entry Pattern	1%
	ILS Pattern	1%
	TACAN Pattern	1%
		good

Davis-Monthan AFB Percentages of Operations during Acoustic Day and Night

Operation	Type	AFRC F-35A Acoustic Day 0700 to 2200	AFRC F-35A Acoustic Night 2200 to 0700	
Arrivals	Overhead Break	100%	0%	good
	Straight-in (ILS)	99%	1%	good
	Straight-in (TACAN)	99%	1%	good
	Straight-in (VFR)	99%	1%	good
	HITRP			
Departures	Military	99%	1%	good
	Afterburner	99%	1%	good
Patterns	VFR Pattern	100%	0%	good
	ILS Pattern	100%	0%	good
	TACAN Pattern	100%	0%	good

Percent (Identifies the relative frequency a specific pattern is flown)

Type (Identifies the specific typical flight patterns)

Operation (Note: Arrivals include both Takeoff and Climb Out Modes)

Step 2, Obtain Flight Patterns and Profiles: For each of the specific operations identified in the table (i.e., arrivals, departures, and patterns), compile the noise flight patterns and profiles for each "type" of operation. For example, the departures operation has two types: military departures and afterburner departures. Note that a noise flight pattern and profile is often used for the same "type" of operation.

Step 3, Interpolation of Critical Points: This step is performed for each "type" of operation identified in Step 2. The LTO Cycle Model has critical data points that represent the start and end of specific flight modes as defined by the model. Unfortunately, noise profiles do not usually fall on these critical data points; therefore, these critical data points must be extrapolated from the available noise data. Generally, data collected for noise are missing critical data points for takeoff at 500 ft AGL, for climb out at 3,000 ft AGL, and for approach at the 3,000 ft AGL. At each of these critical data points, which are missing in a noise profile, the distance (i.e., horizontal), height (i.e., altitude), power setting, and air speed must be approximated. For example, the following approach profile is missing the 3,000 ft AGL point where the approach mode would begin.

Example Noise Approach Profile

Point	Distance (ft)	Height (ft)	Power (% ETR)	Speed (kts)
a	209,442	10000	15	300
b	73,060	1500	35	300
c	42,864	1500	15	300
d	31,898	1500	35	210
e	21,932	1500	50	200
f	17,932	1500	15	200
g	11,966	1500	60	200
h	6,000	300	40	170
i	0	50	40	160

Missing 3,000 ft critical point

Extrapolation is *estimating* a value by *assuming that existing trends will continue;* however, noise profiles have very few data points from which to suggest any specific trend. Therefore, we must default to the even less precise method of *interpolation* to approximate the needed critical points. Linear interpolation is quick and easy, but this is a very imprecise method. *Linear interpolation error can be substantial* because the error is proportional to the square of the distance between the data points.

By assuming a linear relationship between points (which has been proven to not be true), we can approximate the distance (horizontal), power setting, and air speed for a given missing critical point. In a linear relationship, any point between the two known points can be derived with the point-slope equation of a straight line.

$$y = \frac{y_2 - y_1}{x_2 - x_1} \times (x - x_2) + y_2$$

Therefore, for the previous example, the horizontal distance along flight track *(D)*, power setting *(P)*, and air speed *(S)* at an altitude *(A)* of 3,000 AGL can be approximated as follows.

$$D = \frac{D_b - D_a}{A_b - A_a} \times (A - A_b) + D_b$$

$$D = \frac{73060 - 209442}{1500 - 10000} \times (3000 - 1500) + 73060 = \mathbf{97,127\ ft}$$

$$P = \frac{P_b - P_a}{A_b - A_a} \times (A - A_b) + P_b$$

$$P = \frac{25 - 15}{1500 - 10000} \times (3000 - 1500) + 35 = \mathbf{31\%}$$

$$S = \frac{S_b - S_a}{A_b - A_a} \times (A - A_b) + S_b$$

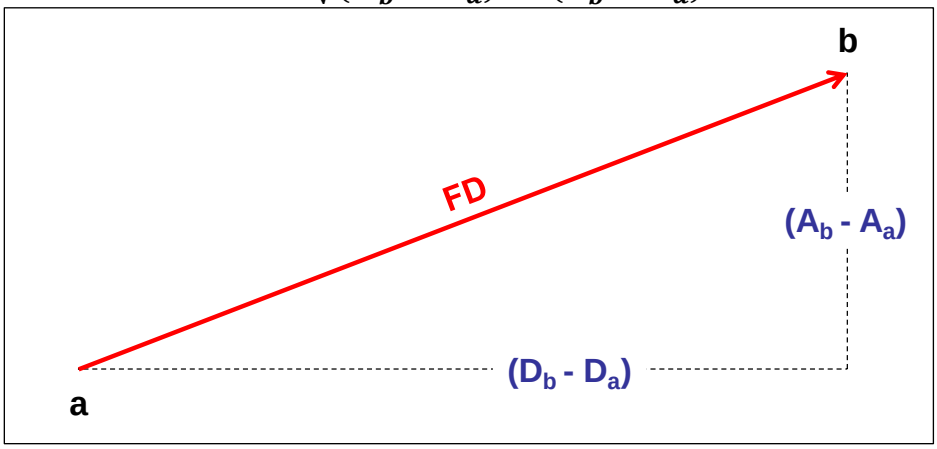
$$P = \frac{300 - 300}{1500 - 10000} \times (3000 - 1500) + 300 = \mathbf{300\ Kts}$$

Example Noise Profile with Extrapolation of Critical Point

Point	Distance (ft)	Height (ft)	Power (% ETR)		Speed (kts)
a	209,442	10000	15	Variable	300
	97,127	3000	31		300
b	73,060	1500	35	Variable	300
c	42,864	1500	15	Variable	300
d	31,898	1500	35	Variable	210
e	21,932	1500	50	Parallel	200
f	17,932	1500	15	Parallel	200
g	11,966	1500	60	Parallel	200
h	6,000	300	40	Parallel	170
i	0	50	40	Parallel	160

Step 4, Derive Flight Distances *(FD):* This step is performed for each "type" of operation identified in Step 2. Flight distance is the actual distance an aircraft travels between two points on a flight track (i.e., a segment). The variables used are the horizontal distance along flight track *(D)* and altitude *(A)*. The altitude values and the distance along flight track values are presented in feet. Therefore, one can calculate approximate flight distance *(FD)* using the Pythagorean theorem.

$$FD = \sqrt{(D_b - D_a)^2 + (A_b - A_a)^2}$$



Therefore, for the previous example, the flight distance *(FD)* between the critical point of 3,000 AGL and point "b" can be approximated as follows.

$$FD = \sqrt{(97127 - 73060)^2 + (3000 - 1500)^2} = 24,114\ ft$$

Example Noise Profile with Derived Flight Distances

Point	Distance (ft)	Height (ft)	Power (% ETR)		Speed (kts)	True Flight Distance (ft)
a	209,442	10000	15	Variable	300	
	97,127	3000	31		300	
b	73,060	1500	35	Variable	300	24114
c	42,864	1500	15	Variable	300	30196
d	31,898	1500	35	Variable	210	10966
e	21,932	1500	50	Parallel	200	9966
f	17,932	1500	15	Parallel	200	4000
g	11,966	1500	60	Parallel	200	5966
h	6,000	300	40	Parallel	170	6085
i	0	50	40	Parallel	160	6005

Step 5, Convert Air Speed: This step is performed for each "type" of operation identified in Step 2. Noise profiles provide air speed (speed) in knots (kts) at the beginning and end of a segment, so the values must be converted to feet per second (fps), and an average air speed (AS) of the segment must be calculated. The conversion from kts to fps is 1 kts = 1.6878 fps or AS (fps) = AS (kts) x 1.6878 (fps/kts); therefore, AS is calculated with the following equation.

$$AS = \frac{Speed_a + Speed_b}{2} \times 1.6687$$

Example Noise Profile with Derived Flight Distances and Air Speed

Point	Distance (ft)	Height (ft)	Power (% ETR)		Speed (kts)	True Flight Distance (ft)	Air Speed (fps)
a	209,442	10000	15	Variable	300		
	97,127	3000	31		300		
b	73,060	1500	35	Variable	300	24114	506
c	42,864	1500	15	Variable	300	30196	506
d	31,898	1500	35	Variable	210	10966	430
e	21,932	1500	50	Parallel	200	9966	346
f	17,932	1500	15	Parallel	200	4000	338
g	11,966	1500	60	Parallel	200	5966	338
h	6,000	300	40	Parallel	170	6085	312
i	0	50	40	Parallel	160	6005	278

Step 6, Approximate Time to Travel Segment: This step is performed for each "type" of operation identified in Step 2. Once the actual distance traveled between two points on a flight track (i.e., a segment) and AS is determined, the time to travel a specific segment can be approximated. Segment time *(ST)* is approximated by dividing the segment's flight distance *(FD)* by the AS of the segment.

$$ST = \frac{FD}{AS}$$

Example Noise Profile with Derived Segment Times

Point	Distance (ft)	Height (ft)	Power (% ETR)		Speed (kts)	True Flight Distance (ft)	Air Speed (fps)	Segment Time (sec)
a	209,442	10000	15	Variable	300			
	97,127	3000	31		300			
b	73,060	1500	35	Variable	300	24114	506	47.62
c	42,864	1500	15	Variable	300	30196	506	59.64
d	31,898	1500	35	Variable	210	10966	430	25.48
e	21,932	1500	50	Parallel	200	9966	346	28.80
f	17,932	1500	15	Parallel	200	4000	338	11.85
g	11,966	1500	60	Parallel	200	5966	338	17.67
h	6,000	300	40	Parallel	170	6085	312	19.49
i	0	50	40	Parallel	160	6005	278	21.56

Step 7, TIMs by Altitude Method: This step is performed for each "type" of operation identified in Step 2. The LTO cycle provides a basis for calculating aircraft emissions. According to USEPA guidance (EPA 420-R-92-009 and EPA 450/3-78-117),

> During each mode of operation, the aircraft engines operate at a fairly standard power setting for a given aircraft category. Emissions for one complete cycle for a given aircraft can be calculated by knowing emission factors for specific aircraft engines at those power settings. Then, if the activity of all aircraft in the modeling zone can be determined for the inventory period, the total emissions can be calculated.

Step 7a, Derive TIMs for Specific Noise Flight Profiles Based on Altitudes: For each mode of flight operations represented in a noise flight profile (i.e., takeoff, climb out, and approach), add all segment times that are associated with each specific mode as defined by altitude only.

- Takeoff TIM = time to fly from 0 ft (end of runway) to 500 ft (start of climb out mode)
- Climb Out TIM = time to fly from 500 ft (after takeoff mode) to 3,000 ft (mixing height)
- Approach TIM = time to fly from 3,000 to 0 ft (landing)

Example Noise Profile with Derived Takeoff and Climb Out TIMs

Point	Distance (ft)	Height (ft)	Power (% ETR)		Speed (kts)	True Flight Distance (ft)	Air Speed (fps)	Segment Time (sec)	
a	0	0	75	75% ETR	0				
b	3,000	0	100	Variable	150	3000	253	11.85	
c	3,500	7	100	Mil	174	500	273	1.83	Take Off = 33 sec
d	10,000	250	100	Variable	300	6505	400	16.26	
	11,582	500	100		305	1601	510	3.14	
e	27,400	3000	95	Variable	350	16015	552	28.99	Climbout= 29 sec
f	53,624	10000	35	Variable	350				
g	200,000	10000	35	Variable	350				

Example Noise Profile with Derived Approach TIM

Point	Distance (ft)	Height (ft)	Power (% ETR)		Speed (kts)	True Flight Distance (ft)	Air Speed (fps)	Segment Time (sec)	
a	209,442	10000	15	Variable	300				
	97,127	3000	31		300				
b	73,060	1500	35	Variable	300	24114	506	47.62	Approach = 232 sec
c	42,864	1500	15	Variable	300	30196	506	59.64	
d	31,898	1500	35	Variable	210	10966	430	25.48	
e	21,932	1500	50	Parallel	200	9966	346	28.80	
f	17,932	1500	15	Parallel	200	4000	338	11.85	
g	11,966	1500	60	Parallel	200	5966	338	17.67	
h	6,000	300	40	Parallel	170	6085	312	19.49	
i	0	50	40	Parallel	160	6005	278	21.56	

NOTE: Noise flight profiles do not include taxi in and taxi out data; therefore, taxi TIMs cannot be derived from noise profiles.

For each operation type identified in Step 1, tabulate the TIMs by mode derived in this step.

Example of Operations Type TIMs Tabulated by Modes

Mode	Arrivals					Departures	
	Overhead Break Arrival Lead (F35AO03)	Overhead Break Arrival - Wingman (F35AO04)	Straight in IFR Arrival (F35AA01)	straight in VFR Arrival (F35AA06)	PFO Arrival (F35AS01)	Mil Departure (F35ADM01)	Afterburner Departure (F35ADA01)
Takeoff Afterburner	0	0	0	0	0	0	30.85
Takeoff Military	0	0	0	0	0	33.08	27.23
Climb Out	0	0	0	0	0	28.99	0
Approach	217	232	120	230	34	0	0
Taxi/Idle Out/In	0	0	0	0	0	0	0
Frequency Flown =	**15%**	**50%**	**20%**	**5%**	**10%**	**95%**	**5%**

Step 7b, Derive Overall Representative TIMs Based on Altitudes: For each operation type identified in Step 1 and tabulated in Step 7a, calculate the percent-weighted representative TIMs for each mode (i.e., operation) by multiplying the time spent in a specified mode by the percent (i.e., frequency) the aircraft is flown in that specified mode for each operation type (i.e., profile).

$$TIM_{Mode_{Type}} = time\ spent\ in\ a\ mode\ for\ a\ specific\ operation\ type$$
$$= TIM_{Mode_{Type}} \times Percent_{Type}$$

For example, calculate the TIMs for the approach mode (using the values in the previous table).

$$TIM_{Approach_{F35Ao03}} = 217 \times 15\% = 32.57\ sec$$

Then, the representative TIMs are derived by adding all percent-weighted representative TIMs for each mode.

$$\text{Representative } TIM_{Mode} = \sum TIM_{Mode_{Type}}$$

For example, calculate the representative TIMs for the approach mode (using the values in the following table).

$$\textbf{Representative TIM}_{Approach} = 32.57 + 116.06 + 23.94 + 11.51 + 3.39 = 187.47\ sec$$

Example of Weighted Times Based on Noise Profiles (seconds)

Mode	Arrivals					Departures		Noise LTO
	Overhead Break Arrival Lead (F35AO03)	Overhead Break Arrival - Wingman (F35AO04)	Straight in IFR Arrival (F35AA01)	straight in VFR Arrival (F35AA06)	PFO Arrival (F35AS01)	Mil Departure (F35ADM01)	Afterburner Departure (F35ADA01)	Cycle Contributions
Takeoff Afterburner	0.00	0.00	0.00	0.00	0.00	0.00	1.54	1.54
Takeoff Military	0.00	0.00	0.00	0.00	0.00	31.42	1.36	32.79
Climb Out	0.00	0.00	0.00	0.00	0.00	27.54	0.00	27.54
Approach	32.57 +	116.06 +	23.94 +	11.51 +	3.39 +	0.00 +	0.00 =	187.47
Taxi/Idle Out/In	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Derived Representative TIMs

NOTE: The derived representative TIMs do not include a TIM for Taxi/Idle Out/In. Therefore, the existing Taxi/Idle Out/In value must be used.

Step 8, TIMs by Power Setting Method: This step is performed for each "type" of operation identified in Step 2. This method is a modification of the USEPA method (EPA 420-R-92-009 and EPA 450/3-78-117) described in Step 7. In this case, the altitudes are ignored except for 3,000 ft AGL, which is used to identify the end of a Climb Out and the beginning of the approach. Instead of altitudes to define the modes for flight operations, the engine's percent thrust range is used.

- Taxi/Idle TIM = time flown within the range of 0 to 18.5 percent thrust below 3,000 ft AGL
- Approach TIM = time flown within the range of 18.5 to 50 percent thrust below 3,000 ft AGL
- Climb Out TIM = time flown within the range of 50 to 92.5 percent thrust below 3,000 ft AGL
- Military Takeoff TIM = time flown within the range of 92.5 to 105 percent thrust below 3,000 ft AGL
- AB Takeoff TIM = time flown within the range of 105 to 150 percent thrust below 3,000 ft AGL

Step 8a, Derive TIMs for Specific Noise Flight Profile Based on Power Settings: For each mode of flight operations represented in a noise flight profile (i.e., takeoff, climb out, and approach), add all segment times that are associated with each specific mode as defined by percent thrust range only.

Example Noise Profile with Derived Takeoff and Climb Out TIMs

Point	Distance (ft)	Height (ft)	Power (% ETR)		Speed (kts)	True Flight Distance (ft)	Air Speed (fps)	Segment Time (sec)	
a	0	0	75	75% ETR	0				
b	3,000	0	100	Variable	150	3000	253	11.85	← Millitary Take Off
c	3,500	7	100	Mil	174	500	273	1.83	← Millitary Take Off
d	10,000	250	100	Variable	300	6505	400	16.26	← Millitary Take Off
	11,582	500	100		305	1601	510	3.14	← Millitary Take Off
e	27,400	3000	95	Variable	350	16015	552	28.99	← Millitary Take Off
f	53,624	10000	35	Variable	350				← Climbout
g	200,000	10000	35	Variable	350				← Climbout

Note, that in this scenario, the segment times for climb out mode are blank (i.e., 0.0 value) because the climb out power range starts above 3,000 ft AGL.

For each operation type identified in Step 1, tabulate the TIMs by mode that were derived in this step.

Example of Operations Type TIMs Tabulated by Mode

Mode	% Thrust Range		Arrivals					Departures	
			Overhead Break Arrival Lead (F35AO03)	Overhead Break Arrival - Wingman (F35AO04)	Straight in IFR Arrival (F35AA01)	straight in VFR Arrival (F35AA06)	PFO Arrival (F35AS01)	Mil Departure (F35ADM01)	Afterburner Departure (F35ADA01)
	>	≤							
Takeoff Afterburner	105	150	0.0	0.0	0.0	0.0	0.0	0.0	9.7
Takeoff Military	92.5	105	0.0	0.0	0.0	0.0	0.0	62.1	48.4
Climb Out	50	92.5	17.7	17.7	0.0	0.0	0.0	0.0	0.0
Approach	18.5	50	128.0	143.0	119.7	230.3	0.0	0.0	0.0
Taxi/Idle Out/In	0	18.5	71.5	71.5	0.0	0.0	33.9	0.0	0.0
Frequency Flown =			15%	50%	20%	5%	10%	95%	5%

Step 8b, Derive Overall Representative TIMs Based on Power Settings: For each operation type identified in Step 1 and tabulated in Step 7a, calculate the percent-weighted representative TIMs for each mode (operation) by multiplying the time spent in a specified mode by the percent (frequency) the aircraft is flown in that specified mode for each operation type (profile).

$$TIM_{Mode_{Type}} = time\ spent\ in\ a\ mode\ for\ a\ specific\ operation\ type$$
$$= TIM_{Mode_{Type}} \times Percent_{Type}$$

For example, calculate the TIMs for the approach mode (using the values in the previous table).

$$TIM_{Approach_{F35Ao03}} = 128 \times 15\% = 19.2\ sec$$

The representative TIMs are then derived by adding all percent-weighted representative TIMs for each mode.

$$\text{Representative } TIM_{Mode} = \sum TIM_{Mode_{Type}}$$

For example, calculate the representative TIMs for the approach mode (using the values in the following table).

$$\text{Representative TIM}_{Approach} = 19.2 + 71.5 + 23.9 + 11.5 = 126.1\ sec$$

Representative TIM$_{Mode}$ = (Σ TIM$_{segement}$) x Percent$_{Mode}$

Example of Weighted Times Based on Noise Profiles (seconds)

Mode	% Thrust Range		Arrivals					Departures		Noise LTO
			Overhead Break Arrival Lead (F35AO03)	Overhead Break Arrival - Wingman (F35AO04)	Straight in IFR Arrival (F35AA01)	straight in VFR Arrival (F35AA06)	PFO Arrival (F35AS01)	Mil Departure (F35ADM01)	Afterburner Departure (F35ADA01)	Cycle Contributions
	>	≤								
Takeoff Afterburner	105	150	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
Takeoff Military	92.5	105	0.0	0.0	0.0	0.0	0.0	59.0	2.4	61.4
Climb Out	50	92.5	2.7	8.8	0.0	0.0	0.0	0.0	0.0	11.5
Approach	18.5	50	19.2	+ 71.5	+ 23.9	+ 11.5	+ 0.0	+ 0.0	+ 0.0	= 126.1
Taxi/Idle Out/In	0	18.5	10.7	35.7	0.0	0.0	3.4	0.0	0.0	49.9

Derived Representative TIMs

Step 9, Derive Overall Average Representative TIMs: Given there are two viable methodologies for deriving representative LTO Cycle TIMs, the last step is to assume both methods are equally valid. Therefore, the TIMS for a representative LTO Cycle are derived by simply averaging the TIM values.

$$\boldsymbol{Representative\ TIM} = \frac{(\textbf{TIM by Altitude Method} + \textbf{TIM by Power Setting Method})}{\mathbf{2}}$$

For example, calculate the representative TIMs for the approach mode (using the previous example values).

$$\boldsymbol{Representative\ TIM_{Approach}} = \frac{(187 + 126)}{2} = 157\ sec = 2.61\ min$$

B.3 Organization Of Emissions Data In Attachments

Appendix B includes the following attachments that present construction and operational emissions data and estimates in summary and detail reports:

- Attachment B-1: AFRC KC-46A MOB 5 – March ARB Alternative Record of Conformity Analysis (ROCA) and Grissom ARB and Tinker AFB Record of Air Analysis (ROAA) Summary Reports.
- Attachment B-2: AFRC KC-46A MOB 5 - March ARB Alternative – Detail Air Conformity Applicability Model Report.

The ACAM summary reports include general project alternative information and summaries of total calendar year emissions. The ACAM detail reports include specific information on construction and operational source activities, emission factors, and emission calculation methods. The detail ACAM reports for the Grissom ARB and Tinker AFB Alternatives are available on the project website at: http://www.kc-46a-mob5.com/index.aspx.

B.3.1 Organization of Construction Emissions Data

The ACAM detail reports for each project alternative present sections on construction projects that include emissions data for one or more of the following activities:

- General Information,
- Construction/Demolition,
- Trenching/Excavating Phase,
- Building Construction Phase,

- Architectural Coatings Phase,
- Site Grading Phase, and
- Paving Phase.

B.3.2 Organization of Operations Emissions Data

The ACAM detail report for each project alternative contains operations emissions data for the proposed KC-46A mission and the replaced KC-135R mission. These data occur in separate sections titled "Aircraft," and they include the following information:

- General Information and Timeline Assumptions,
- Aircraft and Engines,
- Flight Operations,
- Auxiliary Power Unit (APU),
- Aircraft Engine Test Cell, and
- AGE.

Each ACAM detail report also includes sections for an emergency diesel-powered generator and space heating associated with a new maintenance hangar and a section titled Personnel, which includes the operational emissions calculations for POV and GOV activities for KC-135R and KC-46A missions at each basing location.

B.4 References

AFCEC. (2019). *Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide – Fundamentals, Volume 1 of 2*. Air Force Civil Engineer Center, Compliance Technical Support Branch.

Solutio Environmental, Inc. (2022). U.S. Air Force Air Conformity Applicability Model (ACAM). Developed by Solutio Environmental, Inc. Version 5.0.18a.

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ATTACHMENT B-1

AFRC KC-46A MOB 5 – MARCH ARB ALTERNATIVE RECORD OF CONFORMITY ANALYSIS (ROCA) AND GRISSOM ARB AND TINKER AFB RECORD OF AIR ANALYSIS (ROAA) SUMMARY REPORTS

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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 Manual 32-7002, Environmental Compliance and Pollution Prevention; 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: MARCH ARB
State: California
County(s): Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

b. Action Title: AFRC KC-46A MOB 5 - March ARB Alternative

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2024

e. Action Description:

Aircraft Replacement - 12 KC-135s with 12 KC-46As and construction activities.

f. Point of Contact:
Name: Chris Crabtree
Title: Air Quality Meteorologist
Organization: Leidos Corp.
Email: crabtreec@leidos.com
Phone Number: 805-566-6422

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:

2024

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Los Angeles South Coast Air Basin, CA			
VOC	0.562	10	No
NOx	2.881	10	No
CO	4.007	100	No
SOx	0.010	70	No
PM 10	0.280	100	No
PM 2.5	0.101	70	No
Pb	0.000		
NH3	0.006	70	No
CO2e	972.4		

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

2025

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Los Angeles South Coast Air Basin, CA			
VOC	5.586	10	No
NOx	-2.385	10	No
CO	-14.128	100	No
SOx	-5.565	70	No
PM 10	-8.194	100	No
PM 2.5	-7.339	70	No
Pb	0.000		
NH3	0.015	70	No
CO2e	-16500.6		

2026

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Los Angeles South Coast Air Basin, CA			
VOC	4.880	10	No
NOx	-4.065	10	No
CO	-16.576	100	No
SOx	-5.571	70	No
PM 10	-8.255	100	No
PM 2.5	-7.396	70	No
Pb	0.000		
NH3	0.011	70	No
CO2e	-17102.0		

2027

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Los Angeles South Coast Air Basin, CA			
VOC	4.880	10	No
NOx	-4.065	10	No
CO	-16.576	100	No
SOx	-5.571	70	No
PM 10	-8.255	100	No
PM 2.5	-7.396	70	No
Pb	0.000		
NH3	0.011	70	No
CO2e	-17102.0		

2028 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Los Angeles South Coast Air Basin, CA			
VOC	4.880	10	No
NOx	-4.065	10	No
CO	-16.576	100	No
SOx	-5.571	70	No
PM 10	-8.255	100	No
PM 2.5	-7.396	70	No
Pb	0.000		

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

NH3	0.011	70	No
CO2e	-17102.0		

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.

Chris Crabtree, Air Quality Meteorologist

DATE

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AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; 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: GRISSOM JARB
State: Indiana
County(s): Miami
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: AFRC KC-46A MOB 5 - Grissom ARB Alternative

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2024

e. Action Description:

Aircraft Replacement - 16 KC-135s with 12 KC-46As and construction activities.

f. Point of Contact:

Name: Chris Crabtree
Title: Air Quality Meteorologist
Organization: Leidos Corp.
Email: crabtreec@leidos.com
Phone Number: 805-566-6422

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

2024

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.636	250	
NOx	3.260	250	
CO	4.701	250	
SOx	0.011	250	
PM 10	0.572	250	
PM 2.5	0.108	250	
Pb	0.000	25	No
NH3	0.008	250	
CO2e	1153.4		

2025

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	4.885	250	
NOx	39.740	250	
CO	-43.151	250	
SOx	-3.544	250	
PM 10	-11.833	250	
PM 2.5	-10.674	250	
Pb	0.000	25	No
NH3	-0.003	250	
CO2e	-10376.3		

2026 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	4.224	250	
NOx	37.934	250	
CO	-45.950	250	
SOx	-3.550	250	
PM 10	-11.892	250	
PM 2.5	-10.732	250	
Pb	0.000	25	No
NH3	-0.007	250	
CO2e	-11062.8		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality.Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs.No further air assessment is needed.

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

Chris Crabtree, Air Quality Meteorologist _____ DATE

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AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; 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: TINKER AFB
State: Oklahoma
County(s): Oklahoma; Miami
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: AFRC KC-46A MOB 5 - Tinker AFB Alternative

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2024

e. Action Description:

Aircraft Replacement - 8 KC-135s with 12 KC-46As and construction activities.

f. Point of Contact:

Name: Chris Crabtree
Title: Air Quality Meteorologist
Organization: Leidos Corp.
Email: crabtreec@leidos.com
Phone Number: 805-566-6422

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

2024

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.573	100	
NOx	2.995	100	
CO	4.196	250	
SOx	0.009	250	
PM 10	0.864	250	
PM 2.5	0.098	250	
Pb	0.000	25	No
NH3	0.009	250	
CO2e	1065.3		

2025

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	5.798	100	
NOx	74.734	100	
CO	3.750	250	
SOx	1.194	250	
PM 10	-3.982	250	
PM 2.5	-3.567	250	
Pb	0.000	25	No
NH3	0.031	250	
CO2e	4012.4		

2026 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	5.395	100	
NOx	73.602	100	
CO	2.171	250	
SOx	1.191	250	
PM 10	-4.020	250	
PM 2.5	-3.604	250	
Pb	0.000	25	No
NH3	0.028	250	
CO2e	3605.1		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality.Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs.No further air assessment is needed.

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

Chris Crabtree, Air Quality Meteorologist _____ DATE

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ATTACHMENT B-2

AFRC KC-46A MOB 5 - MARCH ARB ALTERNATIVE – DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location
Base: MARCH JARB
State: California
County(s): Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Action Title: AFRC KC-46A MOB 5 - March ARB Alternative

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2024

- Action Purpose and Need:
Aircraft Replacement - 12 KC-135s with 12 KC-46As.

- Action Description:
Aircraft Replacement - 12 KC-135s with 12 KC-46As and construction activities.

- Point of Contact
Name: Chris Crabtree
Title: Air Quality Meteorologist
Organization: Leidos Corp.
Email: crabtreec@leidos.com
Phone Number: 805-566-6422

- Activity List:

	Activity Type	Activity Title
2.	Aircraft	Add KC-46A Aircraft LTOs
3.	Aircraft	Remove KC-135R Aircraft LTOs
4.	Aircraft	Add KC-46A Aircraft Closed Patterns
5.	Aircraft	Remove KC-135R Aircraft Closed Patterns
6.	Construction / Demolition	Demolition of Building 1246
7.	Construction / Demolition	Renovate Building 2327 for the Battery Shop
8.	Construction / Demolition	Building 2320 Renovation for the Hydraulics/Boom Shop
9.	Construction / Demolition	Building 2310 Renovation for Secure Parts Storage
10.	Construction / Demolition	Building 2245 Renovation for Squadron Operations
11.	Construction / Demolition	Building 2303 Renovation for Aero Repair
12.	Construction / Demolition	Building 479 Renovation for Mobile Container Storage
13.	Construction / Demolition	Building 429 Renovation for Aircraft Maintenance Squadron and Storage
14.	Construction / Demolition	Building 452 Renovation for Aerospace Ground Equipment Storage
15.	Construction / Demolition	Building 600 Renovation for Simulator Facility
16.	Construction / Demolition	Building 1221 Renovation for the Mission Planning Cell
17.	Construction / Demolition	Building 1244 Renovation for the Fuselage Trainer and Cargo Pallet Staging
18.	Construction / Demolition	Construct new 2-Bay Hanger with Apron Access
19.	Construction / Demolition	Repair Ramp for 16 Mooring Points
20.	Heating	New Hanger - Space Heating
21.	Emergency Generator	New Hanger - Emergency Diesel-powered Generator
22.	Personnel	Removal of Existing 452nd Air Mobility Wing (AMW) POV/GOV Activities
23.	Personnel	Addition of MOB 5 POV/GOV Activities

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Add KC-46A Aircraft LTOs

- Activity Description:
Add KC-46A Aircraft LTOs

- Activity Start Date
Start Month: 1
Start Year: 2025

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	6.253601
SO_x	3.341532
NO_x	84.297257
CO	21.399506
PM 10	0.857765

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.808120
Pb	0.000000
NH_3	0.000000
CO_2e	9028.1

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	4.143905
SO_x	2.653954
NO_x	54.536280
CO	15.766138
PM 10	0.176790

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.152684
Pb	0.000000
NH_3	0.000000
CO_2e	7795.9

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: KC-46A
Engine Model: PW4062
Primary Function: Transport - Bomber
Aircraft has After burn: No

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

2.2.2 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	1666.68	12.49	1.07	3.78	42.61	0.11	0.10	3234
Approach	5698.45	0.10	1.07	12.17	1.93	0.05	0.04	3234
Intermediate	16865.19	0.08	1.07	25.98	0.50	0.07	0.06	3234
Military	21627.13	0.09	1.07	34.36	0.61	0.08	0.07	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 12
Flight Operation Cycle Type: LTO (Landing and Takeoff)
Number of Annual Flight Operation Cycles for all Aircraft: 604
Number of Annual Trim Test(s) per Aircraft: 12

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)
Taxi [Idle] (mins): 15.84
Approach [Approach] (mins): 5.25
Climb Out [Intermediate] (mins): 1.01
Takeoff [Military] (mins): 1.23
Takeoff [After Burn] (mins): 0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test
Idle (mins): 12
Approach (mins): 27
Intermediate (mins): 9
Military (mins): 12
AfterBurn (mins): 0

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for Flight Operation Cycles per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
FOC: Number of Flight Operation Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Flight Operation Cycles per Year

$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{FOC}: 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 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)

2.4 Auxiliary Power Unit (APU)

2.4.1 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	0.87	No	GTCP 331-200ER	Honeywell Inc.

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
GTCP 331-200ER	267.9	0.115	0.284	2.548	1.110	-1.000	-1.000	-1.0

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

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
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

2.5 Aircraft Engine Test Cell

2.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell
Total Number of Aircraft Engines Tested Annually: 24

- Default Settings Used: No

- Annual Run-ups / Test Durations
Annual Run-ups (Per Aircraft Engine): 1
Idle Duration (mins): 12
Approach Duration (mins): 27
Intermediate Duration (mins): 9
Military Duration (mins): 12
After Burner Duration (mins): 0

2.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

2.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
$TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

$TestCellPS_{POL}$: Aircraft Engine Test Cell 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: Total Number of Engines (For All Aircraft)
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year
$TestCell = TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

TestCell: Aircraft Engine Test Cell Emissions (TONs)
$TestCellPS_{IDLE}$: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs)
$TestCellPS_{APPROACH}$: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs)
$TestCellPS_{INTERMEDIATE}$: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs)
$TestCellPS_{MILITARY}$: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs)
$TestCellPS_{AFTERBURN}$: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

2.6 Aerospace Ground Equipment (AGE)

2.6.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 604

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	10	No	Air Compressor	MC-1A - 18.4hp
1	1	No	Air Conditioner	MA-3D - 120hp
1	11	No	Generator Set	A/M32A-86D
1	1	No	Heater	H1
1	3	No	Hydraulic Test Stand	MJ-2A
1	10	No	Light Cart	NF-2
1	0.25	No	Start Cart	A/M32A-60A

2.6.2 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-1A - 18.4hp	1.1	0.267	0.008	0.419	0.267	0.071	0.068	24.8
MA-3D - 120hp	7.1	0.053	0.050	4.167	0.317	0.109	0.105	161.7
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-2A	0.0	0.190	0.238	3.850	2.460	0.083	0.076	172.0
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

2.6.3 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

3. Aircraft

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Remove KC-135R Aircraft LTOs

- Activity Description:
Remove KC-135R Aircraft LTOs

- Activity Start Date
Start Month: 1
Start Year: 2025

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	-1.483582
SO_x	-2.570511
NO_x	-41.034187
CO	-22.163112
PM 10	-3.558043

Pollutant	Emissions Per Year (TONs)
PM 2.5	-3.234607
Pb	0.000000
NH_3	0.000000
CO_2e	-7453.2

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	-0.154279
SO_x	-2.139721
NO_x	-15.810715
CO	-17.741226
PM 10	-2.963039

Pollutant	Emissions Per Year (TONs)
PM 2.5	-2.665806
Pb	0.000000
NH_3	0.000000
CO_2e	-6467.2

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: KC-135R
Engine Model: F108-CF-100
Primary Function: Transport - Bomber
Aircraft has After burn: No
Number of Engines: 4

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

3.2.2 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	1136.00	0.19	1.07	3.88	23.65	2.07	1.86	3234
Approach	2547.00	0.06	1.07	5.73	8.57	1.55	1.40	3234
Intermediate	5650.00	0.03	1.07	11.04	2.32	0.65	0.58	3234
Military	6458.00	0.03	1.07	12.05	0.36	1.59	1.43	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 12
Flight Operation Cycle Type: LTO (Landing and Takeoff)
Number of Annual Flight Operation Cycles for all Aircraft: 676
Number of Annual Trim Test(s) per Aircraft: 12

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi [Idle] (mins): 15.84
Approach [Approach] (mins): 5.25
Climb Out [Intermediate] (mins): 1.57
Takeoff [Military] (mins): 0.56
Takeoff [After Burn] (mins): 0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins): 12
Approach (mins): 27
Intermediate (mins): 9
Military (mins): 12
AfterBurn (mins): 0

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for Flight Operation Cycles per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$

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
FOC: Number of Flight Operation Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Aircraft Emissions for Flight Operation Cycles per Year

$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{FOC}: 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 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)

3.4 Auxiliary Power Unit (APU)

3.4.1 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

3.4.2 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

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

APU: Number of Auxiliary Power Units
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

3.5 Aircraft Engine Test Cell

3.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell
Total Number of Aircraft Engines Tested Annually: 48

- Default Settings Used: No

- Annual Run-ups / Test Durations

Annual Run-ups (Per Aircraft Engine):	1
Idle Duration (mins):	12
Approach Duration (mins):	27
Intermediate Duration (mins):	9
Military Duration (mins):	12
After Burner Duration (mins):	0

3.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

3.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
$TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

$TestCellPS_{POL}$: Aircraft Engine Test Cell 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: Total Number of Engines (For All Aircraft)
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year
$TestCell = TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs)
$TestCellPS_{IDLE}$: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs)
$TestCellPS_{APPROACH}$: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs)
$TestCellPS_{INTERMEDIATE}$: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs)
$TestCellPS_{MILITARY}$: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs)
$TestCellPS_{AFTERBURN}$: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

3.6 Aerospace Ground Equipment (AGE)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

3.6.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 676

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	0.33	No	Air Compressor	MC-1A - 18.4hp
1	2	No	Air Conditioner	MA-3C
1	10	No	Generator Set	A/M32A-86D
1	5	No	Heater	H1
1	2	No	Light Cart	NF-2
1	1	No	Start Cart	A/M32A-60A

3.6.2 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-1A - 18.4hp	1.1	0.267	0.008	0.419	0.267	0.071	0.068	24.8
MA-3C	7.1	0.053	0.050	4.167	0.317	0.109	0.105	161.7
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
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

3.6.3 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

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Add KC-46A Aircraft Closed Patterns

- Activity Description:

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Add KC-46A Aircraft Closed Patterns

- Activity Start Date
Start Month: 1
Start Year: 2025

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.259465
SO_x	2.915602
NO_x	47.524245
CO	3.771755
PM 10	0.157043

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.129795
Pb	0.000000
NH_3	0.000000
CO_2e	8812.2

- Activity Emissions [Test Cell part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: KC-46A
Engine Model: PW4062
Primary Function: Transport - Bomber
Aircraft has After burn: No
Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

4.2.2 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	1666.68	12.49	1.07	3.78	42.61	0.11	0.10	3234
Approach	5698.45	0.10	1.07	12.17	1.93	0.05	0.04	3234
Intermediate	16865.19	0.08	1.07	25.98	0.50	0.07	0.06	3234
Military	21627.13	0.09	1.07	34.36	0.61	0.08	0.07	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

4.3 Flight Operations

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4.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:		12
Flight Operation Cycle Type:	CP (Close Pattern)	
Number of Annual Flight Operation Cycles for all Aircraft:		2000
Number of Annual Trim Test(s) per Aircraft:		0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi [Idle] (mins):	0
Approach [Approach] (mins):	8.87
Climb Out [Intermediate] (mins):	1.85
Takeoff [Military] (mins):	0
Takeoff [After Burn] (mins):	0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for Flight Operation Cycles per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$

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
FOC: Number of Flight Operation Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Flight Operation Cycles per Year

$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{FOC}: 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 Trim per Year

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$AEPS_{POL}$ = (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)

5. Aircraft

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Remove KC-135R Aircraft Closed Patterns

- Activity Description:
Remove KC-135R Aircraft Closed Patterns

- Activity Start Date
Start Month: 1
Start Year: 2025

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	-0.262144
SO_x	-9.265905
NO_x	-95.239428
CO	-20.478926

Pollutant	Emissions Per Year (TONs)
PM 2.5	-5.131008
Pb	0.000000
NH_3	0.000000
CO_2e	-28005.5

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PM 10	-5.748128

- Activity Emissions [Test Cell part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

5.2 Aircraft & Engines

5.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: KC-135R
Engine Model: F108-CF-100
Primary Function: Transport - Bomber
Aircraft has After burn: No
Number of Engines: 4

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

5.2.2 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	1136.00	0.19	1.07	3.88	23.65	2.07	1.86	3234
Approach	2547.00	0.06	1.07	5.73	8.57	1.55	1.40	3234
Intermediate	5650.00	0.03	1.07	11.04	2.32	0.65	0.58	3234
Military	6458.00	0.03	1.07	12.05	0.36	1.59	1.43	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

5.3 Flight Operations

5.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 12
Flight Operation Cycle Type: CP (Close Pattern)
Number of Annual Flight Operation Cycles for all Aircraft: 4015
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)
Taxi [Idle] (mins): 0
Approach [Approach] (mins): 0.23
Climb Out [Intermediate] (mins): 11.28
Takeoff [Military] (mins): 0.06
Takeoff [After Burn] (mins): 0

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Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

5.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for Flight Operation Cycles per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$

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
FOC: Number of Flight Operation Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Flight Operation Cycles per Year

$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{FOC}: 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 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)

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$AEPS_{IDLE}$: 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)

6. Construction / Demolition

6.1 General Information & Timeline Assumptions

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Demolition of Building 1246

- Activity Description:
Facility size is 26,716 sf and 3 stories high.

- Activity Start Date
Start Month: 1
Start Month: 2024

- Activity End Date
Indefinite: False
End Month: 2
End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.020487
SO_x	0.000404
NO_x	0.137323
CO	0.181757
PM 10	0.173941

Pollutant	Total Emissions (TONs)
PM 2.5	0.005120
Pb	0.000000
NH_3	0.000394
CO_2e	39.1

6.1 Demolition Phase

6.1.1 Demolition Phase Timeline Assumptions

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

- Phase Duration
Number of Month: 2
Number of Days: 0

6.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 26716

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Height of Building to be demolished (ft): 30

- 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

6.1.3 Demolition Phase Emission Factor(s)

- 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	0.0357	0.0006	0.2608	0.3715	0.0109	0.0109	0.0032	58.544
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

6.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

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$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: 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 (%)

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2000: Conversion Factor pounds to tons

7. Construction / Demolition

7.1 General Information & Timeline Assumptions

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Renovate Building 2327 for the Battery Shop

- Activity Description:
Building is 7,700 sf. and 2 stories. Renovation will include interior wall demolition to expand for battery shop and provide proper access and add door to accommodate battery and maintenance requirements.

Assume construction effort = 25% of constructing a new building, or 1,925 sf. Architectural coatings needs for renovated buildings based on 1 entire interior wall area = building W * H = 87.8 * 10 = 877 sf.

- Activity Start Date
Start Month: 4
Start Month: 2024

- Activity End Date
Indefinite: False
End Month: 7
End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.048929
SO_x	0.000820
NO_x	0.201195
CO	0.315176
PM 10	0.006906

Pollutant	Total Emissions (TONs)
PM 2.5	0.006755
Pb	0.000000
NH_3	0.000291
CO_2e	77.7

7.1 Building Construction Phase

7.1.1 Building Construction Phase Timeline Assumptions

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

- Phase Duration
Number of Month: 4
Number of Days: 0

7.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial

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Area of Building (ft^2): 1875
Height of Building (ft): 20
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

7.1.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607

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LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

7.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

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

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

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

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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

7.2 Architectural Coatings Phase

7.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 0
Number of Days: 4

7.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 877
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

7.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628

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LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

7.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

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

8. Construction / Demolition

8.1 General Information & Timeline Assumptions

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Building 2320 Renovation for the Hydraulics/Boom Shop

- Activity Description:
Building is 7,500 sf. and 2 stories. Renovation will include additional rooms and utilities, such as hot water, power, and lighting to the rooms. Two test stands will be built in this area when the engine shop CTK vacates. A new CMU wall is needed between battery room and rest of the facility for safety.

Assume construction effort = 40% of constructing a new building, or 3,000 sf. Architectural coatings needs for renovated buildings based on 1 interior wall = building 86.6' * 10' = 866 sf.

A new road is included on both sides of the facility for proper maneuvering of the required equipment?

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Start Date
Start Month: 5
Start Month: 2024

- Activity End Date
Indefinite: False
End Month: 9
End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.058451
SO_x	0.001025
NO_x	0.251869
CO	0.393458
PM 10	0.008650

Pollutant	Total Emissions (TONs)
PM 2.5	0.008453
Pb	0.000000
NH_3	0.000360
CO_2e	97.1

8.1 Building Construction Phase

8.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 5
Number of Days: 0

8.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 3000
Height of Building (ft): 20
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

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

8.1.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

8.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

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

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

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

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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

8.2 Architectural Coatings Phase

8.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Month: 9
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 0
Number of Days: 4

8.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 866
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

8.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

8.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

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

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

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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

9. Construction / Demolition

9.1 General Information & Timeline Assumptions

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Building 2310 Renovation for Secure Parts Storage

- Activity Description:
Building is 18,000 sf. and 2 stories. Renovation includes securing 18,000 SF of the facility with a 26' tall interior fence to meet FAA supply compliance..

Assume construction effort = 20% of constructing a new building, or 3,600 sf. Architectural coatings needs for renovated buildings based on 1 interior wall = building 134.2' * 10' = 1,342 sf.

- Activity Start Date
Start Month: 6
Start Month: 2024

- Activity End Date
Indefinite: False
End Month: 8
End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.044692
SO_x	0.000619
NO_x	0.152286
CO	0.236487
PM 10	0.005263

Pollutant	Total Emissions (TONs)
PM 2.5	0.005108
Pb	0.000000
NH_3	0.000241
CO_2e	58.7

9.1 Building Construction Phase

9.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 6

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Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 3
Number of Days: 0

9.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 3600
Height of Building (ft): 20
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

9.1.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e

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Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

9.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (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

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

9.2 Architectural Coatings Phase

9.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 8
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 0
Number of Days: 7

9.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 1342
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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

POVs	50.00	50.00	0	0	0	0	0

9.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

9.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

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

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

10. Construction / Demolition

10.1 General Information & Timeline Assumptions

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Building 2245 Renovation for Squadron Operations

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Description:

Building is 19,000 sf. and 2 stories. Project includes renovation of 19,000 SF to maximize administrative areas. Lighting, restrooms, HVAC, and fire suppression will be included.

Assume construction effort = 25% of constructing a new building, or 4,750 sf. Architectural coatings needs for renovated buildings based on 1 interior wall = building 137.8' * 10' = 1,378 sf.

- Activity Start Date

Start Month: 7
Start Month: 2024

- Activity End Date

Indefinite: False
End Month: 9
End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.045137
SO_x	0.000622
NO_x	0.153012
CO	0.236513
PM 10	0.005307

Pollutant	Total Emissions (TONs)
PM 2.5	0.005130
Pb	0.000000
NH_3	0.000252
CO_2e	58.9

10.1 Building Construction Phase

10.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 7
Start Quarter: 1
Start Year: 2024

- Phase Duration

Number of Month: 3
Number of Days: 0

10.1.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft^2): 4750
Height of Building (ft): 20
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

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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

10.1.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

10.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)

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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)

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VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

10.2 Architectural Coatings Phase

10.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 9
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 0
Number of Days: 7

10.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 1378
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

10.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

10.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

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

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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

11. Construction / Demolition

11.1 General Information & Timeline Assumptions

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Building 2303 Renovation for Aero Repair

- Activity Description:
Building is 6,500 sf. and 2 stories. Renovations include offices above wheel and tire in Tower One and repair admin area.

Assume construction effort = 25% of constructing a new building, or 1,625 sf. Architectural coatings needs for renovated buildings based on 1 interior wall = building 80.6' * 10' = 806 sf.

- Activity Start Date
Start Month: 8
Start Month: 2024

- Activity End Date
Indefinite: False
End Month: 11
End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.038780
SO_x	0.000818
NO_x	0.200976
CO	0.314353

Pollutant	Total Emissions (TONs)
PM 2.5	0.006746
Pb	0.000000
NH_3	0.000273
CO_2e	77.4

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PM 10	0.006886		

11.1 Building Construction Phase

11.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 8
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 4
Number of Days: 0

11.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 1625
Height of Building (ft): 20
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

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11.1.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

11.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (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

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

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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

11.2 Architectural Coatings Phase

11.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 11
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 0
Number of Days: 4

11.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 10
Number of Units: N/A

- Architectural Coatings Default Settings

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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

11.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

11.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

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

12. Construction / Demolition

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

12.1 General Information & Timeline Assumptions

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Building 479 Renovation for Mobile Container Storage

- Activity Description:
Building is 8,100 sf. and 2 stories. Renovations includes paint, roll up doors, and proper lighting to secure these assets.

Assume construction effort = 20% of constructing a new building, or 1,620 sf. Architectural coatings needs for renovated buildings based on 1 interior wall = building 80.6' * 10' = 806 sf.

- Activity Start Date
Start Month: 9
Start Month: 2024

- Activity End Date
Indefinite: False
End Month: 11
End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.039490
SO_x	0.000615
NO_x	0.151016
CO	0.236181
PM 10	0.005185

Pollutant	Total Emissions (TONs)
PM 2.5	0.005069
Pb	0.000000
NH_3	0.000217
CO_2e	58.2

12.1 Building Construction Phase

12.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 9
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 3
Number of Days: 0

12.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 1620
Height of Building (ft): 20
Number of Units: N/A

- Building Construction Default Settings

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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

12.1.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

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12.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (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)

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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

12.2 Architectural Coatings Phase

12.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 11
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 0
Number of Days: 5

12.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 900
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

12.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

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12.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

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

13. Construction / Demolition

13.1 General Information & Timeline Assumptions

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Building 429 Renovation for Aircraft Maintenance Squadron and Storage

- Activity Description:
Building is 30,400 sf and 3 stories. Renovate for the C-17 AMXS which will relocate from B1221. 6,000 sf for storage will include combining ATGL and Seat Pallets for KC-46. Refresh paint and carpet for the 24,400 sf administrative space. Add sewer connection for cleaning of the ATGLs. paint, roll up doors, and proper lighting to secure these assets.

Assume construction effort = 35% of constructing a new building, or 10,640 sf. Architectural coatings needs for renovated buildings based on 1 interior wall = building 174.4' * 30' = 5,231 sf.

- Activity Start Date
Start Month: 10
Start Month: 2024

- Activity End Date
Indefinite: False

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End Month: 3
End Month: 2027

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.109540
SO_x	0.001053
NO_x	0.260157
CO	0.395124
PM 10	0.009159

Pollutant	Total Emissions (TONs)
PM 2.5	0.008705
Pb	0.000000
NH_3	0.000514
CO_2e	99.8

13.1 Building Construction Phase

13.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 10
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 5
Number of Days: 0

13.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 10640
Height of Building (ft): 30
Number of Units: N/A

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC

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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

13.1.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

13.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

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

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (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)

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

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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

13.2 Architectural Coatings Phase

13.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 0

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Number of Days: 26

13.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 5231
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

13.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

13.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (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
$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

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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

14. Construction / Demolition

14.1 General Information & Timeline Assumptions

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Building 452 Renovation for Aerospace Ground Equipment Storage

- Activity Description:
Building is 14,400 sf and 3 stories. This will be a 10,000 sf minimal renovation with demolition of 4,000 sf condemned upstairs area. There will be an addition of an outside jack-stand tester at 25 ft depth (20 ft by 20 ft concrete pad). B452 to accommodate covered storage/jack stand tester.

Assume construction effort = 25% of constructing a new building, or 3,600 sf. Since demolition is interior, reduce sf by 50% to simulate demoltion of an entire building = 4,000sf * 0.50 = 2,000 sf. Architectural coatings needs for renovated buildings based on 1 interior wall = building 120.0' * 30' = 3,600 sf.

- Activity Start Date
Start Month: 11
Start Month: 2024

- Activity End Date
Indefinite: False
End Month: 3
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.090387
SO_x	0.001003
NO_x	0.264986
CO	0.404036
PM 10	0.013614

Pollutant	Total Emissions (TONs)
PM 2.5	0.009164
Pb	0.000000
NH_3	0.000380
CO_2e	95.4

14.1 Demolition Phase

14.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 11
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 1

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Number of Days: 0

14.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 2000
Height of Building to be demolished (ft): 10

- 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

14.1.3 Demolition Phase Emission Factor(s)

- 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	0.0357	0.0006	0.2608	0.3715	0.0109	0.0109	0.0032	58.544
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662

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HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

14.1.4 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

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

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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

14.2 Building Construction Phase

14.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 4
Number of Days: 0

14.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 3600
Height of Building (ft): 30
Number of Units: N/A

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

- Vendor Trips

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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

14.2.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

14.2.4 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

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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

14.3 Architectural Coatings Phase

14.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 0
Number of Days: 18

14.3.2 Architectural Coatings Phase Assumptions

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- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 3600
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

14.3.3 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	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

14.3.4 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)

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2000: Conversion Factor pounds to tons

15. Construction / Demolition

15.1 General Information & Timeline Assumptions

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Building 600 Renovation for Simulator Facility

- Activity Description:
Building is 5,400 sf and 2 stories. The Weapons Systems Trainer (WST) will need to be modified to accept the new KC-46 simulator and Boom Operator Trainer (BOT). This project will add 2,100 sf and interior renovation of 1,100 sf. Also needed is the renovation of the existing BOT space into two story configuration; approximately 2,200 sf. An addition will be needed for the new BOT installation. Also needed are two briefing rooms, communications closet, computer area, air conditioning, classroom space, and conference room. WST concrete pad will be replaced at five foot thickness for appropriate load bearing. BOT foundation construction will be similar. Exterior doors and pavement are included in the cost.

Assume building area = 5,400 + 2,100 sf, or 8,100 sf. Assume construction effort = 60% of constructing a new building, or 4,500 sf. Architectural coatings needs for renovated buildings based on 1 interior wall = building 86.6' * 30' = 866 sf.

- Activity Start Date
Start Month: 12
Start Month: 2024

- Activity End Date
Indefinite: False
End Month: 5
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.068218
SO_x	0.001236
NO_x	0.304238
CO	0.472310
PM 10	0.010501

Pollutant	Total Emissions (TONs)
PM 2.5	0.010204
Pb	0.000000
NH_3	0.000466
CO_2e	117.1

15.1 Building Construction Phase

15.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 6

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Number of Days: 0

15.1.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft^2): 4500
Height of Building (ft): 30
Number of Units: N/A

- Building Construction Default Settings

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

- Construction Exhaust (default)

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

- Vehicle Exhaust

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

- Vendor Trips

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

- Vendor Trips Vehicle Mixture (%)

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

15.1.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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- 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	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

15.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

15.2 Architectural Coatings Phase

15.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 0
Number of Days: 4

15.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 866
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

15.2.3 Architectural Coatings Phase Emission Factor(s)

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- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

15.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

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

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

16. Construction / Demolition

16.1 General Information & Timeline Assumptions

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Building 1221 Renovation for the Mission Planning Cell

- Activity Description:
Building is 22,900 sf and 2 stories. The project will include renovation of 15,600 sf and will build secure areas with interior walls. 6,000 sf dedicated to the MPC for vault /open secret storage standard. A 1,300 sf Sensitive

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Compartmented Information/Special Assess Program Facility area within the MPC. The building will accommodate the tanker crew communications, mission planning, intelligence, and tactics.

Assume construction effort = 35% of constructing a new building, or 8,015 sf. Architectural coatings needs for renovated buildings based on 1 interior wall = building 151.3' * 10' = 1,513 sf.

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 4
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.054783
SO_x	0.000825
NO_x	0.187680
CO	0.313876
PM 10	0.006237

Pollutant	Total Emissions (TONs)
PM 2.5	0.005987
Pb	0.000000
NH_3	0.000361
CO_2e	78.5

16.1 Building Construction Phase

16.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 4
Number of Days: 0

16.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 8015
Height of Building (ft): 20
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

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- 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

16.1.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.109	000.003	000.060	000.995	000.015	000.005		000.025	00270.916
LDGT	000.146	000.003	000.115	001.387	000.016	000.006		000.027	00338.433
HDGV	000.190	000.005	000.179	001.535	000.024	000.008		000.052	00457.538
LDDV	000.021	000.002	000.148	000.275	000.027	000.017		000.008	00214.664
LDDT	000.015	000.003	000.060	000.139	000.022	000.011		000.009	00300.814
HDDV	000.088	000.005	001.611	000.317	000.102	000.050		000.033	00543.534
MC	004.804	000.002	000.585	015.057	000.017	000.007		000.053	00187.526

16.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

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

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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

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16.2 Architectural Coatings Phase

16.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2025

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

16.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 1513
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

16.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.109	000.003	000.060	000.995	000.015	000.005		000.025	00270.916
LDGT	000.146	000.003	000.115	001.387	000.016	000.006		000.027	00338.433
HDGV	000.190	000.005	000.179	001.535	000.024	000.008		000.052	00457.538
LDDV	000.021	000.002	000.148	000.275	000.027	000.017		000.008	00214.664
LDDT	000.015	000.003	000.060	000.139	000.022	000.011		000.009	00300.814
HDDV	000.088	000.005	001.611	000.317	000.102	000.050		000.033	00543.534
MC	004.804	000.002	000.585	015.057	000.017	000.007		000.053	00187.526

16.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

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

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

17. Construction / Demolition

17.1 General Information & Timeline Assumptions

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Building 1244 Renovation for the Fuselage Trainer and Cargo Pallet Staging

- Activity Description:
Building is 16,000 sf and 3 stories. The Fuselage Trainer (FuT) will be located in existing hangar B1244. Project will include new exterior, new roof, HVAC interior, fuselage ducting for AC, fire suppression, existing doors, office and bathrooms. Exterior training yard and covered hardstand staging area are included with pavement to the front of the existing hangar for proper access. Trenching for utilities are included as well.

Assume construction effort = 75% of constructing a new building, or 12,000 sf. Architectural coatings needs for renovated buildings based on 1 interior wall = building 126.5' * 10' = 1,265 sf.

- Activity Start Date
Start Month: 2
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 7
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.070639
SO_x	0.001246
NO_x	0.284871
CO	0.470840

Pollutant	Total Emissions (TONs)
PM 2.5	0.009083
Pb	0.000000
NH_3	0.000597
CO_2e	118.7

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PM 10	0.009562		

17.1 Building Construction Phase

17.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 6
Number of Days: 0

17.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 12000
Height of Building (ft): 30
Number of Units: N/A

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

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

- Vendor Trips Vehicle Mixture (%)

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

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17.1.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.109	000.003	000.060	000.995	000.015	000.005		000.025	00270.916
LDGT	000.146	000.003	000.115	001.387	000.016	000.006		000.027	00338.433
HDGV	000.190	000.005	000.179	001.535	000.024	000.008		000.052	00457.538
LDDV	000.021	000.002	000.148	000.275	000.027	000.017		000.008	00214.664
LDDT	000.015	000.003	000.060	000.139	000.022	000.011		000.009	00300.814
HDDV	000.088	000.005	001.611	000.317	000.102	000.050		000.033	00543.534
MC	004.804	000.002	000.585	015.057	000.017	000.007		000.053	00187.526

17.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (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

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

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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

17.2 Architectural Coatings Phase

17.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 0
Number of Days: 6

17.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 1265
Number of Units: N/A

- Architectural Coatings Default Settings

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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

17.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.109	000.003	000.060	000.995	000.015	000.005		000.025	00270.916
LDGT	000.146	000.003	000.115	001.387	000.016	000.006		000.027	00338.433
HDGV	000.190	000.005	000.179	001.535	000.024	000.008		000.052	00457.538
LDDV	000.021	000.002	000.148	000.275	000.027	000.017		000.008	00214.664
LDDT	000.015	000.003	000.060	000.139	000.022	000.011		000.009	00300.814
HDDV	000.088	000.005	001.611	000.317	000.102	000.050		000.033	00543.534
MC	004.804	000.002	000.585	015.057	000.017	000.007		000.053	00187.526

17.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

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

18. Construction / Demolition

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

18.1 General Information & Timeline Assumptions

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Construct new 2-Bay Hanger with Apron Access

- Activity Description:
A new two-bay general maintenance/fuel cell/wash hangar will be sited near B1244 on the South end of the apron. The new hangar will protrude ~50' into the existing apron. This protrusion will not impact aircraft flow but will need the existing building restriction redline to move. This facility will contain two bays, one for fuel cell and the other for general maintenance. The back shops will contain fuel cell maintenance, 912th ARS, 752 AMXS / CTK, 452 MXS / CTK. Pavements, communications, utilities, and tanks are included in the cost estimate. Building is 200,000 sf and 3 stories.

Architectural coatings for new hanger – 4 interior walls 10' high = 447 * 10 * 4 = 17,889 sf.

- Activity Start Date
Start Month: 3
Start Month: 2024

- Activity End Date
Indefinite: False
End Month: 8
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.518714
SO_x	0.006184
NO_x	1.971379
CO	2.415254
PM 10	0.078002

Pollutant	Total Emissions (TONs)
PM 2.5	0.071285
Pb	0.000000
NH_3	0.005361
CO_2e	584.1

18.1 Building Construction Phase

18.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2024

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

18.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 200000
Height of Building (ft): 30
Number of Units: N/A

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- 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

18.1.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Generator Sets Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0303	0.0006	0.2464	0.2674	0.0091	0.0091	0.0027	61.061
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875
Welders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0227	0.0003	0.1427	0.1752	0.0059	0.0059	0.0020	25.653

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	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

18.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (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)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

18.2 Architectural Coatings Phase

18.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 2
Number of Days: 10

18.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 17889
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

18.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

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	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.118	000.003	000.067	001.109	000.016	000.006		000.025	00297.907
LDGT	000.160	000.004	000.131	001.551	000.018	000.006		000.027	00367.514
HDGV	000.206	000.005	000.206	001.719	000.026	000.009		000.052	00499.607
LDDV	000.024	000.002	000.178	000.308	000.030	000.019		000.008	00238.628
LDDT	000.017	000.003	000.069	000.149	000.024	000.013		000.009	00321.662
HDDV	000.098	000.006	001.812	000.353	000.111	000.055		000.033	00586.839
MC	005.166	000.002	000.649	016.618	000.019	000.008		000.053	00208.203

18.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

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

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

19. Construction / Demolition

19.1 General Information & Timeline Assumptions

- Activity Location

County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Repair Ramp for 16 Mooring Points

- Activity Description:

Two mooring points per nose (16 each) will be installed. ~9,000 linear feet of airfield ramp striping will be included. Affected ramp area is ~900,000 sf.

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Assume construction effort = 1% of constructing a new building, or 9,000 sf. Architectural coatings needs = 9,000' * 0.5' wide strip = 4,500 sf.

- Activity Start Date
Start Month: 7
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 9
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.058889
SO_x	0.000142
NO_x	0.040436
CO	0.069554
PM 10	0.001501

Pollutant	Total Emissions (TONs)
PM 2.5	0.001391
Pb	0.000000
NH_3	0.000126
CO_2e	13.3

19.1 Building Construction Phase

19.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 1
Number of Days: 0

19.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 9000
Height of Building (ft): 10
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	1	4
Concrete/Industrial Saws Composite	1	4
Sweepers/Scrubbers Composite	1	4
Tractors/Loaders/Backhoes Composite	1	4

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20

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- 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

19.1.3 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	0.0348	0.0007	0.2103	0.3027	0.0087	0.0087	0.0031	63.686
Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0336	0.0006	0.2470	0.3705	0.0093	0.0093	0.0030	58.539
Sweepers/Scrubbers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0409	0.0009	0.2254	0.4839	0.0061	0.0061	0.0036	78.635
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.109	000.003	000.060	000.995	000.015	000.005		000.025	00270.916
LDGT	000.146	000.003	000.115	001.387	000.016	000.006		000.027	00338.433
HDGV	000.190	000.005	000.179	001.535	000.024	000.008		000.052	00457.538
LDDV	000.021	000.002	000.148	000.275	000.027	000.017		000.008	00214.664
LDDT	000.015	000.003	000.060	000.139	000.022	000.011		000.009	00300.814
HDDV	000.088	000.005	001.611	000.317	000.102	000.050		000.033	00543.534
MC	004.804	000.002	000.585	015.057	000.017	000.007		000.053	00187.526

19.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)

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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 (%)

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2000: Conversion Factor pounds to tons

19.2 Architectural Coatings Phase

19.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 9
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 0
Number of Days: 12

19.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 4500
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

19.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.109	000.003	000.060	000.995	000.015	000.005		000.025	00270.916
LDGT	000.146	000.003	000.115	001.387	000.016	000.006		000.027	00338.433
HDGV	000.190	000.005	000.179	001.535	000.024	000.008		000.052	00457.538
LDDV	000.021	000.002	000.148	000.275	000.027	000.017		000.008	00214.664
LDDT	000.015	000.003	000.060	000.139	000.022	000.011		000.009	00300.814
HDDV	000.088	000.005	001.611	000.317	000.102	000.050		000.033	00543.534
MC	004.804	000.002	000.585	015.057	000.017	000.007		000.053	00187.526

19.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)

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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

20. Heating

20.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: New Hanger - Space Heating

- Activity Description:
Natural gas-fired heaters. Assumed that half of the floor space would be heated = 100,000 sf.

- Activity Start Date
Start Month: 1
Start Year: 2025

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.017705
SO_x	0.001931
NO_x	0.321905
CO	0.270400
PM 10	0.024465

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.024465
Pb	0.000000
NH_3	0.000000
CO_2e	387.5

20.2 Heating Assumptions

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- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 100000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 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)

20.3 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

20.4 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

21. Emergency Generator

21.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: New Hanger - Emergency Diesel-powered Generator

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- Activity Description:

- Activity Start Date
Start Month: 1
Start Year: 2025

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO_x	0.004759
NO_x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH_3	0.000000
CO_2e	2.7

21.2 Emergency Generator Assumptions

- Emergency Generator
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

- Default Settings Used: No

- Emergency Generators Consumption
Emergency Generator's Horsepower: 135
Average Operating Hours Per Year (hours): 30

21.3 Emergency Generator Emission Factor(s)

- Emergency Generators Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

21.4 Emergency Generator Formula(s)

- Emergency Generator Emissions per Year
$AE_{POL} = (NGEN * HP * OT * EF_{POL}) / 2000$

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

22. Personnel

22.1 General Information & Timeline Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Add or Remove Activity from Baseline? Remove

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Removal of Existing 452nd Air Mobility Wing (AMW) POV/GOV Activities

- Activity Description:
The existing 452 AMW mission has 496 personnel = 188/308 full/part-time staff.

- Activity Start Date
Start Month: 1
Start Year: 2025

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	-0.626464
SO_x	-0.008476
NO_x	-0.293392
CO	-4.255981
PM 10	-0.044527

Pollutant	Emissions Per Year (TONs)
PM 2.5	-0.016085
Pb	0.000000
NH_3	-0.075927
CO_2e	-881.8

22.2 Personnel Assumptions

- Number of Personnel
Active Duty Personnel: 188
Civilian Personnel: 308
Support Contractor Personnel: 0
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)

22.3 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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

22.4 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	000.109	000.003	000.060	000.995	000.015	000.005		000.025	00270.916
LDGT	000.146	000.003	000.115	001.387	000.016	000.006		000.027	00338.433
HDGV	000.190	000.005	000.179	001.535	000.024	000.008		000.052	00457.538
LDDV	000.021	000.002	000.148	000.275	000.027	000.017		000.008	00214.664
LDDT	000.015	000.003	000.060	000.139	000.022	000.011		000.009	00300.814
HDDV	000.088	000.005	001.611	000.317	000.102	000.050		000.033	00543.534
MC	004.804	000.002	000.585	015.057	000.017	000.007		000.053	00187.526

22.5 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

23. Personnel

23.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Riverside
Regulatory Area(s): Los Angeles South Coast Air Basin, CA

- Activity Title: Addition of MOB 5 POV/GOV Activities

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Description:
The MOB 5 mission would have 567 personnel = 233/334 full/part-time staff.

- Activity Start Date
Start Month: 1
Start Year: 2025

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.716139
SO_x	0.009689
NO_x	0.335390
CO	4.865204
PM 10	0.050901

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.018388
Pb	0.000000
NH_3	0.086796
CO_2e	1008.0

23.2 Personnel Assumptions

- Number of Personnel
Active Duty Personnel: 233
Civilian Personnel: 334
Support Contractor Personnel: 0
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)

23.3 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

23.4 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	000.109	000.003	000.060	000.995	000.015	000.005		000.025	00270.916
LDGT	000.146	000.003	000.115	001.387	000.016	000.006		000.027	00338.433
HDGV	000.190	000.005	000.179	001.535	000.024	000.008		000.052	00457.538

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LDDV	000.021	000.002	000.148	000.275	000.027	000.017		000.008	00214.664
LDDT	000.015	000.003	000.060	000.139	000.022	000.011		000.009	00300.814
HDDV	000.088	000.005	001.611	000.317	000.102	000.050		000.033	00543.534
MC	004.804	000.002	000.585	015.057	000.017	000.007		000.053	00187.526

23.5 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

The Time in Mode (TIM) tables and the ACAM Detailed Reports for Grissom ARB and Tinker AFB are located on the project website at:
www.kc-46a-mob5.com/index.aspx

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