Final

ENVIRONMENTAL ASSESSMENT FOR CONSTRUCTION AND OPERATION OF PUBLIC PRIVATE VENTURE HOUSING AT NAVAL AIR STATION FALLON, NEVADA (EA-007-17-USN-1700467201)

December 2024

This page intentionally left blank.

Abstract

Designation: Environmental Assessment

Title of Proposed Action: Environmental Assessment for Construction and Operation of Public Private Venture Housing at Naval Air Station Fallon, Nevada

Project Location: Naval Air Station Fallon, Nevada

Lead Agency for the EA: United States Department of the Navy

Cooperating Agency: United States Department of the Interior, Bureau of Reclamation

Affected Region: Churchill County, Nevada

Action Proponent: United States Department of the Navy

Point of Contact: Amanda Peyton
Naval Facilities Engineering Systems Command Southwest
750 Pacific Highway (12th Floor, Environmental)
San Diego, California 92132-5190
Email: amanda.t.peyton.civ@us.navy.mil

Date: December 2024

The Department of the Navy (Navy) prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), as implemented by the Council on Environmental Quality (CEQ) Regulations, Navy Regulations, and Department of the Interior Regulations for implementing NEPA. The Proposed Action includes the leasing of additional Government land, as well as the construction, operation, and maintenance of up to 172 new Public Private Venture (PPV) privatized military family housing (MFH) units at Naval Air Station (NAS) Fallon to address approximately 90 percent of the 192-unit housing deficit. The Navy would continue to own the Government land, but the land would be leased to a private entity, San Diego Family Housing, LLC (SDFH), and SDFH would construct, own, operate, manage, and maintain the MFH units, including site infrastructure, for the term of the lease. The Proposed Action would include obtaining Bureau of Reclamation authorization to utilize Newlands Project drainage facilities for long-term discharge and conveyance of stormwater from the project site, as well as authorization for construction of a sanitary sewer pipeline across a Newlands Project irrigation facility. The purpose of the Proposed Action is to provide adequate, affordable housing for military personnel and their families in the NAS Fallon area in accordance with Office of the Secretary of Defense and Department of Defense (DoD) standards. The PPV approach allows the Navy to leverage assets while benefiting from private sector solutions to build and renovate family housing and support facilities more quickly and cost effectively. The need for the Proposed Action is to alleviate the current shortfall in adequate housing for Navy and Marine Corps forces stationed at NAS Fallon.

This EA evaluates the potential environmental impacts associated with the one action alternative and the No Action Alternative to the following resource areas: air quality; noise; biological resources; cultural resources; land use; infrastructure; hazardous materials and wastes; transportation; public health and safety; and socioeconomics. The Proposed Action would have less than significant impacts to these resources. Potential impacts to the following additional resource areas would be negligible or nonexistent: water resources; geological resources; visual resources; and environmental justice.

This page intentionally left blank.

Abstract-2

Abstract

EXECUTIVE SUMMARY

Proposed Action

The Department of the Navy (Navy) proposes to amend existing agreements with San Diego Family Housing, LLC (SDFH) to include the leasing of additional Government land from the Navy into the SDFH leasehold, as well as construction, operation, and maintenance of 172 new Public Private Venture (PPV) privatized military family housing (MFH) units and associated facilities at Naval Air Station (NAS) Fallon, located in Churchill County, Nevada. The Proposed Action would address deficit housing by providing new MFH for active-duty military members assigned to NAS Fallon and their families. The Navy would continue to own the Government land, but the land would be leased to a private entity. The current ground lease with SDFH expires on July 31, 2051. At the end of the ground lease either: (1) the lease ends and MFH and improvements will revert to Navy ownership; (2) the lease will be renegotiated and extended; or (3) the Government will take another legally permissible action at that time regarding the privatized housing. It is planned at this time that the MFH would remain at the end of the ground lease term.

The Proposed Action would include obtaining Bureau of Reclamation (Reclamation) authorization to utilize Newlands Project drainage facilities for long-term discharge and conveyance of stormwater from the project site, as well as authorization for construction of a sanitary sewer pipeline across a Newlands Project irrigation facility.

The Navy prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), as implemented by the Council on Environmental Quality (CEQ) Regulations, Navy Regulations, and Department of the Interior Regulations for implementing NEPA. The Navy has invited the Department of the Interior, Reclamation to be a cooperating agency under NEPA.

The Navy is aware of the November 12, 2024, decision in *Marin Audubon Society v. Federal Aviation Administration*, No. 23-1067 (D.C. Cir. Nov. 12, 2024). To the extent that a court may conclude that the CEQ regulations implementing NEPA are not judicially enforceable or binding on this agency action, the Navy has nonetheless elected to follow those regulations at 40 Code of Federal Regulations (CFR) Parts 1500–1508, in addition to Navy's procedures/regulations implementing NEPA at 32 CFR Part 775, to meet the agency's obligations under NEPA, 42 United States Code Section 4321 et seq.

Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to provide adequate, affordable housing for military personnel and their families in the NAS Fallon area, in accordance with Office of the Secretary of Defense and Department of Defense (DoD) standards. The PPV approach allows the Navy to leverage assets while benefiting from private sector solutions to build, renovate, own, operate, and maintain MFH and support facilities more quickly and cost effectively. The need for the Proposed Action is to alleviate the current shortfall in adequate housing for Navy and Marine Corps forces stationed at NAS Fallon and their families, as concluded in the 2020 Housing Requirements Market Analysis (HRMA). This would positively enhance combat readiness and mission capabilities.

Alternatives Considered

The Navy applied alternatives screening factors during a rigorous exploration and objective evaluation of reasonable alternatives. The screening factors focused on identifying locations for the proposed MFH

units on Federal (Navy) lands, and potential alternative locations were eliminated for the following primary reasons: (1) incompatibility with NAS Fallon mission; (2) being located within an Accident Potential Zone (APZ); or (3) size constraints (i.e., not a large enough site to accommodate the proposed 172 housing units, infrastructure, and amenities). Based on the reasonable alternative screening factors and meeting the purpose and need for the Proposed Action, one action alternative (Alternative 1) was identified and will be analyzed within this EA.

Under the No Action Alternative, the existing SDFH ground lease would not be amended to add additional Government land into the SDFH leasehold for deficit MFH construction at NAS Fallon. The existing SDFH business agreements would not be amended to add the construction, ownership, operation, management, and maintenance of additional PPV housing units at NAS Fallon. Reclamation authorization for long-term discharge and conveyance of stormwater from the project site or construction across a Newlands Project irrigation facility would not be required.

Under Alternative 1, the proposed MFH would be constructed on undeveloped land west of Pasture Road, north and west of the NAS Fallon Child Development Center, and north of Cottonwood Drive and the existing PPV housing. The project area footprint encompasses 99 acres in the western portion of NAS Fallon, although only approximately 55 to 70 acres of development would occur within this footprint. The proposed project area was identified by Naval Facilities Engineering Systems Command Southwest (NAVFAC SW) PPV in collaboration with NAS Fallon. The larger area allows for flexibility in design, layout, and avoidance of sensitive natural and cultural resources. There may be potential to utilize fill material from the larger area where no sensitive cultural or natural resources are present.

Public and Agency Participation and Intergovernmental Coordination

The Navy prepared the Draft EA to inform the public of the Proposed Action and to allow the opportunity for public review and comment. The Navy has published a Notice of Availability of the Draft EA in three local newspapers: *Reno Gazette Journal*, *Lahontan Valley News*, and *The Fallon Post*. The Draft EA was made available for public review at the Churchill County Library in Fallon, Nevada, and on the Navy Region Southwest website: https://cnrsw.cnic.navy.mil/Operations-and-Management/Environmental-Support/Public-Information-Access-to-Navy-Projects/NASF-Environmental-Assessment-PPV-Housing/. The 30-day public review period was from August 9, 2024 to September 8, 2024. Federal, state, and local agencies and members of the public were encouraged to review and comment on the Draft EA during the 30-day public review period. One comment was received from a member of the public and one comment was received from the Nevada Division of Water Resources, Department of Conservation and Natural Resources. All comments received were considered in the preparation of the Final EA.

The Navy consulted with Tribal Governments and the Nevada State Historic Preservation Officer (SHPO) on the Proposed Action. The Navy has coordinated with Reclamation on amending the 2018 license to utilize Newlands Project drainage facilities for discharge and conveyance of stormwater from the proposed new housing area, as well as authorization for construction of a sanitary sewer pipeline across a Newlands Project irrigation facility.

Summary of Potential Environmental Consequences

Table ES-1 presents a summary of potential environmental impacts associated with Alternative 1.

Table ES-1 Summary of Potential Impacts

Resource	*No Action Alternative*	*Alternative 1*
Air Quality	No change to existing air quality would occur and therefore, there would be no significant impacts.	Air quality impacts from the proposed construction activities would occur from (1) combustive emissions due to the use of fossil-fuel-powered equipment and (2) fugitive dust (PM_{10}/$PM_{2.5}$) due to the operation of equipment on exposed soil. • Annual project emissions would be well below the thresholds of concern for all pollutants. • Annual HAP emissions would be substantially lower than the thresholds of concern (10 tpy for an individual HAP or 25 tpy of combined HAPs). Air quality impacts from proposed operations would occur from combustive emissions due to the use of commuter vehicles, natural gas-fired space and water heaters within residential and auxiliary buildings, and a diesel-powered emergency generator within the new sanitary sewer pump station. • Annual emissions from these sources would be well below the thresholds of concern for all pollutants. Therefore, there would be no significant air quality impacts.
Noise	No change to current noise levels would occur and therefore, there would be no significant impacts.	Impacts associated with construction noise would be limited to annoyance and activity interference and would be temporary, lasting only for the duration of the project. Noise levels generated by the proposed activities would not result in significant noise impacts at nearby noise-sensitive locations, and the newly constructed facilities would follow Navy policy and be in substantive compliance with local regulations regarding noise insulation. Therefore, there would be no significant noise impacts.
Biological Resources	No change to biological resources would occur and therefore, there would be no significant impacts.	Removal of the maximum amount (55 to 70 acres) of greasewood vegetation would represent less than 0.08 percent of the total greasewood habitat on the lands that NAS Fallon administers. As set forth in the EA, there would be no significant impacts to biological resources. Additionally, non-significant impacts to rare plants, milkweed, non-jurisdictional playa wetlands, and wildlife species/special status wildlife species would be further minimized/avoided through implementation of conservation measures. Therefore, there would be no significant impacts to biological resources.
Cultural Resources	No change to cultural resources	There are no historic properties recorded in the

Resource	*No Action Alternative*	*Alternative 1*
	would occur and therefore, there would be no significant impacts.	proposed housing development area or new sanitary sewer pump station. Conservation measures would help to minimize potential impacts in the event that previously unrecorded archaeological resources or human remains are encountered during the construction or subsequent maintenance. The Nevada State Historic Preservation Officer has concurred with the Navy's proposed finding of "no historic properties affected." Therefore, there would be no significant impacts to cultural resources.
Land Use	No change to land use would occur and therefore, there would be no significant impacts.	The housing size, design, and density would be consistent with the already developed PPV housing located to the south of the project area. The proposed development would be located on NAS Fallon property and would not alter or be incompatible with any surrounding agricultural land uses. Impacts to prime farmland would be avoided through implementation of conservation measures. Therefore, there would be no significant land use impacts.
Infrastructure	No change to infrastructure would occur and therefore, there would be no significant impacts.	Current utilities have sufficient capacity to handle Alternative 1 except for wastewater treatment. However, the Navy would construct a new sanitary sewer pump station and a new force main sewer pipeline connecting the new sanitary sewer pump station to the existing force main under Alternative 1 to manage increased wastewater flows. (The project could potentially utilize a reduced scope of infrastructure construction work, so long as wastewater capacity would remain sufficient. Any such reduction in scope would not alter the impacts analysis for Infrastructure or otherwise.) Due to an increase in impervious surfaces from roadways and houses, a minimal amount of increased stormwater runoff is anticipated. Thus, there would be a minor increase in stormwater discharge to the Bureau of Reclamation irrigation drainage ditches. Management of stormwater during construction and operations would be in compliance with applicable NPDES permits. Therefore, there would be no significant impacts to infrastructure.

Resource	*No Action Alternative*	*Alternative 1*
Hazardous Materials and Wastes	No change to hazardous materials and wastes would occur and therefore, there would be no significant impacts.	Conservation measures would be implemented for safe storage of hazardous materials and the prevention of, and response to, and spills related to the operation of construction equipment to minimize risks. Contractors would also be required to follow all applicable federal and local requirements with respect to storage, transportation, and handling any hazardous materials. Therefore, there would be no significant hazardous materials and wastes impacts.
Transportation	No change from current traffic conditions would occur. Queues would continue to occur at the main gate during the morning and afternoon peak hours. Therefore, there would be no significant impacts.	The proposed housing residents currently travel to and from the station. The traffic modeling shows the MFH as new trips and still shows all intersections operating without delay. Queues at the main gate in the morning and afternoon peak hours would continue to occur, with no change to the number of personnel going through the gate and LOS still above C. With a concentration of housing and the Child Development Center, there potentially could be some degree of traffic from the MFH to the main gate resulting in longer queues to develop. However, there would be no increase in the number of military personnel. Traffic could also be generated from family members leaving the MFH area to access the city of Fallon or other locations for work or school. Trips to the base for services could occur during non-peak hours. Traffic congestion may be offset by active-duty military members walking or biking with the MFH located close to the main gate. With no change to the number of personnel going through the gate and LOS still above C (LOS C indicates stable traffic flow), there would be no significant transportation impacts.
Public Health and Safety	No change to public health and safety would occur and therefore, there would be no significant impacts.	During construction, there may be a minor and temporary increase in demand for public services; during operations, there may be a long-term but minor impact on fire, emergency, and police services at NAS Fallon from the additional permanent residents on base. The Proposed MFH site is located outside of the CZ and APZs. No environmental health and safety risks associated with the Proposed Action would disproportionally affect children. Therefore, there would be no significant impacts to public health and safety.

Resource	*No Action Alternative*	*Alternative 1*
Socioeconomics	There would be no impacts to socioeconomic resources.	There would be no change in personnel numbers, employment, or income. There would be a temporary and direct benefit from the use of local labor and supplies and indirect and induced benefit from expenditures of workers during construction. During operation, the additional 172 military families residing on base could result in additional but minor expenditures on base. Military dependents of school-age children residing on base would be expected to continue attending the school previously attended, which would have no significant impacts on school capacity. Therefore, there would be no significant socioeconomic impacts.

Legend: APZ = Accident Potential Zone; CZ = Clear Zone; EA = Environmental Assessment; HAP = Hazardous Air Pollutant; LOS = Level of Service; MFH = Military Family Housing; NAS = Naval Air Station; NPDES = National Pollutant Discharge Elimination System; $PM_{2.5}$ = 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; PPV = Public Private Venture; tpy = tons per year.

Table of Contents

List of Figures

List of Tables

List of Appendices

Abbreviations and Acronyms

Acronym	Definition
°F	degree Fahrenheit
ACM	Asbestos-containing Material
AICUZ	Air Installations Compatible Use Zone
APE	Area of Potential Effects
APZ	Accident Potential Zone
BMP	Best Management Practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHRIMP	Consolidated Hazardous Material Reutilization and Inventory Management Program
CNIC	Commander, Navy Installations Command
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CZ	Clear Zone
dBA	A-weighted decibel
DERP	Defense Environmental Restoration Program
DNL	Day-Night Average Sound Level
DoD	Department of Defense
EA	Environmental Assessment
ECP	Environmental Condition of Property
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
HAP	Hazardous Air Pollutant
HRMA	Housing Requirements Market Analysis
ID	Identification
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
kg	kilogram
LLC	Limited Liability Company
LOS	Level of Service

_Hlk148418249
_Hlk148514238

Acronym	Definition
MBTA	Migratory Bird Treaty Act
MFH	Military Family Housing
MMRP	Military Munitions Response Program
NAAQS	National Ambient Air Quality Standards
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Systems Command
NAVFAC SW	Naval Facilities Engineering Systems Command Southwest
Navy	Department of the Navy
NDEP	Nevada Division of Environmental Protection
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSR	New Source Review
PCB	polychlorinated biphenyl
PFAS	per- and polyfluoroalkyl substances
PK	prekindergarten
$PM_{2.5}$	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
PPV	Public Private Venture
PSD	Prevention of Significant Deterioration
Reclamation	Bureau of Reclamation
SDFH	San Diego Family Housing, LLC
SHPO	State Historic Preservation Office(r)
SIP	State Implementation Plan

_Hlk148418249
_Hlk148514238

Acronym	Definition
SO_2	sulfur dioxide
SR	State Route
SWPPP	Stormwater Pollution Prevention Plan
TCID	Truckee Carson Irrigation District
tpy	tons per year
U.S.	United States
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant

1 Purpose of and Need for the Proposed Action

1.1 Introduction

The Department of the Navy (Navy) proposes to amend existing agreements with San Diego Family Housing, Limited Liability Company (LLC) (SDFH), to include the leasing of additional Government land from the Navy into the SDFH leasehold, as well as construction, operation, and maintenance of 172 new Public Private Venture (PPV) privatized military family housing (MFH) units at Naval Air Station (NAS) Fallon, located in Churchill County, Nevada. The Proposed Action would address deficit housing by providing new MFH for active-duty military members assigned to NAS Fallon and their families.

SDFH currently leases land from the Navy, and owns, operates, and maintains three housing communities at NAS Fallon that were privatized through the Navy PPV Housing Program in 2001. An updated 2020 Housing Requirements Market Analysis (HRMA) concluded a housing deficit of 192 housing units remains at NAS Fallon (Commander, Navy Installations Command [CNIC], 2020). The Military Housing Privatization Initiative that established the PPV program authorized PPV to build up to 90 percent of demand, or approximately 172 new MFH units at NAS Fallon. The Navy would continue to own the Government land, but the land would be leased to a private entity, SDFH, via amendment of the existing SDFH ground lease. The current ground lease with SDFH expires on July 31, 2051. At the end of the ground lease either: (1) the lease ends and MFH and improvements will revert to Navy ownership; (2) the lease will be renegotiated and extended; or (3) the Government will take another legally permissible action at that time regarding the privatized housing. It is planned at this time that the MFH would remain at the end of the lease term.

The Proposed Action would include obtaining Bureau of Reclamation (Reclamation) authorization to utilize Newlands Project drainage facilities for long-term discharge and conveyance of stormwater from the project site, as well as authorization for construction of a sanitary sewer pipeline across a Newlands Project irrigation facility.

The Navy prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), as implemented by the Council on Environmental Quality (CEQ) Regulations, Navy Regulations, and Department of the Interior Regulations for implementing NEPA (Appendix A). The Navy has invited the Department of the Interior, Reclamation to be a cooperating agency under NEPA.

The Navy is aware of the November 12, 2024, decision in *Marin Audubon Society v. Federal Aviation Administration*, No. 23-1067 (D.C. Cir. Nov. 12, 2024). To the extent that a court may conclude that the CEQ regulations implementing NEPA are not judicially enforceable or binding on this agency action, the Navy has nonetheless elected to follow those regulations at 40 Code of Federal Regulations (CFR) Parts 1500–1508, in addition to Navy's procedures/regulations implementing NEPA at 32 CFR Part 775, to meet the agency's obligations under NEPA, 42 United States (U.S.) Code (USC) Section 4321 et seq.

1.2 Background

The Proposed Action would be implemented through the Navy PPV Housing Program. The PPV Housing Program, as authorized by the Military Housing Privatization Initiative (10 USC Sections 2871–2885), includes a series of authorities that allow the Department of Defense (DoD) and, in turn, the Navy to work with the private sector to lease, build, renovate, and maintain military housing in key areas of need. The statute grants the DoD authority to employ a variety of private sector approaches to manage

military housing, using private capital to leverage government dollars and make efficient use of limited resources. Using the PPV approach for the Proposed Action, the Navy may lease land to a private entity, which will construct, renovate, own, operate, and maintain housing units for military personnel and their families, who will have the opportunity to rent PPV units at rental rates at or below the members' Basic Allowance for Housing. This arrangement allows the military personnel and their families to obtain adequate, market-comparable housing, within their housing allowance. The PPV entity generally pays the utilities, including water, sewer, gas, electric, and trash.

Using the PPV program to construct, renovate, own, operate, and maintain housing for military personnel and their families provides many benefits to the Navy unavailable through more traditional approaches. In traditional Navy MFH, the Navy pays 100 percent of the costs associated with operating and maintaining the housing. Under the PPV approach, the private entity can leverage private sector resources to fund development costs and ongoing operations and maintenance of the PPV units post-construction. Thus, the PPV approach offers advantages over other acquisition vehicles by providing for the maintenance of housing while applying the operating efficiencies of the private sector.

1.3 Project Location

The Proposed Action would be implemented at NAS Fallon, which is located in west-central Nevada, approximately 6 miles southeast of the city of Fallon and 70 miles east of the city of Reno (Figure 1-1). The proposed PPV housing development would be located on undeveloped NAS Fallon property north of existing PPV housing and along Pasture Road. The MFH site location is adjacent to the NAS Fallon Child Development Center, approximately 600 feet west from the NAS Fallon main gate on Churchill Avenue (Figure 1-2).

1.4 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to provide adequate, affordable housing for military personnel and their families in the NAS Fallon area, in accordance with Office of the Secretary of Defense and DoD standards. The PPV approach allows the Navy to leverage assets while benefiting from private sector solutions to build, renovate, own, operate, and maintain MFH and support facilities more quickly and cost effectively. The need for the Proposed Action is to alleviate the current shortfall in adequate housing for Navy and Marine Corps forces stationed at NAS Fallon and their families, as concluded in the 2020 HRMA. This would positively enhance combat readiness and mission capabilities.

1.5 Decisions to be Made

The Navy's decision to be made as a result of the analysis in this EA is to determine if an Environmental Impact Statement (EIS) needs to be prepared. An EIS will need to be prepared if it is determined that the Proposed Action or other alternative ultimately selected for implementation would have significant impacts to the human or natural environment. Should an EIS be deemed unnecessary based on the effects analysis of the alternative selected for implementation, the selection would be documented in a Finding of No Significant Impact (FONSI).

Reclamation's decision is whether or not to authorize the long-term discharge and conveyance of stormwater from the proposed NAS Fallon MFH units project area through Newlands Project irrigation water drainage facilities (i.e., Lower Diagonal BR3 Drain and Lower Diagonal Deep Drain). In addition, Reclamation will decide whether or not to authorize NAS Fallon to construct a sanitary sewer pipeline

(i.e., new force main sewer pipeline) across a Newlands Project irrigation water delivery facility (L8-2 Lateral Canal).

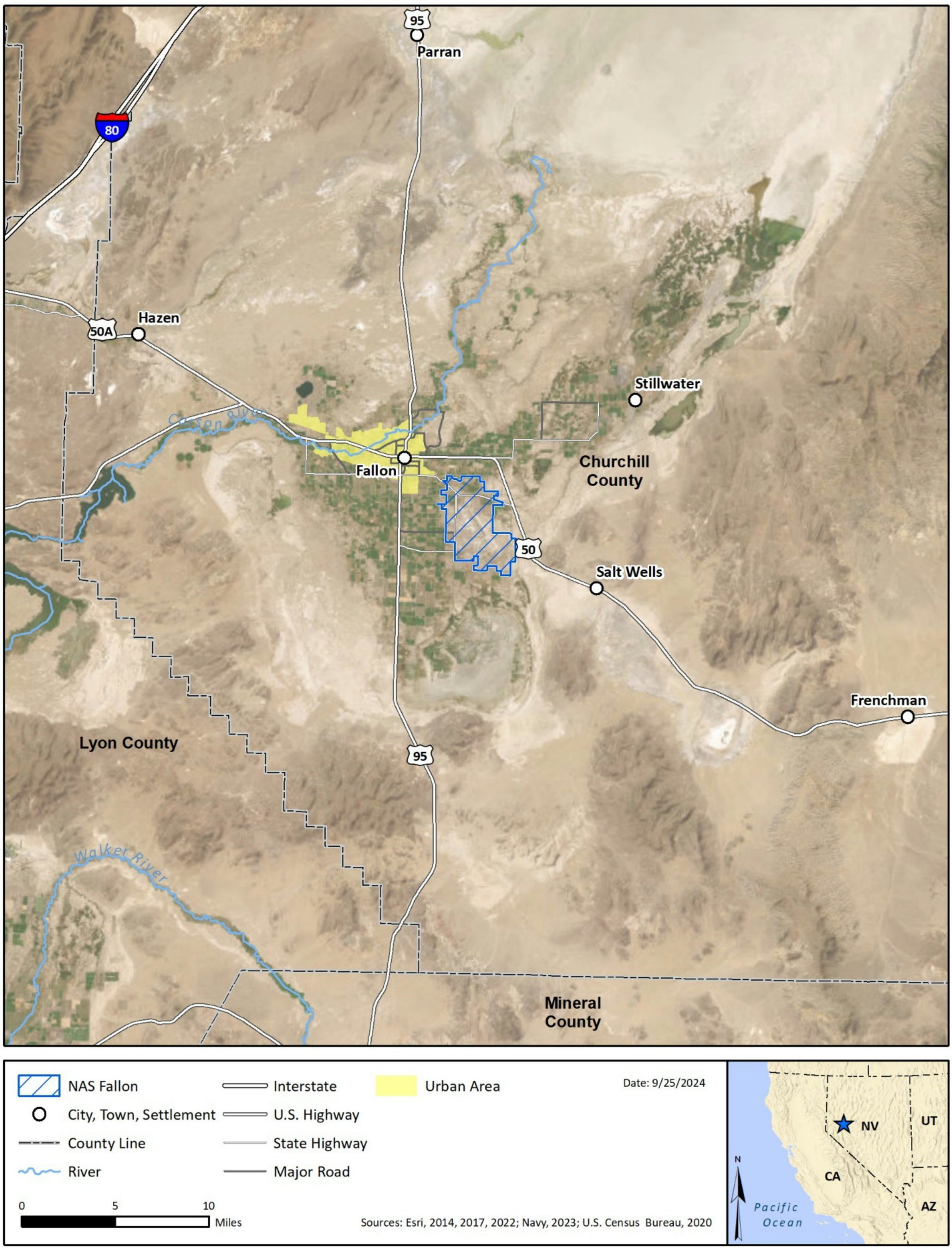

Figure 1-1 Regional Location of NAS Fallon

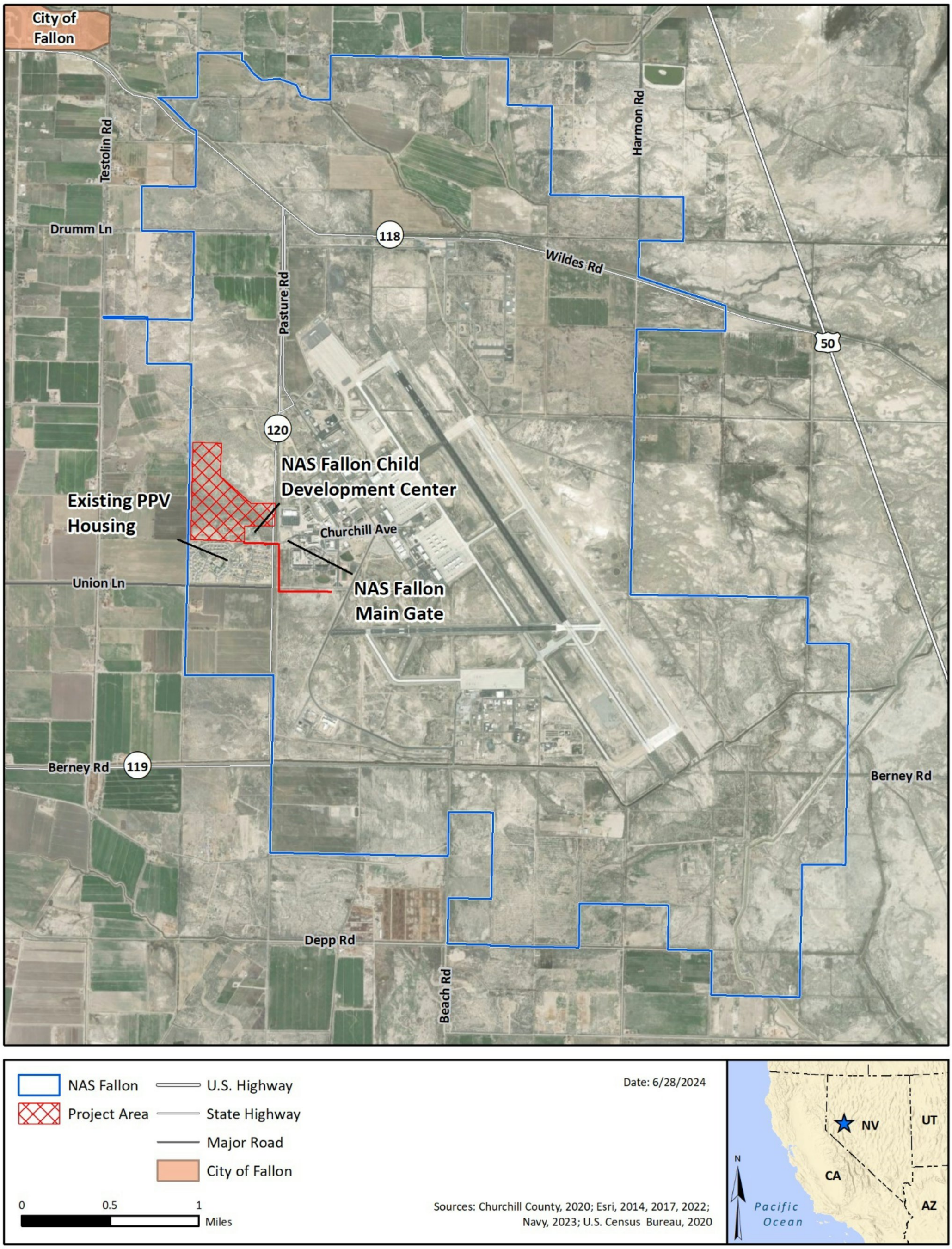

Figure 1-2 Location of Project Area

1.6 Scope of Environmental Analysis

CEQ regulations, NEPA, Navy, and Reclamation procedures for implementing NEPA specify that an EA should address only those resource areas potentially subject to more than trivial or de minimis impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact. This EA includes an analysis of potential environmental impacts associated with the one action alternative and the No Action Alternative. The environmental resource areas analyzed in this EA include: air quality, noise, biological resources, cultural resources, land use, infrastructure, hazardous materials and wastes, transportation, public health and safety, and socioeconomics. Potential impacts to the following additional resource areas would be negligible or nonexistent: water resources, geological resources, visual resources, and environmental justice.

1.7 Key Documents

Key documents are sources of information incorporated into this EA. Documents are considered to be key because of similar actions, analyses, or impacts that may apply to this Proposed Action. CEQ guidance encourages incorporating documents by reference. Documents incorporated herein by reference are available upon request during the public review period by contacting the Navy via the information provided above in the Abstract. Documents incorporated by reference in whole or in part are listed in Chapter 6, *References*.

1.8 Relevant Laws and Regulations

The Navy has prepared this EA based upon federal and state laws, statutes, regulations, and policies pertinent to the implementation of the Proposed Action (see Appendix A).

1.9 Public and Agency Participation and Intergovernmental Coordination

Pursuant to CEQ Regulations (40 CFR part 1506.6), the Navy works to maximize public involvement in the development of the NEPA analysis for its proposed actions.

The Navy prepared the Draft EA to inform the public of the Proposed Action and to allow the opportunity for public review and comment. The Navy has published a Notice of Availability of the Draft EA in three local newspapers: *Reno Gazette Journal*, *Lahontan Valley News*, and *The Fallon Post*.

The Draft EA was made available for public review at the Churchill County Library in Fallon, Nevada, and on the Navy Region Southwest website: https://cnrsw.cnic.navy.mil/Operations-and-Management/Environmental-Support/Public-Information-Access-to-Navy-Projects/NASF-Environmental-Assessment-PPV-Housing/. The 30-day public review period was from August 9, 2024 to September 8, 2024. Federal, state, and local agencies and members of the public were encouraged to review and comment on the Draft EA during the 30-day public review period. One comment was received from a member of the public and one comment was received from the Nevada Division of Water Resources, Department of Conservation and Natural Resources. All comments received were considered in the preparation of the Final EA (Appendix B).

The Navy consulted with Tribal Governments and the Nevada State Historic Preservation Officer (SHPO) on the Proposed Action (Appendix C). The Navy has coordinated with Reclamation on amending the 2018 license (Reclamation, 2018) to utilize Newlands Project drainage facilities for discharge and

conveyance of stormwater from the proposed new housing area, as well as authorization for construction of a sanitary sewer pipeline across a Newlands Project irrigation facility.

This page intentionally left blank.

2 Proposed Action and Alternatives

2.1 Proposed Action

The Navy's Proposed Action would amend the existing ground lease and business agreements with SDFH to include the leasing of additional Government land from the Navy into the SDFH leasehold, as well as the construction, ownership, operation, management, and maintenance of up to 172 new MFH units at NAS Fallon. The Navy would continue to own the Government land, but the land would be leased to a private entity, SDFH, via amendment of the existing SDFH ground lease, and SDFH would construct, own, operate, manage, and maintain these additional deficit MFH units, including site infrastructure, for the term of the lease. The current lease with SDFH expires on July 31, 2051.

Reclamation's portion of the Proposed Action would be to authorize the long-term discharge and conveyance of stormwater from the proposed NAS Fallon MFH units project area through Newlands Project irrigation water drainage facilities (i.e., Lower Diagonal BR3 Drain and Lower Diagonal Deep Drain). In addition, Reclamation would authorize NAS Fallon to construct a sanitary sewer pipeline across a Newlands Project irrigation water delivery facility (L8-2 Lateral Canal) easement.

2.2 Screening Factors

NEPA's implementing regulations provide guidance on the consideration of alternatives for a federally Proposed Action and require rigorous exploration and objective evaluation of reasonable alternatives. Only those alternatives determined to be reasonable and to meet the purpose and need require detailed analysis. Potential alternatives that meet the purpose and need were evaluated against the following screening factors:

- be located on federal property;
- be located on a site large enough to accommodate the proposed 172 housing units, infrastructure, and amenities (i.e., 55 to 70 acres in size);
- be located in an area compatible for MFH, including a compatible noise environment and outside Accident Potential Zones (APZs);
- provide adequate housing for military personnel and their families at NAS Fallon;
- continue to provide on-base MFH;
- be near existing utilities and infrastructure;
- not cause unnecessary or unduly lengthy temporary delays or disruptions in current installation mission or function; and
- avoid significant impacts to sensitive natural and cultural resources.

2.3 Alternatives Carried Forward for Analysis

Based on the reasonable alternative screening factors and meeting the purpose and need for the Proposed Action, one action alternative (Alternative 1) was identified and will be analyzed within this EA.

(See Section 2.4 herein for discussion of other potential action alternatives which were considered but which have not been carried forward for detailed analysis.)

2.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. The existing SDFH ground lease would not be amended to add additional Government land into SDFH leasehold for deficit MFH construction at NAS Fallon, nor would the existing SDFH business agreements be amended to add the construction, ownership, operation, management, and maintenance of additional PPV housing units at NAS Fallon. Reclamation authorization for long-term discharge and conveyance of stormwater from the project site or construction across a Newlands Project irrigation facility would not be required.

The No Action Alternative represents the status quo, and there would continue to be a deficit in MFH at NAS Fallon as identified in the 2020 HRMA. The No Action Alternative would not meet the purpose and need for the Proposed Action; however, as required by NEPA, the No Action Alternative is carried forward for analysis in this EA and provides a baseline for measuring the environmental consequences of the action alternatives.

2.3.2 Alternative 1 (Preferred Alternative)

The proposed MFH would be constructed on undeveloped land west of Pasture Road, north and west of the NAS Fallon Child Development Center, and north of Cottonwood Drive and the existing PPV housing (Figure 2-1). The project area footprint encompasses 99 acres in the western portion of NAS Fallon, although only approximately 55 to 70 acres of development would occur within this footprint. The proposed project area was identified by Naval Facilities Engineering Systems Command Southwest (NAVFAC SW) PPV in collaboration with NAS Fallon. The larger area allows for flexibility in design, layout, and avoidance of sensitive natural and cultural resources.

2.3.2.1 Project Design

Designs for the proposed MFH at NAS Fallon do not currently exist; formal design and planning would be provided through the Invitation for Offer response process with SDFH. The project design would meet standard criteria as presented here. As part of this process, SDFH would provide an overall conceptual site plan for approval by NAVFAC SW. The conceptual site plan would include details for each neighborhood, describing the land areas for development, and explaining how programmed uses would be accommodated while considering issues such as density; vehicular access and circulation; pedestrian movement; orientation of uses to the sites and the surrounding areas; and other pertinent issues. The plan would also describe availability and capacity of existing utilities and identify any proposed on- and off-site infrastructure improvements.

SDFH would develop a detailed physical design plan for construction of units and amenities for each site/location, describing programmed uses in sufficient detail to demonstrate the character, quality, and innovation/creativity of the proposed development. Generally, site planning, unit design, and construction standards would follow those established under prior phases of PPV. All housing would comply with applicable local, state, and national codes. Generally, PPV projects follow Antiterrorism and Force Protection, fire protection, and other rules and regulations where Naval Facilities Engineering Systems Command (NAVFAC) has provided guidance. The soil bearing capacity of the existing soils in the proposed project area footprint has not been defined. A soil boring program and engineering analysis of foundation conditions would be completed prior to any detail physical design.

Housing size and design would be consistent with the existing PPV housing located to the south of the proposed development site. The proposed housing would consist of 3-bedroom and 4-bedroom houses. These would range from one- to three-story units, two-story over garage structures, or any combination thereof. Unit entrance and living areas would not require more than a one-story walk up or down from grade. Proposed gross square footages are provided in Table 2-1.

Figure 2-1 Proposed Action Project Area

Table 2-1 Proposed Size of PPV MFH Units

Unit	*Minimum Gross Size (SF)*	*Suggested Size (SF)*	*Total Number to be Built*
3-Bedroom	1,490	1,760	115
4-Bedroom	1,670	2,220	57
Total			172

Legend: SF = square foot/feet.

Generally, the building arrangement would provide a balance of view, privacy, safety, variety, and convenient access for residents and guests. The development would include all service and support uses, parking, recreational facilities, and other amenities proposed (e.g., neighborhood centers, community support/mixed-use buildings with meeting rooms, minimal irrigation systems, outdoor basketball/volleyball/tennis courts, playgrounds, dog parks, tot lots, multi-use ball fields, swimming pools, open landscaped spaces, and similar amenities).

New plantings would be added to improve streetscapes; to add shade and vegetation to play areas; to create a transition/visual break between housing units; to buffer residential areas from busy streets or adjacent incompatible uses; and to beautify residential yards. The Integrated Natural Resources Management Plan (INRMP) (NAS Fallon, 2014a) has a newly revised landscaping plant list that would be provided to the PPV team. Plant selection should be in accordance with this list, and if alternative species are proposed, they should be coordinated with the NAS Fallon natural resources program staff for concurrence. The plantings should be native to the area and materials would be chosen based on plant compatibility, drought tolerance or resistance, climate, soils condition, low maintenance, and aesthetic suitability. The design would aim to reduce the use of fertilizers and pesticides and implement water-efficient practices. Minimal irrigation would be provided to all newly landscaped areas (i.e., at the playgrounds, multi-use fields, and individual residences' front, side, and back yards) to enable plant establishment only and not for long-term irrigation.

The street system would provide convenient and safe access and circulation (including collections, deliveries, and fire protection) within the housing area and would discourage through traffic. Sidewalks would be provided on both sides of all streets. Walkways would be designed as an internal network to provide pedestrian circulation and access to recreation as well as off-site amenities. Parking space would be provided at a rate of 2.5 off-street spaces for each housing unit (including the garage spaces). In addition, one guest parking spot either on- or off-street would be provided for every three units. A chain link fence with barbed-wire outriggers in accordance with force protection standards, including safety signage and perimeter lighting, would enclose the proposed MFH area to minimize the potential for unauthorized individuals to enter the area.

The new MFH units would connect to and utilize existing utilities. NV Energy would provide electricity via the aboveground utility line to the west of the project area. The potable water system would tie into existing mains along Cottonwood Drive. NAS Fallon is a sequential water distribution system with water treatment by the City of Fallon. The City of Fallon has available drinking water capacity.

The existing NAS Fallon wastewater collection system does not have capacity to convey wastewater from the proposed new MFH units to the existing wastewater treatment plant (WWTP). To meet increased wastewater conveyance under Alternative 1, the Navy would construct a new sanitary sewer pump station in a previously disturbed parking lot to the south of Cottonwood Drive, along with a new force main sewer pipeline connecting the new pump station to the existing force main (Figure 2-2). These additions would reroute the residential flow around existing Pump Station 316.

Figure 2-2 Proposed New Sanitary Sewer Pump Station and Force Main Sewer Pipeline

The new sanitary sewer pump station would have visual screening to hide the generator and electrical panels. The new force main sewer pipeline would require Reclamation design review and authorization for the crossing of Newlands Project lateral canal (L8-2 in Figure 2-1).

Reclamation and the Truckee Carson Irrigation District (TCID) currently authorize the discharge and conveyance of stormwater from NAS Fallon through Newlands Project drainage facilities (Reclamation, 2015). Prior to initiation of construction or other ground-disturbing activities at the site, the Navy would coordinate with Reclamation to amend the 2018 license (Reclamation, 2018) to utilize Newlands Project drainage facilities for discharge and conveyance of stormwater from the proposed new housing area. Construction stormwater would also be authorized under Nevada Division of Environmental Protection (NDEP) Construction Stormwater General Permit (NVR100000).

The proposed new MFH, in combination with the existing base housing area, would be considered a Municipal Separate Storm Sewer System but would not be subject to a National Pollutant Discharge Elimination System (NPDES) permit under the Clean Water Act of 1972 (33 USC Section 1251 et seq.) due to the very low population density of the base (U.S. Environmental Protection Agency [USEPA], 2023). Stormwater from the proposed new housing area would be discharged to an existing ditch that is located to the west of Pasture Road and the north of Cottonwood Drive. This ditch is not a part of the Newlands Project drainage facilities but has an existing connection (i.e., culvert below Cottonwood Drive) to the Lower Diagonal BR3 Drain - Ext (see Figure 2-1); there would be no new connection to or disturbance of Newlands Project drainage facilities.

Project design would include an onsite retention basin that could hold up to the 100-year storm event before discharging to the Reclamation drainage ditch (likely to the Lower Diagonal BR3 Drain - Ext shown in Figure 2-1). The drainage system would be properly coordinated with surrounding properties and Reclamation to ensure that runoff does not exceed historical levels and does not cause damage to downstream properties or irrigation and drainage facilities. Ponding on-site would be prohibited, except in designated retention basins. The site would be graded so that no drainage flows across a driveway or walk to reach a storm drain inlet, except at street intersections.

2.3.2.2 Construction

Construction of the PPV MFH is currently estimated to begin in 2026 and be completed within 3 years. The development footprint would range from 55 to 70 acres within the larger 99-acre project area (see Figure 2-1). Access to the site would be from the south along Cottonwood Drive and Juniper Drive or from Pasture Road. Access from Pasture Road would attempt to use existing crossings across ditches and lateral canals managed by Reclamation. Any existing crossing modifications or new crossing of a Reclamation ditch or lateral canal would require design review and written permission from Reclamation as well as from TCID, along with a “Working in Waterways Temporary Permit” from NDEP.

Construction-related activities would include: clearing vegetation; demolition; grading and controlled compaction of soils for adequate structural support to prepare the site and access roads; trenching (up to 3 feet deep per Unified Facilities Criteria codes) for utilities; building of new houses and associated support facilities; landscaping; and recreation improvements. Demolition may include, but is not limited to, the demolition of buildings and existing roads and removal of existing utilities (overhead and underground), including some wastewater and water mains.

Potable water would be used for dust control, and portable toilets would be used by construction workers. The construction contractor would pull potable water from a fire hydrant in the existing PPV housing adjacent to the project area. The fire hydrant would be metered and have a certified backflow preventer.

Proposed construction of the new sanitary sewer pump station includes site preparation, selective demolition, and improvements and electrical site improvements and generator. The new sanitary sewer pump station would be approximately 600 square feet and be located in a previously disturbed area (see Figure 2-1).

The new force main sewer pipeline would cross Pasture Road, then southward parallel to the perimeter road within the perimeter fence, and then eastward to the south of Union Lane (see Figure 2-2). The pipeline would be approximately 3,500 feet in length and construction of the pipeline would require a disturbance width of 8 feet and be installed by cut and cover method approximately 4 feet below grade. Asphalt removal/replacement would occur at road crossings. Excavation down to the level of the existing force main at approximately 20 feet below grade would be needed for the connection and would probably require dewatering and shoring of the excavation. The new pipeline would cross a Reclamation lateral canal (L8-2 in Figure 2-1) to the east of Pasture Road at Cottonwood/Churchill Avenue crossing. Construction at this crossing would be done in coordination with Reclamation and following Reclamation engineering and operations and maintenance guidelines for crossings (Reclamation, 2008).

All construction would be done in compliance with applicable federal, state, and local laws, and in compliance with all Navy regulations applicable to SDFH or its contractors conducting work activities on NAS Fallon. Demolished non-recyclable materials, surplus materials, and any other rubbish or debris would be hauled and disposed of off NAS Fallon property in accordance with applicable local, state, and federal laws and regulations. Material and soils that are potentially hazardous would be disposed of in accordance with the regulations regarding the disposal of hazardous materials. All earth moving, excavation, and backfilling activities would utilize dust control measures in accordance with the NAS Fallon Air Pollution Permit and/or the Air Media Compliance Manager in the NAS Fallon Environmental Division.

2.3.2.3 Operations and Maintenance

Ongoing maintenance of the property by SDFH would occur during the lease term through July 31, 2051. SDFH would be responsible for maintenance of the buildings and associated facilities within the lease boundaries. Maintenance activities would be those typical of residential uses and similar to those already undertaken in the other privatized housing areas of NAS Fallon. Typical maintenance would include activities such as painting, landscaping, and building and infrastructure repairs. Stormwater management controls would be regularly maintained and inspected to ensure management and discharge of stormwater to ditches meets requirements outlined in any amendment to the 2018 license (Reclamation, 2018) to utilize Newlands Project drainage facilities (as discussed in Section 2.3.2.1).

2.4 Alternat¡ves Considered but not Carried Forward for Detailed Analysis

NAS Fallon conducted a screening analysis of potential PPV housing site locations at NAS Fallon. The proposed project area footprint in the western portion of NAS Fallon (see Figure 2-1) meets all the screening factors listed in Section 2.1, *Reasonable Alternatives Screening Factors*. Due to potential operational/environmental constraints, all other sites were determined not to be viable sites for the

proposed project. Therefore, these potential sites represent alternatives considered, but not carried forward for detailed analysis in this EA, as they did not meet the purpose and need for the project and/or satisfy the reasonable alternative screening factors presented in Section 2.2. These sites were all eliminated for one of the following primary reasons: (1) incompatibility with NAS Fallon mission; (2) being located within an APZ; or (3) size constraints (i.e., not a large enough site to accommodate the proposed 172 housing units, infrastructure, and amenities). Alternatives considered but not carried forward for detailed analysis are shown in Figure 2-3.

2.4.3 Old Housing Area

This alternative site is located south of the NAS Fallon airfield (Figure 2-3). However, the site was determined to be incompatible with the NAS Fallon mission because housing in this location would create light pollution that would not be conducive to the type of training that is conducted at NAS Fallon. In addition, the site does not have sufficient size to accommodate the proposed 172 MFH units, associated infrastructure, and amenities. Therefore, this alternative would not sufficiently address the deficit in housing units as detailed by the 2020 HRMA.

2.4.4 Agricultural Lease 4A13

This alternative site is located south of the NAS Fallon airfield (Figure 2-3). However, this site was also determined to be incompatible with the NAS Fallon mission because of impacts from light pollution associated with the proposed housing in this area.

2.4.5 Agricultural Lease 4A02

This alternative site is located to the northwest of the airfield at NAS Fallon between State Route (SR) 118 and Drumm Lane and adjacent to Pasture Road (Figure 2-3). While the site has sufficient size to accommodate the proposed MFH, the site was determined to be incompatible due to being partially located within APZ 1 (NAS Fallon, 2002).

2.5 Conservation Measures

Conservation measures are existing policies, practices, and measures that the Navy would adopt to reduce the environmental impacts of designated activities, functions, and processes. Conservation measures mitigate potential impacts by avoiding, minimizing, or eliminating impacts. They are distinguished from potential mitigation measures because conservation measures are either specific requirements applicable to the Proposed Action or established regularly occurring practices routinely implemented for Navy projects. In other words, the conservation measures identified in this document are inherently part of the Proposed Action and are not mitigation measures specifically identified as part of this NEPA environmental review process. Table 2-2 lists conservation measures that would be implemented as part of the Proposed Action.

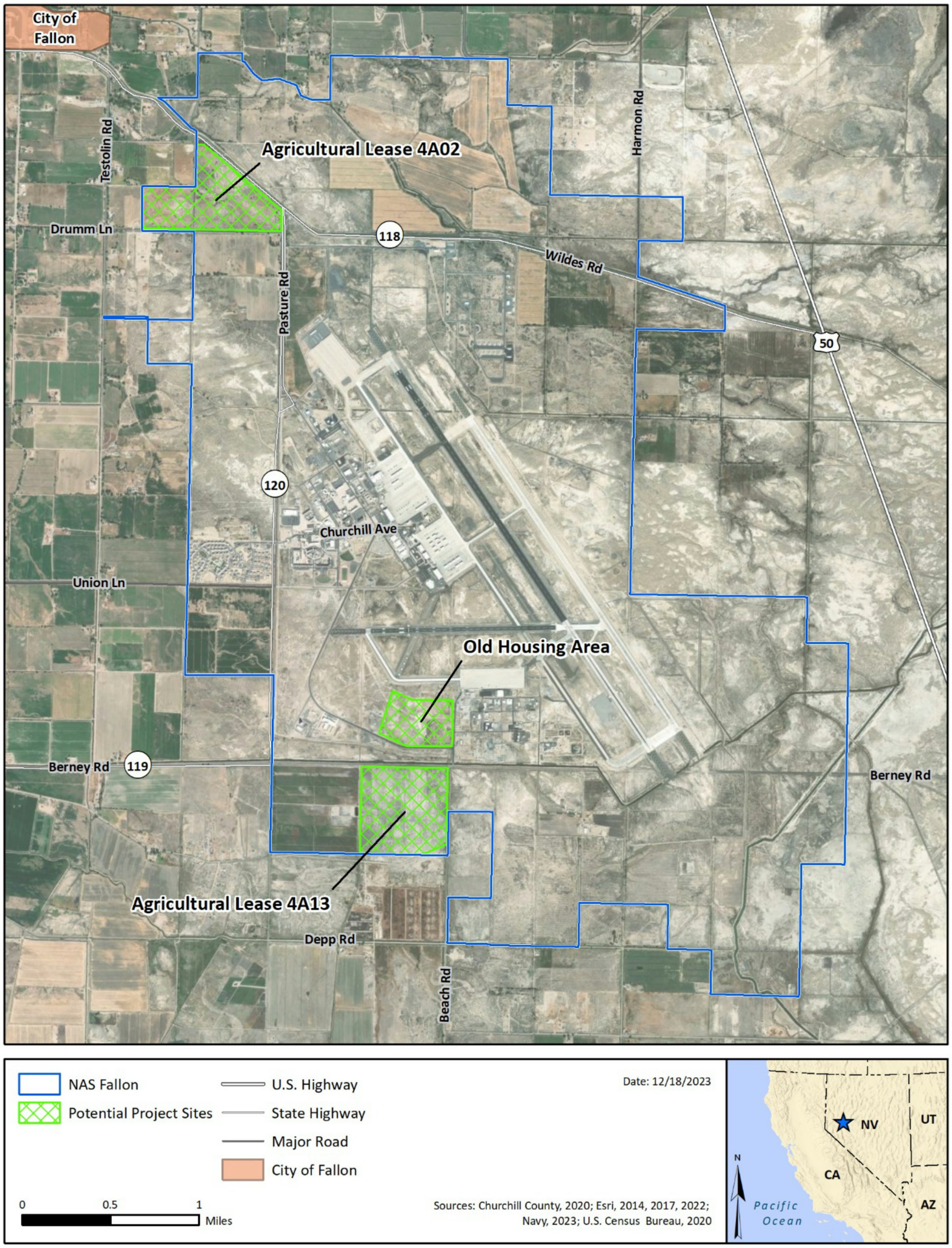

Figure 2-3 Alternatives Considered but not Carried Forward for Detailed Analysis

Table 2-2 Proposed Conservation Measures

Conservation Measure	*Description*	*Impacts Reduced/Avoided*	*Applicability*
Vehicle and Equipment Maintenance	Proper and routine maintenance of all vehicles and other construction equipment to ensure that emissions are within design standards.	Minimize air quality emissions.	Construction
Dust Suppression	Dust suppression methods (such as using water trucks to wet the construction area during construction) would minimize fugitive dust emissions. In addition, a spray-on erosion control fiber matrix (soil stabilizer) would be applied to the soil following construction, which would reduce the potential for soil erosion and dust.	Minimize air quality emissions.	Construction
Noise Insulation	The proposed PPV housing would be designed to comply with acoustic insulation recommendations in Chief of Naval Operations Instruction 11010.36D and Marine Corps Order 11010.16A (AICUZ Program) and local land use regulations in the Churchill County Code.	Reduce impacts associated with noise.	Design and Operations
Erosion Control	Standard erosion control measures as identified in the Nevada Contractors Field Guide for Construction Site BMPs would be used. These include but are not limited to silt fences, straw bale dikes, berms, surface flow directional controls, vegetation, mulch binders, sediment barriers, fiber rolls, erosion blankets, turf mats and stone bag filters.	Prevent runoff, sedimentation, and erosion.	Construction
Stormwater Pollution Prevention Plan and Stormwater Controls	Adhere to NAS Fallon's requirements related to stormwater pollution prevention and stormwater controls. Construction under the Proposed Action would disturb more than 1 acre and coverage would be obtained under the NDEP Construction Stormwater General Permit. This would include preparation and implementation of a project-specific SWPPP along with associated BMPs to minimize erosion resulting from construction activities (and post-construction stormwater/erosion management) and prevent transport of sediment downstream.	Spill, stormwater pollution, erosion prevention, and protection of downstream waters.	Construction

Conservation Measure	*Description*	*Impacts Reduced/Avoided*	*Applicability*
Grading and Stormwater Drainage	The PPV housing development would construct a surface storm drainage system incorporating BMPs that would manage off-site stormwater discharges. The drainage system would be properly coordinated with surrounding properties and Reclamation to ensure that runoff does not exceed historical levels and does not cause damage to downstream properties or irrigation facilities. Ponding on-site would be prohibited, except in designated retention basins. The site would be graded so that no drainage flows across a driveway or walk to reach a storm drain inlet, except at street intersections.	Stormwater management and protection of downstream waters and facilities.	Operations
Herbicide and Pesticide Use	Herbicides or pesticides used to control vegetation would be applied in accordance with regulations as well as manufacturer's guidelines. This includes obtaining the approval of the Installation Pest Management Coordinator prior to use.	Prevent runoff from spill or use of herbicides and pesticides.	Operations
Rare Plant Surveys	Prior to construction, a qualified biologist would conduct rare plant surveys in the project area to determine the presence and locations of potential rare plants. If rare plants are found within the project area, appropriate avoidance and/or minimization measures would be developed with NAS Fallon and implemented prior to construction.	Protect rare plant species.	Prior to construction
MBTA compliance	All project activities would comply with the MBTA and its general requirements related to nest impact avoidance guidelines.	Protect breeding/migratory birds.	Construction and Operations
Ground-Nesting Bird Surveys	To avoid impacts to ground-nesting birds, a survey for active nests or nesting activity would be conducted before construction should such activities occur during the nesting season (typically March 15 to August 31). If the survey finds active nests, then construction personnel would either avoid the nests until fledglings have left, or permitted personnel would relocate eggs and chicks following all federal and state regulations and permitting requirements.	Protect breeding/migratory birds.	Construction
Bird Nesting Season Avoidance	To the extent feasible, construction activities in or near suitable or occupied bird nesting habitat during the breeding season would be avoided (March 15 to August 31).	Protect breeding/migratory birds.	Construction

Conservation Measure	*Description*	*Impacts Reduced/Avoided*	*Applicability*
Nesting Bird Surveys	If construction activities occur during the nesting season for migratory birds, a qualified biologist would conduct preconstruction nesting bird surveys within 14 days before construction activities within a given work area. The initial survey would be conducted at least 14 days before construction to allow sufficient time to develop an avoidance strategy if nests are identified. A final survey would be conducted within 24 hours of ground-disturbing activities.	Protect breeding/ migratory birds.	Construction
Active Nesting Bird Avoidance	If an active nest is identified near a given work area and work cannot be conducted outside the nesting season (March 15 to August 31), a no-activity zone would be established around the nest by a qualified biologist in coordination with the USFWS. Fencing and/or flagging would be used to delineate the no-activity zone. The no-activity zone would be large enough to avoid nest abandonment and would be between 50 and 1,000 feet from the nest, or as otherwise recommended by the USFWS.	Protect breeding/ migratory birds.	Construction
Biological Monitoring	During construction, a qualified biologist would be on-site daily to monitor and record activities as they pertain to biological resources. Results would be reported on a monthly basis, unless a species of concern is found or suspected to be found, and then the species would be reported immediately. The results of the monitoring would be reported to the NAS Fallon natural resources program staff.	Protect biological resources.	Construction
Federally Listed Species	If federally listed species are observed in the project area prior to or during construction activities and/or during operations, NAS Fallon would be immediately notified. The Navy would assess whether ongoing operations might affect any such species and engage in consultation with the USFWS to discuss current and future management strategies, as appropriate.	Protection of federally listed species.	Construction and Operations

Conservation Measure	*Description*	*Impacts Reduced/Avoided*	*Applicability*
INRMP Plant List	Plant selection for the housing development should be in accordance with the newly revised landscaping plant list in the INRMP, and if alternative species are proposed, they should be coordinated with the NAS Fallon natural resources program staff for concurrence. The plantings should be native to the area and materials would be chosen based on plant compatibility, drought tolerance or resistance, climate, soils condition, low maintenance, and aesthetic suitability. The intent of the INRMP plant list is to reduce Bird/Wildlife Aircraft Strike Hazard (fruit trees and tall trees attract birds/raptors) and identify plants that can survive in poor soils.	Reduce Bird/Wildlife Aircraft Strike Hazard risk and increase plant survivability.	Operations
Visual Impacts to Canal	During the design of the new MFH units, design and location of new housing will be focused on the southern end of the development footprint to the maximum extent feasible. Southern placement will both serve to maximize reuse of previously disturbed areas and provide further distance from historic properties.	Minimize potential impacts on the canal.	Design and Operations
Inadvertent Discovery and Monitoring Plan	The Navy will ensure that any ground-disturbing activity in previously undisturbed soils will be monitored by a forensic anthropologist or archaeologist with training in human osteology and proficient in the identification and analysis of human remains. Monitoring processes and procedures will be described in a project-specific Inadvertent Discovery and Monitoring Plan, which will include provisions for the monitor's ability to halt construction in the event of the inadvertent discovery of cultural material or human remains, at which point the NAS Fallon Cultural Resource Manager will be immediately contacted, along with appropriate authorities, before construction can continue.	Minimize potential impacts in the event that previously unrecorded archaeological resources or human remains are encountered.	Construction and Operations
Traffic Management – Scheduling	Given the traffic demand in the area during the morning peak period entering the NAS Fallon main gate, construction worker shifts could need to be scheduled before or after the morning traffic demand to the extent possible.	Minimize traffic delays during construction.	Construction
Traffic Management – Main Gate	NAS Fallon could consider adding staff during peak hours or lanes to the gate configuration, depending on funding.	Minimize traffic delays during operations.	Operations

Legend: AICUZ =Air Installations Compatible Use Zone; BMP = Best Management Practice; INRMP = Integrated Natural Resources Management Plan; MBTA = Migratory Bird Treaty Act; MFH = Military Family Housing; NAS = Naval Air Station; NDEP = Nevada Division of Environmental Protection; PPV = Public Private Venture; Reclamation = Bureau of Reclamation; SWPPP = Stormwater Pollution Plan; USFWS = United States Fish and Wildlife Service.

This page intentionally left blank.

3 Affected Environment and Environmental Consequences

This chapter presents a description of the affected environment and an evaluation of the potential direct and indirect effects of the proposed action and alternatives on specific environmental resources (cumulative effects are presented in Chapter 4).

Environmental resources carried forward for detailed analysis in this chapter include air quality, noise, biological resources, cultural resources, land use, infrastructure, hazardous materials and wastes, transportation, public health and safety, and socioeconomics. As described below, potential impacts to the following additional resource areas would be negligible or nonexistent and these resources are not evaluated further in this EA.

Water Resources: Implementation of the Proposed Action would not adversely affect water resources (groundwater, surface water, wetlands, and floodplains). Although groundwater depths in the project area range from 5 to 10 feet below the land surface, most construction activities are not expected to reach depths that would encounter groundwater. However, groundwater may be encountered during trenching for the installation of the wastewater collection system and would be managed in compliance with the NDEP Construction Stormwater General Permit (NVR100000).

The Proposed Action would result in minor impacts from stormwater, but stormwater runoff during and after construction would be managed as discussed in Section 3.6, *Infrastructure*. The Proposed Action would disturb more than 1 acre and coverage would be obtained under the NDEP Bureau of Water Pollution Control Construction Stormwater General Permit (refer to Table 2-2 and Section 3.6, *Infrastructure*) and a project-specific Stormwater Pollution Prevention Plan (SWPPP) would be prepared and implemented along with associated Best Management Practices (BMPs) to minimize erosion resulting from construction activities (and post-construction stormwater/erosion management) and prevent transport of sediment downstream.

The Navy would coordinate with Reclamation to amend the 2018 license (Reclamation, 2018) to utilize Newlands Project drainage facilities for discharge and conveyance of stormwater from the proposed new housing area. Direct impacts to drainage ditches and lateral canals (e.g., new access crossings) would be avoided to the extent practicable. The new force main sewer pipeline would cross the Reclamation lateral canal (L8-2 in Figure 2-1) to the east of Pasture Road at Cottonwood/Churchill Avenue crossing, but impacts would be minimized by following Reclamation engineering and operations and maintenance guidelines for crossings (Reclamation, 2008).

Wetlands within the project area are small, isolated playas and/or saline flats and are discussed in detail in Section 3.3, *Biological Resources*. The project area is not located in a Special Flood Hazard Area subject to a 100-year flood (Federal Emergency Management Agency, 2008). Therefore, water resources were not carried forward for detailed analysis in this EA.

Geological Resources: Implementation of the Proposed Action would not adversely affect geological resources (topography, geology, and soils). No unique topographic or geology features exist in the project area. New facilities would be built to seismic design requirements based upon the 2018 Uniform Building Code. A subsurface and soil investigation report would be prepared and design recommendations pertaining to the following items would be followed: earthwork construction; surface and subsurface drainage; erosion and siltation prevention during and after construction; surface and subsurface design; foundation design and stability; and settlement and heave. Soil erosion and

stormwater runoff during and after construction would be managed as identified in Table 2-2 and discussed under *Water Resources* (above) and in Section 3.6, *Infrastructure*. Exposed slopes and disturbed areas would be revegetated and/or engineered to minimize the potential for soil erosion. Therefore, geological resources were not carried forward for detailed analysis in this EA.

Visual: Visual resources include the natural and built features of the landscape visible from public views that contribute to the visual quality of an area. Visual perception is an important component of environmental quality that could be changed by implementing the Proposed Action. Visual impacts occur as a result of the relationship between people and the physical environment. Because the Proposed Action would be located on Navy property designated for military use, consistent with the existing visual character of the area and not located near any off-station residential areas, visual impacts would be minor. Equipment used during proposed construction could create a short-term visual effect; however, construction would be on Navy property. Following completion of construction, these effects would be negligible. Therefore, visual resources were not carried forward for detailed analysis in this EA. Visual effects on the historic properties in the Area of Potential Effects (APE) are discussed in Section 3.4, *Cultural Resources*.

Environmental Justice: Executive Order (EO) 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All* (April 21, 2023), defines environmental justice as the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision making and other federal activities that affect human health and the environment.

Consistent with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), the Navy's policy is to identify and address any disproportionately high and adverse human health or environmental effects of its actions on minority and low-income populations. EO 14096 supplements EO 12898 to address environmental justice. EO 14096 establishes a policy to pursue a whole-of-government approach to environmental justice.

Implementation of the Proposed Action would be entirely within Churchill County. Within Churchill County, the U.S. Census further divides populations by census tracts and block groups. The block group has the smallest unit of population generally used to determine minority and low-income populations. There are two block groups that are immediately adjacent to the project area (i.e., NAS Fallon). The presence of minority and low-income populations was determined for each block group if the percentage of individuals residing within the selected block groups was equal to or greater than the percentage of individuals residing within the reference community (Churchill County). The low-income analysis used the U.S. Census Bureau data showing the poverty status of individuals in the past 12 months. The U.S. Census Bureau uses income thresholds that vary by family size and composition to determine who is in poverty. Census Tract 9501, Block Group 1, is considered a minority block group with 89 percent of the population identified as minority compared to 85 percent for Churchill County. Census Tract 9501, Block Group 2, is not considered a minority block group with a population of 83 percent minority. Both block groups adjacent to the project area do not meet the poverty standards of the U.S. Census Bureau for low-income communities.

The location of the Proposed Action would be within an area designated for military use and would not be located near any off-station residential areas. Other than the potential for minimal and temporary construction noise impacts, no impacts would occur with implementation. Implementation of the Proposed Action would not cause disproportionately high and adverse human health or environmental

effects on any minority or low-income populations. Therefore, environmental justice is not carried forward for detailed analysis in this EA.

3.1 Air Quality

This discussion of air quality includes criteria pollutants, hazardous air pollutants (HAPs), standards, sources, permitting, and greenhouse gases (GHGs). Air quality in a given location is defined by the concentration of various pollutants in the atmosphere. A region's air quality is influenced by many factors, including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

Most air pollutants originate from human-made sources, including mobile sources (e.g., cars, trucks, buses) and stationary sources (e.g., factories, refineries, power plants), as well as indoor sources (e.g., some building materials and cleaning solvents). Air pollutants are also released from natural sources such as volcanic eruptions and wildfires.

3.1.6 Regulatory Setting

3.1.6.4 Criteria Pollutants and National Ambient Air Quality Standards

The Clean Air Act (CAA) is the primary federal statute governing the control of air quality. The CAA designates six pollutants as "criteria pollutants" for which the USEPA has established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. The criteria pollutants are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone, suspended particulate matter less than or equal to 10 microns in diameter (PM_{10}), fine particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$), and lead. CO, SO_2, NO_2, lead, and some particulates are emitted directly into the atmosphere from emissions sources. Ozone and some NO_2 and particulates are formed through atmospheric chemical reactions from other pollutant emissions (called precursors) that are influenced by weather, ultraviolet light, and other atmospheric processes. For example, ozone is formed in the atmosphere by photochemical reactions of previously emitted nitrogen oxides (NO_x) and photochemically reactive volatile organic compounds (VOCs).

Areas that are in compliance with the NAAQS are designated as attainment areas. Areas that do not meet the NAAQS are designated nonattainment areas for that pollutant. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are required to adhere to maintenance plans to ensure continued attainment.

The CAA requires states to develop a general plan to attain and maintain the NAAQS in all areas of the country and a specific plan for each nonattainment or maintenance pollutant (including the pollutant's precursors) to achieve (attainment) or maintain (maintenance) compliance with the appropriate NAAQS for that pollutant. These plans, known as State Implementation Plans (SIPs), are developed by state and local air quality management agencies and submitted to USEPA for approval. The NDEP is responsible for enforcing air pollution regulations in Nevada. The NDEP enforces the NAAQS and state ambient air quality standards by monitoring air quality, developing rules to regulate and to permit stationary sources of air emissions, and contributing to air quality attainment planning processes statewide.

3.1.6.5 **Hazardous Air Pollutants**

In addition to the NAAQS for criteria pollutants, there are national standards for HAPs, which are regulated under Section 112(b) of the CAA. HAPs (such as benzene and formaldehyde) are compounds known or suspected to cause cancer or other serious health and environmental effects. Unlike criteria pollutants, there are no NAAQS for HAPs. The *National Emission Standards for Hazardous Air Pollutants* regulate HAP emissions from stationary sources (40 CFR part 61). USEPA also promulgated a Mobile Source Air Toxics Rule to regulate HAPs from mobile sources. USEPA and NDEP control HAPs by regulating constituents of concern in fuels, promulgating cleaner engine emission standards, and limiting excessive engine operations.

3.1.6.6 **General Conformity**

The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emissions thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year [tpy]) vary by pollutant and also depend on the severity of the nonattainment status for the air quality management area in question. Since Churchill County attains all NAAQS, the General Conformity Rule does not apply to the Proposed Action and is not considered further for the purposes of this EA.

3.1.6.7 **Air Permitting**

The CAA established the New Source Review (NSR) and Title V permitting programs for stationary air pollution sources. A permit is required when a stationary source has the potential to emit any pollutant regulated under the CAA in amounts equal to or exceeding specified thresholds. The NSR program is a preconstruction permitting program and includes major and minor source permitting. Major NSR includes the Prevention of Significant Deterioration (PSD) permitting program for construction of major stationary sources located in NAAQS attainment areas. Minor NSR (generally for sources less than 100 tpy of a pollutant) applies to sources that do not necessitate major source permitting. The NSR process ensures that proposed emissions would conform to the SIP. Additional permitting requirements may apply to increases in stationary source GHG emissions for sources that already trigger NSR for criteria pollutant emissions. The Title V program is an operating permit program applicable to all major air pollution sources and a limited number of minor sources. The Title V permitting program ensures that all air quality requirements applicable to an air pollution source are included under a single operating permit.

3.1.6.8 **Fugitive Dust**

Nevada Administrative Code 445B.22037 requires a permit when the area of a surface disturbance exceeds 5 acres.

3.1.6.9 **Greenhouse Gases**

GHGs are air pollutants that trap heat in the atmosphere. These emissions occur from natural processes and human activities. The natural balance of GHGs in the atmosphere regulates the earth's temperature. Scientific evidence indicates a correlation between the worldwide proliferation of GHG emissions from human activities and increasing global temperatures over the past century. Climate change associated with this global warming is predicted to produce negative environmental, economic, and social

consequences across the globe (U.S. Global Change Research Program, 2018; Intergovernmental Panel on Climate Change, 2021).

Examples of GHGs from human activities include carbon dioxide (CO_2), methane, nitrous oxide, and fluorinated gases. Each GHG has a global warming potential, which is its ability to trap heat in the atmosphere. To account for global warming potential, GHG emissions are reported as a carbon dioxide equivalent (CO_2e).

Observed changes due to global warming include rising temperatures, shrinking glaciers and sea ice, thawing permafrost, sea level rise, a lengthened growing season, increases in droughts and severe weather, and shifts in plant and animal ranges. A recent assessment of climate change impacts in Nevada estimates that (1) temperatures will increase from 4 to 6 degrees Fahrenheit (°F) throughout Nevada in the near term (the next few decades), (2) droughts will increase in frequency and severity, (3) there will be a shift from snow to rain during the winter and earlier snow melts in the winter and spring, (4) flooding will increase, and (5) wildfires will increase (McAfee et al., 2021). Long-term (the last few decades of the 21st century) changes will depend on the level of GHGs emitted from this point forward.

Federal agencies address emissions of GHGs by reporting and meeting reductions mandated in federal laws, EOs, and agency policies. The Navy takes proactive measures to reduce GHG emissions by decreasing the use of fossil fuels and increasing the use of alternative energy sources in accordance with the goals set by EOs, the Energy Policy Acts of 2005 and 2020, and Navy and DoD policies. The Navy Climate Action 2030 (Department of the Navy, 2022) details the Navy's goals to meet the requirements of EO 14008, *Tackling the Climate Crisis at Home and Abroad* and EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*. These goals include the following:

- 65 percent reductions in scope 1 (from owned sources, such as fuel combustion and vehicles) and scope 2 (purchased power from off-site sources) GHG emissions by 2030
- acquiring 100 percent zero-emission, light-duty vehicles by 2027
- achieving a 50 percent reduction in GHG emissions from buildings by 2032
- diverting at least 50 percent of nonhazardous solid waste from landfills by 2025
- instituting nature-based resilience to reduce GHG emissions
- establishing energy resilience to ensure mission accomplishment

In addition, the DoD conducts research on potential impacts from climate change and develops measures for installations to adapt to these threats (DoD Strategic Environmental Research and Development Program, 2023). The State of Nevada also is in the process of developing the California Nevada Adaptation Program, which will identify strategies for adapting to future climatic effects (Desert Research Institute, 2023).

On January 9, 2023, the CEQ released interim guidance that describes how federal agencies should consider the effects of GHGs and climate change in their NEPA reviews (CEQ, 2023). The interim guidance explains that agencies should (1) consider the potential effects of project alternatives on climate change, as indicated by estimated GHG emissions; (2) determine the social cost of project GHGs; (3) determine project consistency with GHG plans and goals; (4) consider mitigations that will reduce

project GHGs; (5) consider impacts to environmental justice communities; and (6) consider adaptation measures that would make the actions and affected communities more resilient to the effects of climate change. This EA air quality analysis considers aspects of the CEQ 2023 interim guidance.

3.1.7 Affected Environment

The affected environment for the air quality analysis at NAS Fallon is Churchill County. Churchill County currently attains all NAAQS (USEPA, 2024).

For air quality planning purposes, Nevada has three jurisdictional entities: (1) Washoe County and (2) Clark County, which both administer air quality programs within each of their perspective jurisdictions, and (3) the remaining 15 rural counties, which are administered by the NDEP.

NAS Fallon operates under a Class II Air Quality Operating Permit that includes air quality requirements for air handling units, fuel storage tanks, an abrasive media blast booth, fuel burning equipment, and internal combustion engines (e.g., diesel emergency power generators). Class II permits typically are for facilities that emit less than 100 tpy of a regulated pollutant, 10 tpy of any one HAP, and 25 tpy of total HAPs.

3.1.8 Environmental Consequences

This section presents estimates of air quality impacts that would occur from implementation of the Proposed Action. Effects on air quality are based on estimated emissions. The analysis considered impacts related to criteria pollutant emissions, HAP emissions, and GHG emissions. Appendix D presents details of the analysis inputs and calculation methods.

3.1.8.10 Criteria Pollutants

The analysis evaluated potential air quality impacts with respect to relevant environmental information, including laws, regulations, guidelines, and scientific documentation. In the case of criteria pollutants for which the study area is in attainment with the NAAQS, the NEPA air quality analysis used the Title V major source emissions threshold of 100 tpy of a criteria pollutant as an indicator of projected air quality impacts. This criterion was used because it applies to the Title V permitting process for areas that attain the NAAQS, such as Churchill County. This threshold represents a level of concern, as this amount of emissions often triggers the need to conduct dispersion modeling to demonstrate that a project would not contribute to an exceedance of the NAAQS. If the intensity of a net emissions increase is below a level of concern, the indication is that the air quality impact for that pollutant would not be significant. However, consideration also was given to the potential for such emissions to result in localized impacts that could contribute to an exceedance of an ambient air quality standard. If proposed emissions would exceed the threshold of concern, further analysis was conducted to determine whether impacts would be significant. In such cases, if proposed emissions would not contribute to an exceedance of an ambient air quality standard, then impacts would not be significant.

3.1.8.11 Hazardous Air Pollutants

Regarding HAP emissions, the analysis used the CAA Section 112 major source threshold definition of 10 tpy for a single HAP or 25 tpy for any combination of HAPs as a level of concern for projected human health impacts. These criteria were used because they are regulatory trigger levels that require the maximum degree of reduction in emissions of HAPs from major sources. If proposed construction or operations generate HAP emissions that remain below these thresholds, the indication is that project

health impacts to the public would be less than significant. Consistent with the evaluation of criteria pollutants, the analysis also considered whether project HAP emissions would exceed an ambient health standard at public receptors. If proposed HAP emissions would exceed one of the above thresholds, further analysis was conducted to determine whether impacts would be significant. In such cases, if proposed emissions would not exceed a public health standard, then impacts would not be significant.

3.1.8.12 Greenhouse Gases

The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as worldwide sources of GHGs contribute to climate change. These global impacts would be manifested as impacts on resources and ecosystems in Nevada, as discussed above in Section 3.1.1.6, *Greenhouse Gases*. This EA presents estimates of GHGs that would occur from the Proposed Action and uses these estimates as indicators of their potential effects on climate change, as presented in the Cumulative Effects section (Section 4.3.1).

3.1.8.13 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to existing air quality. Therefore, the No Action Alternative would not result in significant impacts to air quality.

3.1.8.14 Alternative 1

Implementation of the Proposed Action would result in air quality impacts from construction and operational activities. Air quality impacts from the proposed construction activities would occur from (1) combustive emissions due to the use of fossil-fuel-powered equipment and (2) fugitive dust (PM_{10}/$PM_{2.5}$) due to the operation of equipment on exposed soil. Air quality impacts from proposed operations would occur from combustive emissions due to the use of commuter vehicles, natural-gas-fired space and water heaters within residential and auxiliary buildings, and a diesel-powered emergency generator within the pump station.

The analysis estimated emissions that would result from proposed construction and operation activities with the use of the Department of the Air Force Air Conformity Applicability Model (Version 5.0.18a) (Solutio Environmental, 2022) (Appendix D). The Air Conformity Applicability Model uses widely accepted air emission calculation methods combined with default data that can be used if site-specific information is not available. Metrics used to estimate construction emissions were based on the expected area of project disturbance (55 to 70 acres) and the level of development on the project area. The analysis assumed that active construction would take 3 years and would occur from years 2026 through 2028, and full operations would occur by the end of 2028.

Construction

Table 3.1-1 presents estimates of annual air emissions that would occur from construction of the Proposed Action. The largest contributors to pollutant emissions would include (1) construction equipment for CO, NO_x, SO_2, and CO_2e; (2) fugitive dust for PM_{10} and $PM_{2.5}$; and (3) architectural coatings for VOCs. The data in Table 3.1-1 show that annual project emissions would be well below the thresholds of concern for all pollutants. Therefore, the Proposed Action would not pose significant impacts to criteria pollutant levels.

Table 3.1-1 Annual Emissions – NAS Fallon PPV Housing Project (tons/year)

Year (Activity)	*VOCs*	*CO*	*NO_x*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*	*CO_2e (mt)*
2026 (Construction)	0.42	2.76	2.22	0.01	15.52	0.09	648
2027 (Construction)	3.42	1.45	0.92	<0.005	0.05	0.04	270
2028 (Construction)	2.41	2.80	2.00	0.01	0.27	0.10	1,005
2029 (Operations)	0.08	0.62	1.34	0.01	0.11	0.11	1,525
Threshold of Concern	**100**	**100**	**100**	**100**	**100**	**100**	**NA**
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**NA**

Legend: < = less than; CO = carbon monoxide; CO_2e (mt) = carbon dioxide equivalent metric tons; NA = not applicable; NAS = Naval Air Station; NO_x = nitrogen oxides; PM_{10} and $PM_{2.5}$ = particulate matter with a diameter of less than or equal to 10 microns and 2.5 microns, respectively; PPV = Public Private Venture; SO_2 = sulfur dioxide; VOC = volatile organic compound.

Proposed construction activities would implement conservation measures (see Table 2-2) to minimize fugitive dust emissions. As a result, the estimate of fugitive dust emissions presented in Table 3.1-1 includes a reduction of 61 percent from uncontrolled levels (Countess Environmental, 2006). The overwhelming majority of fugitive dust would occur during site grading in the first year of construction (2026).

Construction activities would emit HAPs in the form of (1) VOCs due to the use of architectural coatings, (2) particulate matter from welding, and (3) diesel particulate matter from the operation of diesel-powered equipment. VOCs from coatings and particulate matter from welding typically contain HAPs up to several percent of their total weight. Assuming 25 percent of the VOC and PM_{10} emissions presented in Table 3.1-1 comprise HAPs (a very conservative assumption and excluding 12.3 tons of fugitive dust in year 2026), annual HAP emissions would be substantially lower than the thresholds of concern of 10 tpy for an individual HAP or 25 tpy of combined HAPs. Therefore, project emissions of HAPs would not result in significant health impacts.

Operations

Table 3.1-1 presents estimates of annual air emissions associated with the Proposed Action due to the operation of natural-gas-fired space and water heaters within project residential and auxiliary buildings and a diesel-powered emergency generator within the pump station. These data show that annual emissions from these sources would be well below the thresholds of concern for all pollutants. The traffic study for this EA estimates that the full buildout of the project would generate 1,622 daily vehicle trips, which is essentially the same number of vehicle trips that currently occur from NAS Fallon staff that reside within the project region. Active-duty military members would have a shorter commute to the station, but family members could have a longer commute to work, school, or shopping and dining. As a result, vehicle miles travelled and associated emissions could increase slightly. Any additional emissions from these vehicle trips, plus the emissions increases from the operation of natural gas-fired space and water heaters within project residents and auxiliary buildings would result in total emissions that remain substantially below the thresholds of concern for all pollutants. Therefore, operation of the Proposed Action would result in less than significant impacts to criteria pollutant levels.

3.2 Noise

This discussion focuses on potential noise effects on the human environment. Noise in relation to biological resources is discussed in Section 3.3, *Biological Resources*. Basic information on noise and methods used in the analysis for modeling noise effects is provided in Appendix E.

3.2.1 Regulatory Setting

The Noise Control Act of 1972 (42 USC section 4901 et seq.) directs federal agencies to comply with applicable federal, state, and local noise requirements with respect to the control and abatement of environmental noise unless the activity is specifically exempted. Under the Noise Control Act of 1972, the Occupational Safety and Health Administration established workplace standards for noise. The minimum requirement states that noise exposure must not exceed a time-weighted average of 90 A-weighted decibels (dBA) over an 8-hour period. The highest allowable noise level to which workers can be constantly exposed is 115 dBA, and exposure to this level must not exceed 15 minutes within an 8-hour period. If noise levels exceed these standards, employers are required to provide hearing protection equipment that will reduce noise levels to acceptable limits.

The joint instruction, Chief of Naval Operations Instruction 11010.36D and Marine Corps Order 11010.16A, *Air Installations Compatible Use Zones* [AICUZ] *Program*, provides guidance administering the AICUZ program, which recommends land uses that are compatible with aircraft noise levels. Residential areas are not considered compatible without measures to achieve outdoor-to-indoor noise level reduction of at least 25 dBA in 65–70 dBA day-night average sound level (DNL) and 30 dBA in 70–75 dBA DNL. NAVFAC Publication P-970, *Planning in the Noise Environment* (1978), provides a discussion of allowable noise levels, guidance for selecting a site for new facilities within the noise environments on military installations, and a discussion of noise reduction techniques that may be applied to render marginally acceptable locations suitable for use.

Churchill County has adopted the NAS Fallon 2002 AICUZ noise contours as a planning overlay. Churchill County Code Chapter 14.18 requires that prospective buyers or lessors of real estate within the NAS Fallon zone overlay be informed in writing that the property is exposed to “significant noise levels.” Similar notification is required prior to granting of permits for construction within the 70 dBA DNL AICUZ noise contour. Churchill County Code Chapter 14.18 also disallows construction of residences within the 70 dBA DNL noise contour, “as delineated on the map accepted by the Churchill County commissioners based upon the latest AICUZ study as prepared by the Navy and provided for the NAS Fallon zone overlay, without first providing proof to the Churchill County building department of compliance with the “WYLE Research Report WR 89-7” for sound insulation standards, on file with the Churchill County building department.” Neither the State of Nevada nor Churchill County have established specific limitations on construction noise levels.

3.2.2 Affected Environment

The project area is located near the intersection of two runways that support high-performance military aircraft operations and is frequently exposed to elevated aircraft noise (Office of Economic Adjustment, 2015). The NAS Fallon AICUZ noise contours include portions of the project area that are closer to the runways with noise levels of 70–74 dBA DNL, while areas farther from the runways are 65–69 dBA DNL (NAS Fallon, 2002). As noted previously, the AICUZ contours have been adopted by Churchill County and are referenced in the county’s Zoning and Land Use Code. An EA completed in 2013 includes updated noise contours that also reflect noise levels in the project area being between 65 and 75 dBA DNL (NAS Fallon, 2013). No measured noise levels are available for the project area, but noise levels during time periods when aircraft operations are not under way can be surmised based on measurements taken in similar areas. Time-averaged noise levels in suburban residential areas (i.e., areas similar to the NAS Fallon Housing Area) are typically approximately 55 dBA (USEPA, 1974). The closest non-Navy noise-sensitive locations to the project area is a residence located approximately 3,800 feet west of the

project area. Note that the project area is on Navy property and contains existing noise-sensitive locations (i.e., Navy MFH, the Navy Gateway Inns and Suites, and the NAS Fallon Child Development Center).

3.2.3 Environmental Consequences

This section provides an assessment of the noise impacts that could result from the implementation of the Proposed Action. Effects on noise levels are evaluated based on projected noise sources and their intensities. The analysis addresses impacts associated with operational noise, construction noise, and traffic noise.

3.2.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to current noise levels. Therefore, no impacts to the noise environment would occur with implementation of the No Action Alternative.

3.2.3.2 Alternative 1

The study area for noise is the project area and areas immediately adjacent to it. This section describes noise impacts associated with proposed construction activities and day-to-day activities in the MFH area once the construction is complete.

Construction

Construction activities would be conducted during normal working hours (i.e., 7:00 a.m. to 5:00 p.m. on Monday through Friday). Construction could last up to 3 years and occur within the project area. Construction phasing and the precise locations of residences, roads, new utilities, and other structures to be built under the Proposed Action are not yet known and will be proposed by the construction contractor. To generate a conservative estimation of impacts, noise levels at sensitive locations were estimated for a day in which equipment is operating at the closest point in the project area to the sensitive locations. Noise levels generated by several equipment types commonly used during construction are listed in Table 3.2-1 at a reference distance of 50 feet, 100 feet, 300 feet, and 3,800 feet from construction activities. The Navy Gateway Inns and Suites (temporary duty lodging) and the Child Development Center are 100 feet and 300 feet, respectively, from the closest part of the construction envelope, while the closest non-Navy residence is at a distance of 3,800 feet. Locations farther from active construction activities would experience lower construction noise levels. Over the course of the construction project, the locations of heavy equipment operations would shift as tasks are completed. For example, construction of the sanitary sewer pump station and force main sewer pipeline are the only construction activities that would occur at 100 feet from the Navy Gateway Inns and Suites. Once these activities are completed, construction equipment operations would no longer be conducted in the immediate area of this sensitive location. Other segments of the sewer line traverse undeveloped areas, which are not near noise-sensitive locations. Through most of the project duration, equipment operations would occur at greater distances from the sensitive locations, and noise levels would be lower than the levels stated in Table 3.2-1.

Table 3.2-1 Construction Equipment Noise Levels

Equipment Type	*Maximum Noise Level (L_{max}) in dBA at Specified Distance*			
	Reference Distance (50 feet)	*Navy Gateway Inns and Suites (100 feet)*	*Child Development Center (300 feet)*	*Closest Non-Navy Residence (3,800 feet)*
Dozer	82	76	66	44
Backhoe	78	72	62	40
Concrete Mixer Truck	79	73	63	41
Paver	77	71	61	39
Generator	73	67	57	35
Front End Loader	79	73	63	41
Air Compressor	78	72	62	40
Dump Truck	76	70	60	38

Legend: dBA = A-weighted decibel; L_{max} = maximum sound level.
Source: Federal Highway Administration, 2006.

As shown in Table 3.2-1, construction noise levels would be comparable to or less than baseline aircraft noise levels but may be more persistent during active construction. Construction noise would be noticeable at these locations during time periods when no aircraft operations are underway. People at nearby noise-sensitive locations, such as the Child Development Center, would be expected to notice the construction noise at times. However, the likelihood that they would become highly annoyed by the construction noise is minimal in the context of the current acoustic environment and given the short-term nature of the noise. Construction noise impacts would be limited to annoyance and activity interference (e.g., speech interference) for people who are near the construction sites during working hours. Sleep disturbance is not anticipated to be of concern to most people because construction activities would occur during normal working hours. Average noise levels at noise-sensitive locations would remain below workplace hearing protection criteria.

People residing and working along haul routes may also notice temporary increases in traffic noise levels while certain phases of construction are in progress (e.g., removal of construction debris). As noted in Table 3.2-1, dump trucks generate approximately 76 dBA maximum noise level at a distance of 50 feet. Haul routes would be main roads, which are currently used by a wide variety of vehicles including heavy trucks.

Impacts associated with construction noise would be limited to annoyance and activity interference and would be temporary, lasting only for the duration of the project. Based on the nature of these impacts, no significant noise impacts would occur as a result of construction activities under Alternative 1.

Operations

Common noise sources associated with the day-to-day operation of the proposed MFH would include vehicles and heating ventilation and air conditioning equipment. In the context of baseline noise levels, which include frequent military aircraft overflights, these residential noise sources would not be noticeable at noise-sensitive locations near the proposed housing. The proposed PPV housing would be designed to comply with acoustic insulation recommendations in Chief of Naval Operations Instruction 11010.36D and Marine Corps Order 11010.16A (AICUZ Program) and local land use regulations in the Churchill County Code.

Pumps installed in the housing area pump station would be enclosed within a structure, which would reduce sound levels heard outside of the pump station. Common pumps generate approximately 49 dBA at a reference distance of 50 feet (BBA Pumps, 2024). After accounting for 25 dBA sound level reduction provided a typical structure, the pumps installed in the pump station would not be expected to be audible at this distance in typical acoustic conditions.

As stated in Table 3.2-1, typical generators create 67 dBA at a distance of 100 feet, which is the approximate distance between the pump station and the Navy Gateway Inns and Suites. Noise generated by the pump station backup generator, which would be located outside of the pump station, could result in activity interference (e.g., requiring voices to be raised to allow conversation) for people that are outdoors and nearby. Noise levels indoors would be approximately 25 dBA lower, and neither sleep disturbance nor speech interference would be expected for people inside the Navy Gateway Inns and Suites during generator operation. Because the pump station backup generator would operate only on an infrequent basis, any potential annoyance would be limited.

In summary, noise levels generated by the proposed activities would not result in significant noise impacts at nearby noise-sensitive locations, and the newly constructed facilities would follow Navy policy and be in substantive compliance with local regulations regarding noise insulation. Therefore, noise impacts associated with the implementation of Alternative 1 would not be significant.

3.3 Biological Resources

Biological resources include plant and animal species and the habitats within which they occur. Plant associations are referred to generally as vegetation, and animal species are referred to generally as wildlife. Habitat can be defined as the resources and conditions present in an area that support a plant or animal.

Within this EA, biological resources are divided into two categories: (1) vegetation and (2) wildlife. Threatened, endangered, and other special status species are discussed in their respective categories. Table 3.3-1 lists all special status species that are potentially present (U.S. Fish and Wildlife Service [USFWS], 2024a).

3.3.1 Regulatory Setting

Special-status species, for the purposes of this EA, are those species listed as threatened or endangered under the Endangered Species Act (ESA), and species afforded protection under federal laws and regulations such as the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act. In addition, consideration is given to at-risk species and other species protected by the state of Nevada.

3.3.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under biological resources at NAS Fallon.

Table 3.3-1 Potentially Occurring Special Status Wildlife Species

Common Name	*Scientific Name*	*Federal Status*	*State Status*	*Potential Habitat in Project Area*
Bats				
California Myotis	*Myotis californicus*	None	Watch List	Foraging
Western Small-Footed Myotis	*Myotis ciliolabrum*	None	Watch List	Foraging
Townsend's big-eared bat	*Corynorhinus townsendii*	None	At-Risk	Foraging
Long-Eared Myotis	*Myotis evotis*	None	Watch List	Foraging
Little Brown Bat	*Myotis lucifugus*	None	Watch List	Foraging
Long-legged Myotis	*Myotis Volans*	None	Watch List	Foraging
Yuma Myotis	*Myotis yumanensis*	None	Watch List	Foraging
Western Red Bat	*Lasiurus blossevillii*	None	At-Risk	Foraging
Hoary Bat	*Lasiurus cinereus*	None	Watch List	Foraging
Silver-Haired Bat	*Lasionycteris noctivagans*	None	Watch List	Foraging
Western Pipistrelle	*Parastrellus hesperus*	None	Watch List	Foraging
Big Brown Bat	*Eptesicus fuscus*	None	Watch List	Foraging
Pallid Bat	*Antrozous pallidus*	None	Watch List	Foraging
Brazilian Free-Tailed Bat	*Tadarida brasiliensis*	None	Watch List	Foraging
Other Mammals				
Mule Deer	*Odocoileus hemionus*	None	Protected Big Game Mammal	Foraging
Desert kangaroo rat	*Dipodomys deserti*	None	Watch List	Foraging/burrowing
Invertebrates				
Monarch butterfly	*Danaus plexippus*	Candidate	At-Risk	Foraging
Birds				
Bushtit	*Psaltriparus minimus*	MBTA	None	Nesting/foraging
Bald eagle	*Haliaeetus leucocephalus*	BCC, BGEPA, MBTA	At-Risk	Fly over/foraging
Ferruginous Hawk	*Buteo regalis*	BCC, MBTA	At-Risk	Fly over/foraging
Golden eagle	*Aquila chrysaetos*	BCC, BGEPA, MBTA	Watch List	Fly over/foraging
Horned lark	*Eremophila alpestris*	MBTA	None	Nesting/foraging
Loggerhead shrike	*Lanius ludovicianus*	BCC, MBTA	At-Risk	Foraging
Prairie falcon	*Falco mexicanus*	BCC, MBTA	Watch List	Fly over/foraging
Snowy egret	*Egretta thula*	MBTA	None	Fly over/foraging
Swainson's hawk	*Buteo swainsoni*	BCC, MBTA	Watch List	Nesting/foraging
Turkey vulture	*Cathartes aura*	MBTA	None	Fly over/foraging
Western Burrowing owl	*Athene cunicularia hypugaea*	BCC, MBTA	Watch List	Nesting/foraging
Western grebe	*Aechmophorus occidentalis*	MBTA	None	Nesting/foraging
White-faced ibis	*Plegadis chihi*	MBTA	Watch List	Fly over/foraging

Legend: BCC = Bird of Conservation Concern; BGEPA = Bald and Golden Eagle Protection Act; MBTA = Migratory Bird Treaty Act.

Sources: NAS Fallon, 2014a; Nevada Division of Natural Heritage, 2023, 2024; USFWS, 2024a,b.

3.3.2.1 Vegetation

Vegetation includes terrestrial plant communities and constituent plant species.

The project area is dominated by black greasewood vegetation on saline, loamy sand flats (Figures 3.3-1a and 3.3-1b). Although black greasewood is considered poor for grazing because of potential toxicity to animals and low protein levels, it provides important cover for wildlife, including resting and/or nesting sites for songbirds, especially during the winter (U.S. Department of Agriculture, 2007, 2015). Common plant associated in the black greasewood community include pickleweeds (*Salicornia* spp.), saltbushes (*Atriplex* spp.), seepweeds (*Suaeda* spp.), and several herbs and grasses that can tolerate saline soils. Milkweeds (*Asclepias* spp.) are required host plants for the monarch butterfly (*Danaus plexippus*) (an ESA candidate species) and are also known to exist adjacent to the project area.

Wetlands within the project area are small, isolated playas and/or saline flats within and amongst vegetated areas that are devoid of perennial plant species and hold water only immediately after rains (Figures 3.3-1a and 3.3-1b). None of these wetlands are considered jurisdictional waters of the U.S.

No federally listed threatened or endangered plant species are known to occur near NAS Fallon. During rare plant surveys conducted at NAS Fallon in 2014 and 2015, the following four species of plants, deemed sensitive by the Nevada Natural Heritage Program, were observed on NAS Fallon lands: sand cholla (*Grusonia pulchella*), Nevada oryctes (*Oryctes nevadensis*), Lahontan indigobush (*Psorothamnus kingii*), and Nevada suncup (*Camissonia nevadensis*) (NAS Fallon, 2015). There are no known occurrences of these species in the project area.

3.3.2.2 Wildlife

Animal species known to occur and/or utilize resources at NAS Fallon to date include: 112 invertebrates, 165 birds, 6 fish, 6 amphibians, 16 reptiles, and 37 mammals (NAS Fallon, 2014a). One species, the Dixie Valley toad (*Anaxyrus williamsi*) is the only known federally protected resident or regular seasonal visitor in the vicinity of NAS Fallon. Habitat potentially suitable for this species occurs within the Fallon Range Training Complex, but not in the vicinity of NAS Fallon, and Dixie Valley toads themselves are not known to occur within the project area. The federally endangered Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*), federally endangered Cui-ui (*Chasmistes cujus*) and the federally proposed threatened Western pond turtle (*Actinemys marmorata*) are found in Churchill County (USFWS, 2024b; Nevada Division of Natural Heritage, 2023). However, these species have not been observed on NAS Fallon, and are unlikely to occur within the vicinity due to lack of suitable habitat (NAS Fallon, 2014a). There is no critical habitat for any federally listed species on NAS Fallon.

Although not federally listed, the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) are both protected by the Bald and Golden Eagle Protection Act (16 USC section 668(a); 50 CFR 22) and have the potential to occur at NAS Fallon. These eagles are in addition to many other MBTA-protected bird species that regularly occur on the installation. Special status wildlife species with potential to occur in the project area are presented in Table 3.3-1.

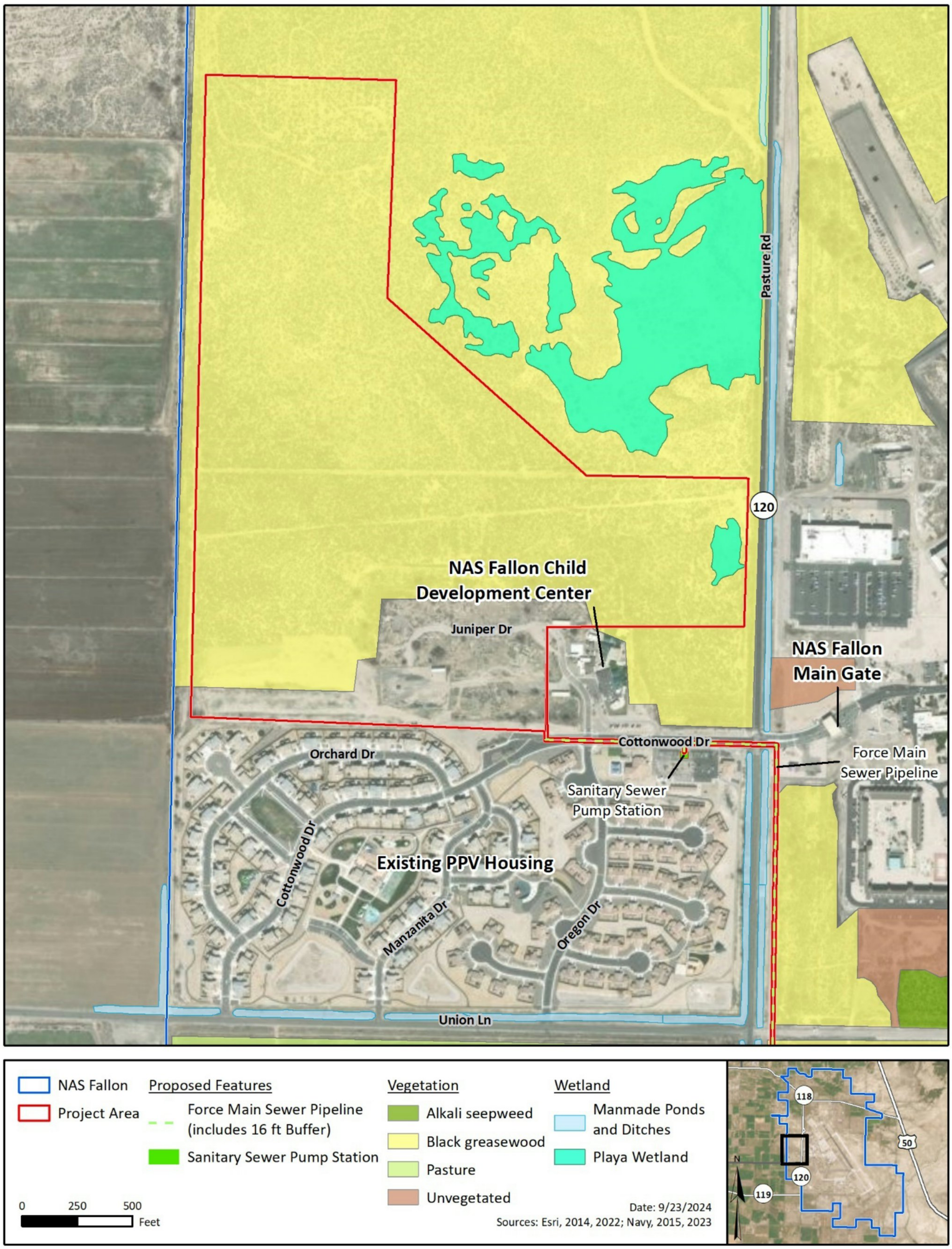

Figure 3.3-1a Biological Resources within the Project Area

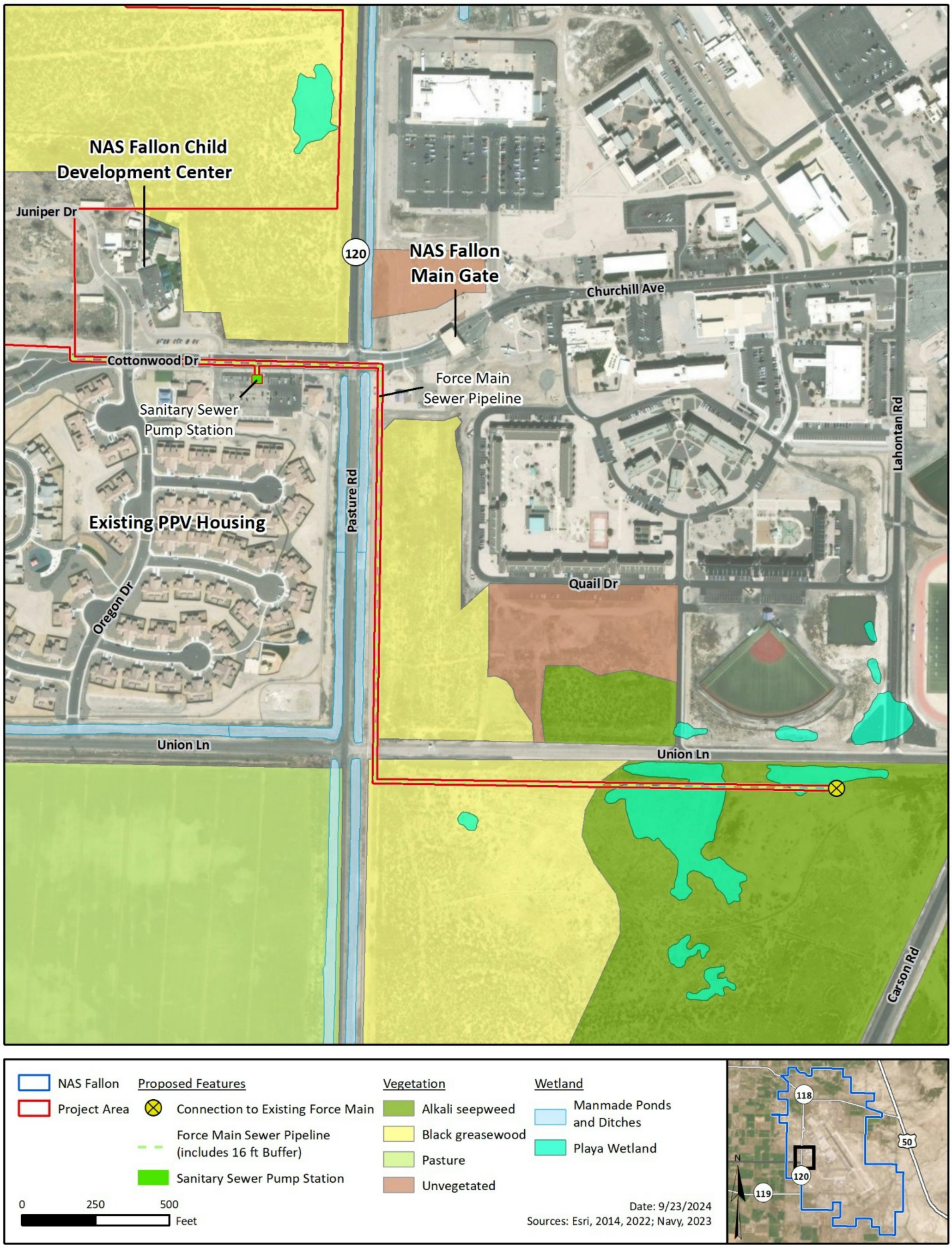

Figure 3.3-1b Biological Resources within the Project Area

3.3.3 Environmental Consequences

This analysis focuses on wildlife or vegetation types that are important to the function of ecosystems or are protected under federal or state law or statute.

3.3.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to biological resources. Therefore, no impacts to biological resources would occur beyond existing conditions with implementation of the No Action Alternative.

3.3.3.2 Alternative 1

The study area for the analysis of effects to biological resources associated with Alternative 1 includes the project area and all immediately surrounding lands that would potentially be impacted by Alternative 1.

Construction

Vegetation

Under Alternative 1, construction activities would result in the removal of 55 to 70 acres of black greasewood vegetation (see Figure 3.3-1). Greasewood habitat is regionally abundant and is a common habitat type on NAS Fallon. Removal of the maximum amount (70 acres) of greasewood vegetation would represent less than 0.08 percent of the total greasewood habitat on the lands that NAS Fallon administers in the high desert region of northern Nevada (approximately 88,000 acres total) (NAS Fallon, 2014a). No tree removal would be required for construction of the proposed MFH units. The new force main sewer pipeline route is within existing road and disturbed area to minimize possible impacts to biological resources.

Although no federally listed plant species are known to occur on NAS Fallon, the potential exists for plants deemed sensitive by the Nevada Division of Natural Heritage to occur within the project area; therefore, as described in Table 2-2, rare plant surveys would be conducted in the project area prior to construction. If rare plants are found within the project area, appropriate impact avoidance and/or minimization measures would be developed with NAS Fallon and implemented prior to construction (see Table 2-2).

Similarly, milkweeds are known to occupy the ditches adjacent to the project area. As milkweed species are required host plants for monarch butterflies, the ditches where milkweeds occur would be avoided.

Approximately 0.8 acre of non-jurisdictional playa wetlands occur within the 99-acre construction footprint. However, development would only occur within 55 to 70 acres of the project area. As such, these non-jurisdictional wetlands would be avoided as part of construction under Alternative 1.

Wildlife

Under Alternative 1, wildlife near construction activities would be exposed to auditory and visual disturbance from human presence and construction equipment. Use of construction equipment and vehicles could potentially crush and/or injure wildlife, especially reptiles, small mammals, and burrowing species that are unable to leave the areas of direct impact quickly enough. Wildlife species that are more mobile, such as MBTA-protected birds and larger mammals, would be able to leave the site if disturbed during construction and temporarily occupy adjacent habitats.

To avoid impacts to ground-nesting birds potentially occurring in the project area (including species protected by the MBTA, such as burrowing owls and killdeer [*Charadrius vociferus]*), a survey for active nests or nesting activity would be conducted before construction, should clearing and grubbing occur during the migratory bird nesting season (typically March 15 to August 31) (see Table 2-2). The Navy would be responsible for obtaining any permits required pursuant to the MBTA and applicable portions of the 50 CFR 10. If the survey finds active nests, qualified personnel would either establish a "no-construction" buffer zone around the nest until it has been determined to be inactive by a qualified biologist (e.g., nestlings have fledged), or, though difficult and unlikely, permitted biologists must relocate the eggs and chicks following all applicable federal and state regulations and permitting requirements. Additionally, as much grubbing as feasible would be conducted prior to nesting season to reduce the potential of nesting occurring within the project area.

Special status wildlife species would be subject to the same types of impacts described in the above paragraph. It is highly unlikely that any special status species would be present within the Alternative 1 footprint during construction activities. Pre-construction nesting surveys would be conducted as described above to reduce potential impacts to special status species. Additionally, the loss of 55 to 70 acres of black greasewood habitat would not impose a significant loss of foraging or nesting habitat for any special status species

Operation

Vegetation

No new areas of vegetated habitat would require removal beyond those that were removed during the construction phase of Alternative 1. Therefore, there would be no additional impacts to native or natural plant communities.

Wildlife

Alternative 1 would result in the urbanization of 55 to 70 acres of black greasewood habitat. Maintenance activities would be those typical of residential uses and would include activities such as painting, landscaping, and building and infrastructure repairs. Because the project area would already be developed, maintenance would not impact any wildlife, including special status species. As described in Table 2-2, plant selection for the housing development should be in accordance with the newly revised landscaping plant list in the INRMP and coordinated with the NAS Fallon natural resources program staff for concurrence. This would include not planting fruit trees and tall trees that could attract birds/raptors to reduce Bird/Wildlife Aircraft Strike Hazard.

Therefore, implementation of Alternative 1 would not result in significant impacts to biological resources. With implementation of the conservation measures described in this section, any less-than-significant impacts would be avoided or further minimized.

3.4 Cultural Resources

This discussion of cultural resources includes prehistoric and historic archaeological sites; historic buildings, structures, and districts; and physical entities and human-made or natural features important to a culture, a subculture, or a community for traditional, religious, or other reasons. Cultural resources can be divided into three major categories:

- Archaeological resources (prehistoric and historic) are locations where human activity measurably altered the earth or left deposits of physical remains.
- Architectural resources include standing buildings, structures, landscapes, and other built-environment resources of historic or aesthetic significance.
- Traditional cultural properties may include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

3.4.1 Regulatory Setting

Cultural resources are governed by various federal laws and regulations, including the National Historic Preservation Act (NHPA), Archeological and Historic Preservation Act, American Indian Religious Freedom Act, Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1990. Federal agencies' responsibility for protecting historic properties is defined primarily by Sections 106 and 110 of the NHPA. In particular, Section 106 requires federal agencies to take into account the effects of their undertakings on historic properties.

3.4.2 Affected Environment

Cultural resources listed in the National Register of Historic Places (NRHP) or eligible for listing in the NRHP are "historic properties" as defined by the NHPA. The list was established under the NHPA and is administered by the National Park Service on behalf of the Secretary of the Interior. The NRHP includes properties on public and private land. Properties can be determined eligible for listing in the NRHP by the Secretary of the Interior or by a federal agency official with concurrence from the applicable SHPO. An NRHP-eligible property has the same protections as a property listed in the NRHP. The NRHP includes archaeological and architectural resources.

The APE for cultural resources is the geographic area or areas within which an undertaking (project, activity, program, or practice) may cause changes in the character or use of any historic properties present. The APE is influenced by the scale and nature of the undertaking and may be different for various kinds of effects caused by the undertaking. For this Proposed Action, the Navy determined that the APE includes the 99-acre project area footprint for the proposed housing development area shown on Figure 2-1 and the 1.51-acre footprint for the new sanitary sewer pump station and force main sewer pipeline shown on Figure 2-2. While the proposed MFH development would only entail about 55 to 70 acres of development, the larger development footprint allows for flexibility in design, layout, and avoidance of sensitive natural and cultural resources. The Navy also considered viewshed issues for historic properties in the nearby area.

The continued discharge and conveyance of stormwater in Newlands Project drainage facilities is not the type of activity that has the potential to affect historic properties pursuant to the regulations at 36 CFR Part 800.3(a)(1) (Reclamation, 2015) and, therefore, related Newlands Project drainage facilities outside of the APE described above are not addressed further. Stormwater would continue to be discharged to and conveyed in existing Newlands Project drainage facilities and there would be no new connection/ disturbance to the existing Newlands Project drainage facilities. No ground-disturbing activities are required to convey water in the existing facilities.

The Navy and Reclamation coordinated on actions related to fulfilling the requirements of Section 106 of the NHPA. The Navy also sent letters about the project to the following Tribal Governments on May 20, 2024: Battle Mountain Band, Te-Moak Tribe of Western Shoshone; Yomba Shoshone Tribe; Yerington Paiute Tribe; Winnemucca Indian Colony of Nevada; Pyramid Lake Paiute Tribe; Wells Band. Te-Moak Tribe of Western Shoshone; Walker River Paiute Tribe; Washoe Tribe of Nevada and California; Summit Lake Paiute Tribe; South Fork Band, Te-Moak Tribe of Western Shoshone; Reno-Sparks Indian Colony; Fallon Paiute-Shoshone Tribe; Lovelock Paiute Tribe; Fort McDermitt Paiute and Shoshone Tribes; Elko Band Council, Te-Moak Tribe of Western Shoshone; Duckwater Shoshone Tribe; and Te-Moak Tribe of Western Shoshone (Appendix C).

3.4.2.1 Archaeological Resources

The Navy has conducted inventories of cultural resources to identify historic properties within the APE (Baskerville, 2024). Six cultural resources have been identified within the APE (Table 3.4-1), including five archaeological sites. The other resource is an architectural feature discussed below under Section 3.4.2.2, *Architectural Resources*. The archaeological sites consist of prehistoric lithic (stone tool) scatters and historic trash scatters. None of these sites are eligible for listing in the NRHP (Nevada SHPO, 2024) and, therefore, do not qualify as historic properties.

Table 3.4-1 Cultural Resources Located within the Area of Potential Effects

Site Number	*Historic/ Prehistoric*	*Description*	*Reference*	*NRHP Eligibility*[1]
26CH2078	Prehistoric	Lithic Scatter	Creger, 1995	Not Eligible
26CH2079	Prehistoric	Lithic Scatter	Bowers, 2009	Not Eligible
26CH2675	Both	Trash Scatter and Lithic Scatter	Jones and Dougherty, 2016	Not Eligible
26CH4177	Historic	Trash Scatter	Estes, 2015	Not Eligible
26CH4230	Prehistoric	Lithic Scatter	Jones and Dougherty, 2016	Not Eligible
S1528	Historic	Structure S1528 (L8-3 canal and features)	Baskerville, 2024	Not Eligible

Note: [1]Nevada SHPO, 2024.
Legend: NRHP = National Register of Historic Places.

Although not located within the APE, human remains that are believed to come from prehistoric burials have been recovered north of the project area. The Navy is currently working with local Tribal Governments on the repatriation of human remains and associated artifacts under the Native American Graves Protection and Repatriation Act.

3.4.2.2 Architectural Resources

One recorded historic architectural resource (S1528) is located within the APE of the proposed housing development area, running along the west side of the project boundary. This structure is a portion of a sub-lateral canal (L8-3) associated with the Newlands Project. The Newlands Project was one of the first projects authorized and built under the Reclamation Act of 1902 (Reclamation, 2021). The project provided critical irrigation, hydroelectric power, and flood control for west-central Nevada. The Newlands Project has been determined eligible for listing in the NRHP under Criterion A, primarily for its significant role in providing the irrigation water that was necessary for development and settlement patterns in Nevada’s lower Carson River Basin.

The L8-3 sub-lateral canal was likely built sometime between 1906 and 1926 to support conveying water to a single farm (Baskerville, 2024). The recorded segment is an abandoned earthen canal with no additional features such as check dams or other water regulation/measurement features. The segment is a non-contributing resource to the Newlands Project and individually not eligible for listing in the NRHP under all criteria (Baskerville, 2024; Nevada SHPO, 2024). Therefore, the recorded portion of the L8-3 sub-lateral canal does not qualify as a historic property (see Table 3.4-1).

3.4.2.3 Traditional Cultural Properties

NAS Fallon currently coordinates with 13 federally recognized Native American tribes who have knowledge and cultural concerns regarding sacred sites, traditional cultural properties, and cultural property types on lands administered by NAS Fallon. NAS Fallon conducts ongoing consultation with these Tribes. NAS Fallon has not been the subject of any traditional cultural property studies.

3.4.3 Environmental Consequences

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the importance of the resource; introducing visual, atmospheric, or audible elements that are out of character for the period the resource represents (thereby altering the setting); or neglecting the resource to the extent that it deteriorates or is destroyed.

3.4.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to cultural resources. Therefore, no impacts to cultural resources would occur with implementation of the No Action Alternative.

3.4.3.2 Alternative 1

There are five archaeological sites and one historic architectural resource recorded within the APE. The five archaeological sites may be disturbed by grading and construction of the new MFH units and associated facilities, depending on final construction design. The L8-3 sub-lateral canal is located outside the project area and would not be disturbed by grading and construction of the new MFH units although the new construction would alter its setting. However, none of these cultural resources are eligible for listing in the NRHP and, therefore, there would be no effect to historic properties.

Although not located within the APE, human remains that are believed to come from prehistoric burials have been recovered north of the project area. The discovery of nearby human remains may indicate additional inhumations in the project area. The following conservation measure would help to minimize potential impacts in the event that previously unrecorded archaeological resources or human remains are encountered during the construction or subsequent maintenance of the proposed MFH development:

- The Navy will ensure that any ground-disturbing activity in previously undisturbed soils will be monitored by a forensic anthropologist or archaeologist with training in human osteology and proficient in the identification and analysis of human remains. Monitoring processes and procedures will be described in a project-specific Inadvertent Discovery and Monitoring Plan,

which will include provisions for the monitor's ability to halt construction in the event of the inadvertent discovery of cultural material or human remains, at which point the NAS Fallon Cultural Resource Manager will be immediately contacted, along with appropriate authorities, before construction can continue.

With implementation of the conservation measures, the Navy has determined that Alternative 1 would have no effect on historic properties. The SHPO concurred with the Navy's finding of "No Historic Properties Affected" (Nevada SHPO, 2024). Therefore, implementation of Alternative 1 would not result in significant impacts to cultural resources.

3.5 Land Use

This discussion of land use includes current and planned uses and the regulations, policies, or zoning that may control the proposed land use. The term land use refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. However, there is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide variety of land use categories resulting from human activity. Descriptive terms often used include residential, commercial, industrial, agricultural, institutional, and recreational.

3.5.1 Regulatory Setting

In many cases, land use descriptions are codified in installation master planning and local zoning laws. Office of the Chief of Naval Operations Instruction 11010.40 establishes an encroachment management program to ensure operational sustainment that has direct bearing on land use planning on installations.

The Farmland Protection Policy Act is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. For the purpose of the Farmland Protection Policy Act, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to Farmland Protection Policy Act requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

3.5.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under land use resources at NAS Fallon.

3.5.2.1 Land Use Compatibility

NAS Fallon is located in the Lahontan Valley of west-central Nevada, approximately 6 miles southeast of the city of Fallon. Land uses within NAS Fallon are predominantly for military air operations and training purposes and include facilities for personnel support, air operations support, and administrative support facilities. Land use surrounding this infrastructure consists of agricultural fields and vacant desert lands that serve as noise and safety buffers Plan (NAVFAC SW, 2023a).

Personnel support facilities include 39 officer family units, 219 MFH units, 532 unaccompanied officer units, and 1,931 unaccompanied enlisted units. There is one primary housing area at NAS Fallon, located on the west side of Pasture Road. In addition, there are personnel support facilities, including bachelor quarters; religious services/family services; morale, welfare, and recreation facilities and clubs; medical; retail services; recycling yard; and auto hobby (NAS Fallon, 2014a).

The air operations area supports airfield and aviation operations, aircraft maintenance and control, fuel storage, ordnance handling, and academic training. Facilities associated with air operations include airfield runways, taxiways, aprons, ordnance handling pads, fuel storage and delivery areas, aircraft maintenance hangars, and air traffic control towers (NAS Fallon, 2014a). The administration facilities include the administration headquarters, the main gate, pass and decal office, supply warehouse, and utilities. NAS Fallon is organized so that the administration facilities buffer the personnel support facilities from the airfield operations (NAS Fallon, 2014a).

Development within NAS Fallon is guided and controlled by the NAS Fallon Installation Master Plan (NAVFAC SW, 2014). The purpose of the NAS Fallon Installation Master Plan is to ensure NAS Fallon is fully ready to support its assigned mission now and in the future. The NAS Fallon Installation Master Plan conveys that need by accurately presenting the facilities and capabilities needed to meet that assignment (NAVFAC SW, 2014).

The Agriculture Outlease Program at NAS Fallon is intended to enhance safety at NAS Fallon by creating a “green” vegetative buffer zone (the “Greenbelt”) around the airfield and to contribute to the local economy by providing an opportunity for agricultural production on Navy-managed lands where such use is compatible with the Navy’s mission (NAVFAC SW, 2023a).

The northern portion of the project area is within the “West BLM Parcel” (NAVFAC SW, 2023a). The area is Navy property and maintained as rangeland, but cattle are not permitted to graze on this land. There is no fencing along the south border and fencing along the western border is deteriorated in places. The southern portion of the project area was developed for housing in 1994 (Sagebrush housing area), but this housing was demolished between 2006 and 2010 and no units are currently standing. The NAS Fallon Child Development Center and existing MFH (Desert Winds, Blue Sky, and Mountain View housing areas) are on Navy property and located adjacent to the project area. There are private properties to the west of the project area that are designated by the Churchill County Land Use Plan for low-intensity uses and are currently being used for agriculture. There are no land use restrictions associated with the project area or nearby sites.

A Reclamation lateral canal runs parallel and outside the western edge of the project area. Reclamation has a 25-foot easement west of center line of the lateral canal and 30-foot easement east of center line of the lateral canal, which are both located outside the project area.

3.5.2.2 Farmland

Soils within the vicinity of and within the playa wetlands (see Figure 3.3-1) are prime farmland if irrigated and reclaimed of excess salts and sodium (Natural Resources Conservation Service, 2024).

3.5.3 Environmental Consequences

The location and extent of a proposed action needs to be evaluated for its potential effects on a project area and adjacent land uses. Factors affecting a proposed action in terms of land use include its

compatibility with on-site and adjacent land uses, restrictions on public access to land, or change in an existing land use that is valued by the community. Other considerations are given to proximity to a proposed action, the duration of a proposed activity, and its permanence.

3.5.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to land use. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

3.5.3.2 Alternative 1

Alternative 1 would include the construction, operation, and maintenance of up to 172 new MFH units at NAS Fallon. The proposed MFH would be constructed on undeveloped land west of Pasture Road, north and west of the NAS Fallon Child Development Center, and north of Cottonwood Drive and the existing PPV housing. The housing size, design, and density would be consistent with the already developed PPV housing located to the south of the project area.

The northern portion of the project area would be located within the “West BLM Parcel” on Navy property; however, cattle are not permitted to graze on the land. The proposed development would be located on NAS Fallon property and would not alter or be incompatible with any surrounding agricultural land uses. All development would be consistent with the NAS Fallon Installation Master Plan (NAVFAC SW, 2014). Prime farmland, if irrigated and reclaimed of excess salts and sodium (i.e., soils within the vicinity of and within the playa wetlands), would be avoided as part of construction under Alternative 1, as described in Section 3.3.3.2.

The proposed construction of MFH units would avoid the Reclamation easement associated with the lateral canal to the west of the project area. The new force main sewer pipeline would cross a Reclamation lateral canal to the east of Pasture Road at Cottonwood/Churchill Avenue crossing. The Navy would coordinate with Reclamation prior to construction in this area to obtain a written land use authorization from Reclamation. The use of Reclamation irrigation drains for stormwater conveyance is discussed in Section 3.6.

Therefore, implementation of Alternative 1 would not result in significant impacts to land use and would remain compatible with current land uses identified.

3.6 Infrastructure

This section discusses infrastructure (including drinking water production, storage, and distribution; wastewater collection treatment and disposal; stormwater management, solid waste management, and energy). Transportation systems and traffic are addressed separately in Section 3.8, *Transportation*.

3.6.1 Regulatory Setting

EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*, requires federal departments and agencies to enact specific actions and operations outlined within the EO to achieve net-zero GHG emissions by 2050 (including a 100 percent carbon pollution-free electricity on a net annual basis by 2030, as well as 50 percent on a 24/7 basis); to increase facility energy efficiency and water efficiency; and to minimize waste by annually diverting at least 50 percent of nonhazardous solid

waste, including food and compostable material and construction and demolition waste and debris, from landfills by fiscal year 2025 and 75 percent by fiscal year 2030.

3.6.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the potentially affected utilities at NAS Fallon.

3.6.2.1 Potable Water

NAS Fallon owns three groundwater wells located outside the station perimeter. Groundwater from these wells comes from the Basalt Aquifer, located more than 500 feet below the surface. Water is drawn from these wells and delivered via pipeline to the City of Fallon Water Treatment Plant, where it is combined with water drawn from groundwater wells owned by the City of Fallon. The City of Fallon owns four groundwater wells, which also tap the Basalt Aquifer and are located throughout central portions of the city. This combined raw well water is treated at the City of Fallon Water Treatment Plant prior to distribution to station personnel and city residents (NAVFAC SW, 2023b). The plant is designed to treat 9.7 million gallons per day, of which 2.2 million gallons per day is designated/allotted to supply NAS Fallon (USEPA, N.D.). The arsenic treatment mechanism consists of the addition of ferric chloride (for adsorption) followed by filtration, pH adjustment, and disinfection. In 2019, NAS Fallon consumed 64 million gallons (32 million gallons for housing and operations each), which averages out to 0.18 million gallons per day (8.2 percent of design capacity) (NAS Fallon, 2020).

3.6.2.2 Wastewater

NAS Fallon operates a WWTP with the design condition of an average annual flow of 0.242 million gallons per day. The WWTP treats industrial, commercial, and residential wastewater from NAS Fallon. The average daily flow is 0.25 million gallons per day; however, during surge conditions resulting from large-scale exercises (station population can increase from 2,940 to 5,500 people) and weather-related events, the WWTP is unable to meet maximum day or peak hour flows, resulting in wastewater backing up in the collection system. The WWTP is permitted to discharge through its NPDES Permit NV0110001. The treated wastewater effluent is discharged to a canal through the former E4X drain that leads to a Reclamation drain (Kimbrough and Stroud, 2014). This discharge is authorized under Agreement Number 09-LC-20-0063 between Reclamation, Navy, and USFWS (2009).

3.6.2.3 Stormwater

NAS Fallon currently operates under NDEP's Multi-Sector General Permit NVR050000 for Stormwater Discharges Associated with Industrial Activities, which allows for the discharge of industrial stormwater runoff to surface waters including lakes, streams, dry washes, and storm drains (NDEP, 2019). In addition, NAS Fallon is authorized to discharge stormwater to Reclamation drains by license 18-LC-20-2279 (Reclamation, 2018). Construction stormwater is authorized separately under the NDEP Construction Stormwater General Permit NVR100000. The station housing area is a municipal separate storm sewer system; however, it is not subject to a NPDES permit under the Clean Water Act of 1972 (33 USC section 1251 et seq.) because it is not classified as an urban area by USEPA.

NAS Fallon has developed a SWPPP for the industrial areas of the main station as required by the Multi-Sector General Permit (NAS Fallon, 2008). Industrial areas typically include sites used for aircraft fueling and maintenance, as well as vehicle maintenance. Potential stormwater pollutants from these

types of industrial areas include antifreeze, fuels (gasoline, jet fuel, and diesel), oils, soaps, solvents, adhesives, grease, aqueous film forming foam, and residential refuse (NAS Fallon, 2008). Construction SWPPP's are developed by the Construction Contractor for individual projects with construction disturbing 1 or more acres.

3.6.2.4 Solid Waste Management

Solid waste management at NAS Fallon is provided by a contractor. Landfill capacity for solid waste in Nevada is projected to be able to adequately handle solid waste generation well into the future (over 1.8 billion cubic yards of remaining capacity as of 2017). The closest landfill, Russell Pass, owned by the City of Fallon, has over 16 million cubic yards of remaining capacity (NDEP, 2017).

3.6.2.5 Energy

NV Energy provides electricity to NAS Fallon. NV Energy, NAS Fallon Public Works Department, and the City of Fallon Engineering and Public Works Department jointly maintain transmission and distribution lines that service the station (NAS Fallon, 2014b). Southwest Gas provides natural gas to NAS Fallon.

3.6.3 Environmental Consequences

This section analyzes the magnitude of anticipated increases or decreases in public works infrastructure demands considering historic levels, existing management practices, and storage capacity and evaluates potential impacts to public works infrastructure associated with implementation of the alternatives. Impacts are evaluated by whether they would result in the use of a substantial proportion of the remaining system capacity, reach or exceed the current capacity of the system, or require development of facilities and sources beyond those existing or currently planned.

3.6.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to the existing infrastructure of NAS Fallon or availability/capacity of supporting utilities. Therefore, no significant impacts to utilities would occur with implementation of the No Action Alternative.

3.6.3.2 Alternative 1

The study area for utilities is NAS Fallon and the city of Fallon.

Construction

Construction of the MFH at NAS Fallon would not result in significant impacts to infrastructure. Potable water would be used for dust control, and portable toilets would be used by construction workers. However, the volumes of potable water used and wastewater generated by construction would be relatively small relative to the overall capacity and thus would not have the potential to exceed the installation's potable water and wastewater capacities. Because the area of disturbance would be more than 1 acre in size, SDFH would comply with the NDEP Construction Stormwater General Permit. The Permit would require the development of a SWPPP as well as inspections. Because a SWPPP would be developed and the requirements adhered to, construction would not significantly affect stormwater (refer to Table 2-2). Solid waste would be generated during construction of the MFH; however, because recycling requirements would be employed and available landfill capacity exists, impacts from solid waste would not be significant. Similarly, regional electric capacity would not be meaningfully impacted,

and any electricity needs that affect capacity of the local distribution system would be addressed by construction of new capacity or the use of portable generators.

Operation

Operation of the MFH would not result in significant impacts to infrastructure. Potable water capacity exists that can accommodate operation of the MFH. MFH would also be equipped with water-saving appurtenances and appliances. Because the current NAS Fallon wastewater collection system does not have capacity to convey the wastewater flows from the proposed new 172 MFH units, the Navy would construct a new sanitary sewer pump station and a new force main sewer pipeline connecting the new sanitary sewer pump station to the existing force main under Alternative 1 to manage increased wastewater flows (see Figure 2-2). (The project could potentially utilize a reduced scope of infrastructure construction work, so long as wastewater capacity would remain sufficient. Any such reduction in scope would not alter the impacts analysis for Infrastructure or otherwise.)

Due to an increase in impervious surfaces from roadways and houses, a minimal amount of increased stormwater runoff is anticipated. The MFH stormwater system development would be designed with BMPs that would manage stormwater flow to account for precipitation from specific design storms (e.g., 100-year event) so that there would be no damage to downstream properties (refer to Table 2-2). Thus, there would be minimal stormwater impact to the Reclamation drainage ditches. SDFH would manage collection of refuse and recyclable materials at the proposed new MFH. Solid waste would be residential in nature and would not exceed existing landfill capacity. Recycling would reduce landfilled solid waste. The electric distribution system would be extended and modified as needed under the Proposed Action to support the MFH. NV Energy would supply electricity to the MFH that is independent of the installation. The MFH would feature energy efficient Energy Star appliances. For all utilities, the personnel and families that would occupy the MFH are currently stationed at NAS Fallon but residing off-station within commuting distance; therefore, regional infrastructure demand and capacity would not be impacted by these individuals and families relocating- to the MFH (e.g., no increase in population served by most regional utilities).

Therefore, implementation of the Proposed Action construction and operation of the MFH would not result in significant impacts to infrastructure.

3.7 Hazardous Materials and Wastes

This section discusses hazardous materials, hazardous wastes, toxic substances, and contaminated sites.

3.7.1 Regulatory Setting

Hazardous materials are defined by 49 CFR section 171.8 as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table, and materials that meet the defining criteria for hazard classes and divisions in 49 CFR part 173.” Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations.

Hazardous wastes are defined by the Resource Conservation and Recovery Act, as amended by the Hazardous and Solid Waste Amendments, as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or

incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed." Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR part 273. Four types of waste are currently covered under the universal waste regulations: (1) hazardous waste batteries; (2) hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs; (3) mercury-containing equipment; and (4) hazardous waste lamps, such as fluorescent light bulbs.

Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include asbestos-containing material (ACM), polychlorinated biphenyls (PCBs), and lead-based paint. USEPA is given authority to regulate special hazard substances by the Toxic Substances Control Act and the Comprehensive Environmental Response, Compensation, and Liability Act. Asbestos is also regulated by USEPA under the CAA.

The DoD established the Defense Environmental Restoration Program (DERP) to facilitate thorough investigation and cleanup of contaminated sites on military installations (active installations, installations subject to Base Realignment and Closure, and formerly used defense sites). The Installation Restoration Program (IRP) and the Military Munitions Response Program (MMRP) are components of the DERP. The IRP requires each DoD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The MMRP addresses nonoperational rangelands that are suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituent contamination. The Environmental Restoration Program is the Navy's initiative to address the DERP.

3.7.2 Affected Environment

The Navy has implemented a strict Hazardous Material Control and Management Program and a Hazardous Waste Minimization Program for all activities. These programs are governed Navy-wide by applicable Office of the Chief of Naval Operations instructions and at the installation by specific instructions issued by the Base Commander. The Navy continuously monitors its operations to find ways to minimize the use of hazardous materials and to reduce the generation of hazardous wastes.

3.7.2.1 Hazardous Materials and Hazardous Waste

Hazardous materials at NAS Fallon are managed in accordance with the Consolidated Hazardous Material Reutilization and Inventory Management Program (CHRIMP). The CHRIMP mandates procedures to control, track, and reduce the variety and quantity of hazardous materials used. The CHRIMP Manual, Naval Supply Systems Command P-722, establishes standard operating procedures based on CHRIMP business practices for all Navy commands, tenant activities, and contractors to ensure consistent operations in the planning, procurement, acquisition, receipt, storage, distribution, use, or other disposition of hazardous materials (CNIC, 2010).

The Navy continuously monitors its operations to find ways to minimize the use of hazardous materials and to reduce the generation of hazardous wastes.

NAS Fallon is registered by the USEPA as a large quantity generator of hazardous waste (USEPA Facility Identification [ID]: NV9170022173). Large quantity generators generate over 1,000 kilograms (kg) of hazardous waste or over 1 kg of acutely hazardous waste per month. Liberty Military Housing (formerly known as Lincoln Military Housing), which maintains the military housing located on NAS Fallon, is a very

small quantity generator of hazardous waste (USEPA Facility ID: NVR000086447). Very small quantity generators generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

3.7.2.2 Special Hazards (Asbestos-Containing Materials, Lead-Based Paint, Polychlorinated Biphenyls)

The project area has no structures present that would contain special hazards. An Environmental Condition of Property (ECP) report did not find any evidence of the presence of special hazards at the project area (NAVFAC SW, 2024a). However, the ECP identified, based on the date of construction (sometime between 1980 and 1994), that former housing and associated utilities that were located on the site (demolished in 2006) may have had ACM and PCBs and, after demolition, these materials may have been introduced to the soil (NAVFAC SW, 2024a). As PCB production ended in 1979, and ACM use in construction largely ceased in the late 1970s, it is unlikely but possible that these materials were used in construction of the housing. Because Navy demolition contract conditions would have required compliance with applicable regulations, (e.g., Asbestos National Emission Standards for Hazardous Air Pollutants [40 CFR 61] and Occupational Safety and Health Administration [29 CFR 1926.1101 and 1915.1001]), any friable ACM present in the buildings would have been identified and removed prior to demolition (NAVFAC, 2004). Similarly, the buildings would also have been surveyed and remediated for PCBs prior to demolition. Therefore, it is unlikely that residual special hazards are present in the soil.

3.7.2.3 Defense Environmental Restoration Program

There are 36 IRP sites at NAS Fallon, 18 of which are currently active and 18 that have been closed as "No Further Action" with NDEP concurrence. There are no IRP or MMRP sites at the project area. An investigation into per- and polyfluoroalkyl substances (PFAS) at NAS Fallon has not found any PFAS in drinking water, and there are no PFAS investigation sites at the project area (NAVFAC SW, 2022). In addition, the groundwater flow from the PFAS investigation sites flows away from the project area.

3.7.3 Environmental Consequences

The hazardous materials and wastes analysis addresses use and management of hazardous materials and wastes, as well as the presence and management of specific cleanup sites at NAS Fallon.

3.7.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change associated with hazardous materials and wastes. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

3.7.3.2 Alternative 1

The study area is NAS Fallon, with a focus on the proposed MFH as depicted in Figure 2-1.

Construction

Construction of the MFH at NAS Fallon would not result in significant impacts to hazardous materials and waste. No IRP sites or MMRP sites are located within the project area and do not affect the area. Excess earth from excavation associated with the new force main sewer pipeline would be tested for contamination and hauled off-installation to an appropriate disposal site. While it has been recorded that there is the potential for ACM and PCBs to be in the soil from housing, presence is unlikely due to

previous demolition. Nevertheless, as per the ECP report, the PPV contract holder would be notified of the potential presence of these hazards in the soil, and the PPV contract holder would ensure that all appropriate measures would be taken to address any issues. Small leaks or spills may potentially occur from vehicles and equipment used during the proposed construction of the MFH. To manage any accidental releases, all construction activities would be conducted in accordance with the NAS Fallon Integrated Contingency Plan for Oil and Hazardous Substance Spill Prevention and Response, as required by the Oil Pollution Act of 1990 and Office of the Chief of Naval Operations M-5090.1, *Environmental Readiness Program Manual*. Hazardous materials and wastes used and/or generated as part of the construction of the MFH would be handled and disposed of in accordance with the NAS Fallon Hazardous Waste Management Plan and all applicable federal, military, state, and local laws and regulations.

Operation

Hazardous materials and wastes resulting from operation of the MFH would resemble those commonly used or generated during household maintenance and repair, such as small amounts of paint, adhesives, lubricants, etc. These materials and wastes would be handled by SDFH in accordance with the NAS Fallon Hazardous Waste Management Plan and all applicable federal, military, state, and local laws and regulations.

Therefore, implementation of the Proposed Action would not result in significant impacts to hazardous materials and wastes.

3.8 Transportation

This discussion of transportation includes all of the air, land, and sea routes with the means of moving passengers and goods. A transportation system can consist of any or all of the following and can be looked at on a local or regional scale: roadways, bus routes, railways, subways, bikeways, trails, waterways, airports, and taxis.

3.8.1 Regulatory Setting and Methodology

The regulatory setting for traffic includes operational and safety standards for roadway level of service (LOS) and performance from the Nevada Department of Transportation, City of Fallon, and Churchill County. The NAS Fallon security department controls on-station traffic. Appendix F contains the traffic study, the source of information for this section (Linscott, Law & Greenspan, Engineers, 2024).

Traffic is commonly measured through average daily traffic and design capacity. These two measures are used to assign a roadway with a corresponding LOS. The LOS designation is a professional industry standard used to describe the operating conditions of a roadway segment or intersection. The LOS is defined on a scale of A to F that describes the range of operating conditions on a particular type of roadway facility. LOS A through LOS B indicates free flow travel. LOS C indicates stable traffic flow. LOS D indicates the beginning of traffic congestion. LOS E indicates the nearing of traffic breakdown conditions. LOS F indicates stop-and-go traffic conditions and represents unacceptable congestion and delay.

Unsignalized intersections were analyzed for morning and afternoon peak hours. Average vehicle delay and LOS were determined based upon the procedures in Chapters 20 and 21 of the Highway Capacity Manual, Sixth Edition, with the assistance of the Synchro (version 11) computer software. According to the Fallon Urban Area 2020 Transportation Plan, “the community of Fallon is subject to significant

volumes of truck and oversized vehicle traffic. Much of this traffic has neither a trip origin nor destination in the Fallon area but is merely passing through. Highways traversing Fallon carry up to 27 percent heavy vehicle traffic" (TranSystems Corporation Consultants, 2020). Field observation conducted for the traffic study on Wednesday, November 1, 2023, confirmed a high volume of trucks and oversized vehicles traversing Veterans Memorial Highway in both the northbound and southbound directions. Therefore, to be conservative, the Synchro files used 30 percent of northbound and southbound traffic along Veterans Memorial Highway comprising heavy vehicles.

Per the Churchill County 2020 Master Plan (Churchill County, 2021), Churchill County's population is expected to increase by 1 percent annually. Therefore, to be conservative, a growth rate of 1 percent per year for 5 years was applied to both the No Action Alternative and Alternative 1.

A queuing deficiency was identified if the calculated queue length exceeds the provided storage. A queue occurs when segments between intersections or other points of interest (e.g., main gate) become filled with lined-up vehicles. Storage is the amount of space between intersections or other points of interest that lined-up vehicles can fit without causing a traffic impact.

The change in calculated queue length was used to assess impact. For example, the intersection operation at Cottonwood Drive and Pasture Road is influenced by the queues generated at the NAS Fallon main gate and its ability to accommodate the demand. The queuing analysis accounts for processing time at the gate, which affects the upstream queue and intersection and is a more accurate and realistic indicator of the operations near the entrance gate. The Synchro model was calibrated to best reflect existing conditions and operations. Field observations were used to adjust the analysis to depict actual queue lengths. A queueing analysis was conducted for the Cottonwood Drive and Pasture Road intersection during the worst-case peak period (morning peak period).

3.8.2 Affected Environment

3.8.2.1 Roadway Network

A traffic study was prepared to evaluate existing conditions of the roadway networks in the study area. The overall number of personnel at NAS Fallon would not increase, but rather the MFH project would result in active-duty military members living closer to the station and a reduction of current work trips that are farther from the station. However, family members could have a longer commute to work, school, or shopping and dining. Intersections and roads located close to the MFH site could experience an increase in traffic and the study evaluated LOS for nine intersections shown on Figure 3.8-1.

Table 3.8-1 provides the classification, pedestrian/bike facilities, and speed limit for the intersections.

Table 3.8-1 Roadway Classification, Pedestrian/Bike Amenities, and Speed Limit

Road	*Classification Description*	*Pedestrian/Bike Amenities in Project Area*	*Speed Limit*
Sheckler Road/ Wildes Road	Rural major collector	None	45 mph
Drumm Lane	2-lane, undivided	None	35 mph
Cottonwood Drive	Minor collector	Sidewalks on both sides	15 mph
Union Lane	2-lane undivided	None	45 mph
Berney Road	Unclassified	None	55 mph
Veterans Memorial Highway	2-lane undivided, on-street parking allowed west of Juniper	None	55 mph

	Drive		
Pasture Road	Rural major collector 2-lane undivided	None	45 mph north of Cottonwood, 35 mph south of Cottonwood

Legend: mph = miles per hour.
Source: Linscott, Law & Greenspan, Engineers, 2024.

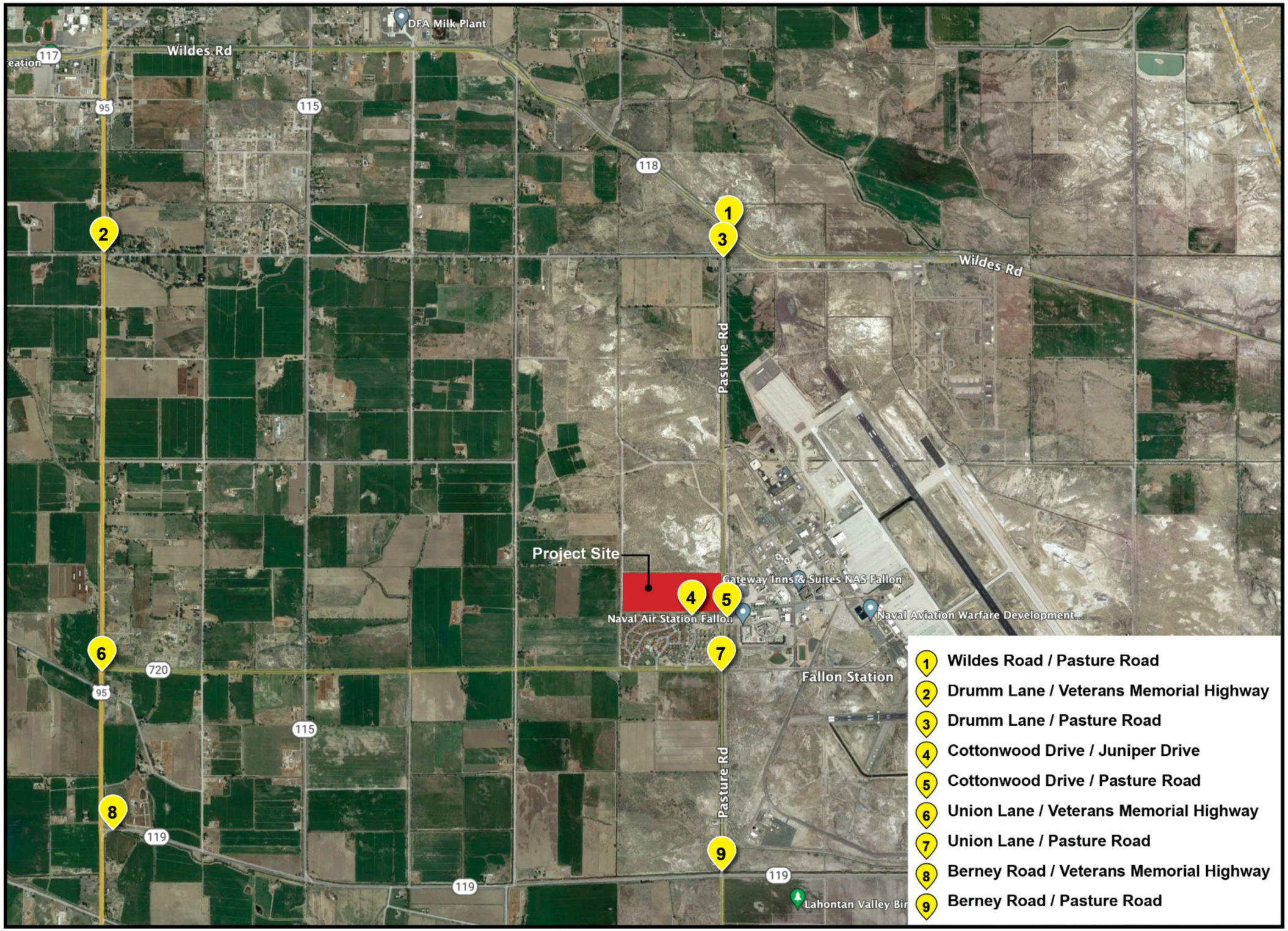

Figure 3.8-1 Intersections Evaluated in the Traffic Study

3.8.2.2 Existing Traffic Volumes

Traffic counts were collected on November 2, 2023. This date was determined to best represent military activity accessing and departing NAS Fallon and was not a school holiday that would limit bus, school employees, and student/parent vehicle trips. The morning peak period was determined to be between 6:30 a.m. and 8:00 a.m., and the afternoon peak period was between 3:00 p.m. and 6:00 p.m. Table 3.8-2 shows the existing traffic volumes and LOS. Potential lunchtime queues were not counted but would be less than the morning and afternoon peak trips.

Table 3.8-2 Existing Intersection Operations with Annual Projected Growth

Intersection	*Control Type*	*Morning Peak*		*Afternoon Peak*	
		Delay[1]	*LOS*	*Delay*[1]	*LOS*
1. Wildes Road/Pasture Road	2-way stop controlled	11.6	B	19.4	C
2. Drumm Lane/Veterans Memorial Highway	2-way stop controlled	13.3	B	15.0	B
3. Drumm Lane/Pasture Road	2-way stop controlled	11.1	B	13.8	B
4. Cottonwood Drive/Juniper Drive	All-way stop controlled	8.3	A	7.7	A
5. Cottonwood Drive/Pasture Road[2]	2-way stop controlled	–	–	–	–
6. Union Lane/Veterans Memorial Highway	2-way stop controlled	13.6	B	12.2	B
7. Union Lane/Pasture Road	2-way stop controlled	10.9	B	9.8	A
8. Berney Road/Veterans Memorial Highway	2-way stop controlled	10.2	B	11.1	B
9. Berney Road/Pasture Road	2-way stop controlled	9.4	A	9.3	A

Notes: [1]Delay is expressed in seconds per vehicle.
[2]A queuing analysis was conducted for this intersection instead of LOS.
Legend: LOS = level of service.
Source: Linscott, Law & Greenspan, Engineers, 2024

A queuing analysis was conducted for the Cottonwood Drive and Pasture Road intersection in order to obtain a more accurate and realistic indicator of the operations near the main gate in the morning. Table 3.8-3 summarizes the calculated queue under current conditions plus with the estimated population growth. The queues are calculated to exceed the provided storage in the northbound movement even without considering annual population growth. Also noted was the queue back to the Union Lane/Pasture Road intersection in the eastbound movement.

Table 3.8-3 Queue Summary for Cottonwood Drive and Pasture Road Intersection

Direction	*Existing with Estimated Annual Population Growth*		
	Storage	*Maximum Queue*	*Average Queue*
Southbound	Greater than 4,000 feet	2,442 feet	1,244 feet
Northbound	1,270 feet	2,132 feet	1,002 feet
Eastbound, shared through/right turn	220 feet	210 feet	92 feet
Eastbound, left turn	220 feet	86 feet	28 feet

Notes: Blue shading = exceeds storage capacity.
Source: Linscott, Law & Greenspan, Engineers, 2024.

3.8.2.3 Existing Pedestrian and Bike Network

There are currently no sidewalks along many of the study area roadways. Many parts of the city and county have limited pedestrian facilities. There is a paved shared path that runs between Sheckler Road and the canal that provides access for pedestrians between Allen Road and Veterans Memorial Highway. In addition, sidewalks are provided within the existing PPV military housing area and adjacent NAS Fallon Child Development Center. A high-visibility crosswalk is provided on the north leg of the Cottonwood Drive/Pasture Road/Churchill Avenue intersection, and sidewalks on the north side of Cottonwood Drive and Churchill Avenue for NAS Fallon personnel walking or biking to the main gate. The Fallon Urban Area 2020 Transportation Plan recommends improving the pedestrian access in the area to include assessing current conditions; adding pedestrian crossing signs, striping, and signal buttons along Williams Avenue and Maine Street corridors; and developing design standards with Americans with Disabilities Act requirements (TranSystems Corporation Consultants, 2020). Currently, there are no signs or roadway striping that could be used by bicycles for the study area roadways. As described above, a paved shared path that runs between Sheckler Road and the canal provides access to pedestrians and bikes between Allen Road and Veterans Memorial Highway. Per the Fallon Urban Area 2020 Transportation Plan, on-street bike lanes are proposed along Wildes Road, Union Lane, and Veterans Memorial Highway. In addition, off-street bike trails are proposed along Harrigan Road and Pasture Road (TranSystems Corporation Consultants, 2020).

3.8.2.4 Existing Transit Network

There are currently no bus transit services in Churchill County with fixed routes. Transit options include A-1 Services, a private for-profit taxi company that provides services to the general public. In addition, the Churchill County Unified School District provides transportation for the schools in the district. Approximately 70 percent of the students are bused daily. Other public transportation services in the county include the Churchill County Senior Center, Fallon Industries, Churchill County Department of Parks and Recreation, Veterans Administration Hospital, Paiute-Shoshone Tribe, and NAS Fallon for personnel, as needed. The Churchill County Task Force on Transportation developed a coordinated, demand-response system called the Churchill Area Regional Transit for the City of Fallon and a 12-mile radius from the center of Fallon. The Churchill Area Regional Transit provides, with 24-hour advance notice, dial-a-ride service to the community. The service operates from 7:00 a.m. to 7:00 p.m., Monday through Friday (Linscott, Law & Greenspan, Engineers, 2024).

3.8.3 Environmental Consequences

Impacts to ground traffic and transportation are analyzed by considering the possible changes to existing traffic conditions and the capacity of area roadways from proposed increases in commuter and construction traffic.

3.8.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to transportation. Military families would continue to obtain housing in Fallon or other local communities and commute to the station. Queuing at the main gate during morning and afternoon peak hours would continue. The study area intersections would operate as acceptable at LOS C or better during the morning and afternoon peak hours. Therefore, no significant impacts to transportation would occur with implementation of the No Action Alternative.

3.8.3.2 Alternative 1

Construction

The proposed housing, sanitary sewer pump station, and force main sewer pipeline would be constructed on undeveloped land west of Pasture Road, north and west of the Child Development Center, and north of Cottonwood Drive and the existing PPV housing. Although the housing would be constructed outside of the main gate, construction workers would access the PPV site from Pasture Road via Veterans Memorial Highway. Given the traffic demand in the area during the morning peak period entering the NAS Fallon main gate, construction worker shifts could need to be scheduled before or after the morning traffic demand to the extent possible. Based on field observations, the morning traffic demand occurs around 8:00 a.m.

Operation

To determine the potential impact of operation of the 172 PPV housing units, trip generation rates were obtained from *Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition*. Table 3.8-4 shows the number of trips generated from the housing. The housing project would be expected to generate 1,622 average daily traffic, with 120 trips during the morning peak hour (31 inbound and 89 outbound), and 162 trips during the afternoon peak hour (102 inbound and 60 outbound). The model also incorporates spouse trips as shown in the table using a rate of 9.43 trips per dwelling unit.

Table 3.8-4 Projected Number of Trips Generated in the Morning and Afternoon Peak Hours

Land Use	*Size*	*Daily Trips*		*Morning Peak Hour*					*Afternoon Peak Hour*				
		Rate	*Volume*	*Rate*	*In/out Split*	*Volume*			*Rate*	*In/out Split*	*Volume*		
						In	*Out*	*Tot*			*In*	*Out*	*Tot*
Single-family detached housing	172 DU	9.43/DU	1,622	0.70/DU	26:74	31	89	120	0.94/DU	63:37	102	60	162

Legend: DU = dwelling unit, Tot=total.
Source: Linscott, Law & Greenspan, Engineers, 2024.

The model considers the generation of trips from the MFH as new trips but in actuality, these trips are already occurring as personnel already commute to the station from Fallon or other local communities. With the location of the MFH, spouses and children may have to travel to Fallon or elsewhere for work and/or school. Since the number of NAS Fallon personnel would not increase, the amount of overall traffic would not increase. However, with the proposed location of the MFH close to the station, existing PPV housing, and NAS Fallon Child Development Center, congestion could occur getting to and from these facilities. Potentially, some of the proposed MFH residents currently access the Child Development Center to drop off and pick up children. However, the location of MFH residences near the main gate would also provide car-free access opportunities to the Child Development Center and NAS Fallon.

Since the current location of residence of the 172 families is unknown, the projected traffic was distributed based on the MFH proposed site location, access to Veterans Memorial Highway and Williams Avenue, existing traffic patterns in the area, and anticipated traffic routes to and from the site. Regional distribution assumed the following:

- 44 percent of trips oriented to/from the north
- 6 percent of trips oriented to/from the south

- 50 percent of trips oriented to/from the NAS Fallon main gate (east)

Site access was assumed to be via a proposed internal roadway north of Cottonwood Drive, across the street from the existing PPV military housing area, directly adjacent to the NAS Fallon Child Development Center. The access could be either from Juniper Drive, which currently serves the Child Development Center or a new access point to Cottonwood Drive, west of the Cottonwood Drive and Juniper Drive intersection. Design plans would determine the location of the access point and if additional emergency access points are needed.

Results of the analysis are shown in Table 3.8-5. The study area intersections would operate as acceptable at LOS C or better during the morning and afternoon peak hours.

Table 3.8-5 Intersection Operations under Alternative 1

Intersection	*Control Type*	*Morning Peak*		*Afternoon Peak*	
		Delay[1]	*LOS*	*Delay*[1]	*LOS*
10. Wildes Road/Pasture Road	2-way stop controlled	12.5	B	22.3	C
11. Drumm Lane/Veterans Memorial Highway	2-way stop controlled	13.7	B	15.7	C
12. Drumm Lane/Pasture Road	2-way stop controlled	11.3	B	14.2	B
13. Cottonwood Drive/Juniper Drive	All-way stop controlled	8.3	A	8.0	A
14. Cottonwood Drive/Pasture Road[2]	2-way stop controlled	–	–	–	–
15. Union Lane/Veterans Memorial Highway	2-way stop controlled	13.8	B	12.7	B
16. Union Lane/Pasture Road	2-way stop controlled	11.2	B	10.1	B
17. Berney Road/Veterans Memorial Highway	2-way stop controlled	10.2	B	11.2	B
18. Berney Road/Pasture Road	2-way stop controlled	9.5	A	9.4	A

Notes: [1]Delay is expressed in seconds per vehicle.
[2]A queuing analysis was conducted for this intersection instead of LOS.
Legend: LOS = level of service.
Source: Linscott, Law & Greenspan, Engineers, 2024.

The main gate currently experiences queues east of the Cottonwood Drive and Pasture Road intersection due to credential checks before allowing access. With a concentration of housing and the Child Development Center, Alternative 1 potentially could add traffic from the MFH to the queues and could cause longer queues to develop (Table 3.8-6). However, since the Proposed Action would not result in any increase in military personnel accessing the installation, any increase in traffic during peak periods would be localized due to family members driving from the installation toward the City of Fallon or other destinations (e.g., for work or school), onto the installation (e.g., to go the commissary or use other base facilities), or accessing the Child Development Center from within MFH. The volume of this additional traffic would likely be relatively minor, and its impact would be minimized by non-work trips onto the installation being spread out over the course of the day (with many individuals choosing to wait for non-peak hours) and to some extent that individuals driving from the MFH to non-installation destinations would not need to access the main gate and would be just passing through. Therefore, implementation of the Proposed Action would not result in significant impacts to transportation. These non-significant impacts would potentially be further minimized through incorporation of sidewalks and

bike lanes into the housing design (which along with providing pedestrian access to the Child Development Center would also likely lead to some military personnel walking or biking to work), which could result in less vehicle traffic entering or exiting the station and potentially would reduce the queue. Further, NAS Fallon could consider adding staff during peak hours or lanes to the gate configuration (subject to funding), which could also potentially reduce queueing.

Table 3.8-6 Alternative 1 Queue Summary for Cottonwood Drive and Pasture Road Intersection

Direction	*Existing Storage*	*Projected Maximum Queue*	*Projected Average Queue*
Southbound	Greater than 4,000 feet	3,224 feet	1,624 feet
Northbound	1,270 feet	2,345 feet	1,010 feet
Eastbound, shared through/right turn	220 feet	218 feet	113 feet
Eastbound, left turn	220 feet	136 feet	35 feet

Notes: Blue shading = exceeds storage capacity.
Source: Linscott, Law & Greenspan, Engineers, 2024.

Therefore, implementation of the Proposed Action would not result in significant impacts to transportation.

3.9 Public Health and Safety

This discussion of public health and safety includes consideration for any activities, occurrences, or operations that have the potential to affect the safety, well-being, or health of members of the public. A safe environment is one in which there is no, or optimally reduced, potential for death, serious bodily injury or illness, or property damage. The primary goal is to identify and prevent potential accidents or impacts on the general public. Public health and safety within this EA discusses information pertaining to community emergency services, construction activities, operations, and environmental health and safety risks to children.

Community emergency services are organizations that ensure public safety and health by addressing different emergencies. The three main emergency service functions include police, fire and rescue service, and emergency medical service.

Public health and safety during construction activities is generally associated with construction traffic, as well as the safety of personnel within or adjacent to the construction zones.

Operational safety may refer to the actual use of the facility or built-out proposed project, or training or testing activities and potential risks to inhabitants or users of adjacent or nearby land and water parcels. Safety measures are often implemented through designated safety zones, warning areas, or other types of designations.

The AICUZ Program delineates APZs, which are areas around an airfield where an aircraft mishap is most likely to happen. APZs are not predictors of accidents nor do they reflect accident probability. The DoD defines an APZ as a planning tool for local planning agencies. The APZs follow departure, arrival, and flight pattern tracks from an airfield and are based upon historical accident data. Range AICUZ addresses range safety.

3.9.1 Regulatory Setting

Aircraft safety is based on the physical risks associated with aircraft flight. Military aircraft fly in accordance with Federal Aviation Regulation Part 91, *General Operating and Flight Rules*, which governs such things as operating near other aircraft, right-of-way rules, aircraft speed, and minimum safe altitudes. These rules include the use of tactical training and maintenance test flight areas, arrival and departure routes, and airspace restrictions as appropriate to help control air operations. In addition, naval aviators must also adhere to the flight rules, air traffic control, and safety procedures provided in Navy guidance.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires federal agencies to "make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks."

3.9.2 Affected Environment

3.9.2.1 Community Emergency Services

Public services provided at NAS Fallon include police protection and fire and emergency medical services. Police protection and emergency response on NAS Fallon is provided by the NAS Fallon Security Department. The Security Department may work in conjunction with other local law enforcement branches, such as the Fallon Police Department or Churchill County Sheriff, as necessary (Navy, 2016).

Fire protection on NAS Fallon is provided by the NAS Fallon Fire Department. In surrounding areas, fire protection is provided by the Fallon/Churchill Volunteer Fire Department, which averages 400 fire and extrication calls per year and has an average response time of less than 6 minutes per call (Churchill County, 2023).

3.9.2.2 Accident Potential Zones

APZs are areas where aircraft collisions are statistically more likely to occur. There are three distinct APZ areas at NAS Fallon: (1) a Clear Zone (CZ), (2) APZ-1, and (3) APZ-2. These areas are further described below:

- The CZ lies immediately at the end of each runway and outward along the extended runway centerline for a distance of 3,000 feet. Only open space, vacant, and agricultural uses are permitted in this zone. Buildings intended for human occupancy are not permitted in the CZ.
- APZ-1 is present under flight paths that have 5,000 or more annual operations. This zone begins at the end of each CZ and curves to conform to the shape of the flight path. It extends to a length of 5,000 feet and is typically 3,000 feet wide. Residential development in this zone is unacceptable, and the density of development and concentration of people requirements limit commercial and industrial uses.
- APZ-2 extends to a length of 7,000 feet and measures 3,000 feet wide. Agriculture, open space, recreation, industrial, business, and commercial uses are acceptable if the requirements for density of development and concentrations of people is met.

The proposed site for PPV housing is not located within an APZ.

3.9.2.3 Protection and Safety Risks to Children

The areas within NAS Fallon adjacent to the project area consist of existing PPV housing and the NAS Fallon Child Development Center to the south and agricultural lands to the north. The project area is located along a boundary of NAS Fallon. Off-station land near the project area is sparsely populated with a few privately owned and operated farms immediately west.

There are no DoD schools located on NAS Fallon. The Churchill County School District provides public education for children in grades prekindergarten (PK) through 12 and is approximately 10 minutes from the station.

Children are currently present and would continue to be present near the project area as residents of PPV housing and as students at the NAS Fallon Child Development Center.

3.9.3 Environmental Consequences

The safety and environmental health analysis contained in the respective sections addresses issues related to the health and well-being of military personnel and civilians living on or in the vicinity of NAS Fallon. Specifically, this section provides information on hazards associated with public services and APZs. Additionally, this section addresses the environmental health and safety risks to children.

3.9.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to public health and safety. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

3.9.3.2 Alternative 1

Under Alternative 1, there may be a minor and temporary increase in demand for public services during construction activities. During operation, the additional permanent population on the station would result in a long-term but minor increase in demand for station services. The increase in demand for public and station services would not be significant.

The proposed projects site would be located outside the CZ and APZs; there would be no impacts to safety during construction and operation associated with Alternative 1.

The Navy has determined that there are no environmental health and safety risks associated with the Proposed Action that would disproportionately affect children. Noise impacts are addressed under Section 3.2, *Noise*. Construction activities would be conducted in compliance with all applicable health and safety regulations. The proposed site would be fenced off during construction activities to minimize the potential for unauthorized access.

Therefore, implementation of the Proposed Action would not result in significant impacts to public health and safety.

3.10 Socioeconomics

Socioeconomic data shown in this section are presented at the U.S. Census Bureau city, county, state, and national levels to characterize baseline socioeconomic conditions in the context of regional, state, and national trends.

3.10.1 Regulatory Setting

Socioeconomic data shown in this section are presented at the U.S. Census Bureau Tract, state, and national levels to characterize baseline socioeconomic conditions in the context of regional, state, and national trends. A Metropolitan Statistical Area is a geographic entity defined for use by federal statistical agencies based on the concept of a core urban area with a high degree of economic and social integration with surrounding communities. Data have been collected from previously published documents issued by federal, state, and local agencies and from state and national databases (e.g., U.S. Bureau of Economic Analysis' Regional Economic Information System).

3.10.2 Affected Environment

NAS Fallon is located in Churchill County, Nevada, approximately 8 miles south of the city of Fallon. The city of Fallon is the largest metropolitan area in Churchill County and the county seat. Churchill County is located in the Fallon Micropolitan Statistical Area.

Other nearby cities include Fernley and Silver Springs, both located in Lyon County. Therefore, the study area for this socioeconomic analysis includes Churchill County and Lyon County.

3.10.2.1 Population

Table 3.10-1 shows the most recent population estimates and population trends in Churchill County and Lyon County. The current population of Churchill County is estimated at 25,843 people. The population of Churchill County is concentrated around the city of Fallon, which has an estimated population of 9,445 people (U.S. Census Bureau, 2022a). The most recent population estimates for Lyon County is 61,585 people. The city of Fernley comprises almost 40 percent of the total county population, with 24,261 people (U.S. Census Bureau, 2022a).

Table 3.10-1 Population Trends in the Study Area

Location	*Population 2010[1] Census*	*Population 2020[1] Census*	*Population 2022[2] Estimates*	*Average Annual Growth (2020[1]–2022[2,3])*	*Population 2025 Projected[4]*	*Population 2028 Projected[4]*
Churchill County	24,877	25,516	25,843	0.6%	28,014	28,782
City of Fallon	8,606	9,327	9,445	0.6%	NA	NA
Lyon County	51,980	59,235	61,585	2.0%	61,076	62,598
City of Fernley	19,368	22,895	24,261	3.0%	NA	NA
City of Silver Springs	5,296	5,629	NA	NA	NA	NA
Nevada	2,700,551	3,104,614	3,177,772	1.2%	3,371,906	3,485,208
United States	308,745,538	331,449,281	333,287,557	0.3%	NA	NA

Notes: [1]Data shown is as of April 1, 2020.
[2]Data shown is as of July 1, 2022.
[3]Two-year growth rate was divided by two to present annual growth rate.
[4]Projection is based on county population estimates for July 1, 2021, as certified by the Governor on March 1, 2022 (Nevada Department of Taxation, 2022).
Legend: % = percent; NA = not available.
Source: U.S. Census Bureau, 2022a; Nevada Department of Taxation, 2022.

Nevada county and state population projections for the years 2025 and 2028 from the Nevada Department of Taxation are shown in Table 3.10-1. The Nevada county population projections are based on 2021 population estimates and indicate that the population in Churchill County is expected to grow

by approximately 1 percent per year and reach 28,782 people, and the population in Lyon County is expected to reach 62,598 people by the year 2028 (Nevada Department of Taxation, 2022). These projections are based on historical growth and do not include any potential plans associated with NAS Fallon.

There are currently 1,257 accompanied and unaccompanied military personnel assigned to NAS Fallon (NAVFAC SW, 2024b). There are also 1,659 civil service employees and contractors at NAS Fallon (NAVFAC SW, 2024b).

3.10.2.2 Housing

Table 3.10-2 provides selected housing characteristics for the study area. Similar to much of the nation, the housing market in the study area is characterized by lack of available inventory and rising prices, which are leading to affordability issues in the market (EKAY Economic Consultants, Inc., 2021).

Table 3.10-2 Housing Characteristics in the Study Area, 2022 Estimates

Location	*Total Housing Units*	*Percent Owner-Occupied*	*Percent Vacant Housing Units*	*Median Value (Owner-Occupied)*	*Median Gross Rent*	*Median Household Income*
Churchill County	10,829	88.6%	11.4%	$255,200	$1,142	$69,922
City of Fallon	4,513	89.3%	10.7%	$234,000	$1,162	$63,490
Lyon County	24,582	94.7%	5.3%	$314,200	$1,196	$70,026
City of Fernley	8,635	97.2%	2.8%	$328,900	$1,351	$84,025
Silver Springs CDP	2,637	88.1%	11.9%	$226,400	$1,308	$47,584
Nevada	1,288,357	90.3%	9.7%	$373,800	$1,382	$71,646
United States	140,943,613	89.2%	10.8%	$281,900	$1,268	$75,149

Legend: % = percent; CDP = census designated place.
Source: U.S. Census Bureau, 2022b,c.

NAS Fallon has a direct effect on local housing demand. Navy housing consists of on-station and off-station housing. Most of the active-duty population at NAS Fallon that reside off-station live within Churchill County and the city of Fallon (Churchill County, 2021). However, due to the high rental rate of military members, shortage of rental units, and lack of available childcare in the county, some military families may be required to find residency outside the Fallon area.

Currently, there are 219 MFH/PPV housing units at NAS Fallon. Unaccompanied housing on the station currently includes five buildings with a total of 113 rooms/226 beds (NAVFAC SW, 2024b). The Navy Gateway Inn and Suites runs one small six-room lodge and one large hotel-style facility with 1,276 rooms (1,885 beds) for rotating or transient active-duty personnel. When these accommodations are full, the station authorizes off-station lodging at local area hotels.

3.10.2.3 Economic Activity (Employment and Income)

The most recent estimates from the Bureau of Economic Analysis of the total full-time and part-time employment in Churchill County was 13,602 jobs (Bureau of Economic Analysis, 2023). Major industries in terms of employment throughout the county include the government and government enterprises industry (i.e., federal civilian, military, state, and local government), the retail trade industry, and the transportation and warehousing industry. There were 953 jobs in the construction industry throughout the county during 2022 (Bureau of Economic Analysis, 2023). In Lyons County, there were 20,610

full-time and part-time jobs (Bureau of Economic Analysis, 2023). Major industries in terms of employment include the manufacturing industry, retail trade, and the government and government enterprises industry. As of 2022, there were 1,493 jobs in the construction industry throughout the county (Bureau of Economic Analysis, 2023).

The most recent average annual unemployment rate from the Bureau of Labor Statistics for Churchill and Lyon Counties was 3.6 percent and 4.9 percent, respectively (Bureau of Labor Statistics, 2023a). Both counties had a lower unemployment rate than the state of Nevada (5.4 percent) and the same or higher than the nation (3.6 percent) (Bureau of Labor Statistics, 2023b).

The per capita income in the past 12 months in Churchill County was estimated at $35,869, and it was estimated at $36,330 in Lyon County. Both counties had lower per capita income than the state ($37,945) and the nation ($41,261) (U.S. Census Bureau, 2022a).

NAS Fallon is a major economic contributor in terms of employment, payroll, goods and services, and contracts and has an estimated total economic impact of $517 million to the local region, which includes Churchill, Washoe, and Lyon Counties (NAS Fallon, 2016).

3.10.2.4 Schools

There are no DoD schools located on NAS Fallon. Military-dependent children who live on the station attend the Churchill County School District, located approximately 10 minutes from the station (Navy, 2023). The public school district includes one PK school, three elementary schools, one middle school, and one high school. The total enrollment as of October 2023 for the 2023–2024 school year for the PK–12th grade schools was 3,283 students (Nevada Department of Education, 2023). Of the total number of students enrolled in the county, 168 (5.12 percent) students identify as military-connected. The district also has an adult education school with a total enrollment of 53 students (Nevada Department of Education, 2023).

In the Lyon County School District, there were 9,057 students enrolled throughout the eight elementary schools, three intermediate schools, two middle schools, one combined school, and five high schools during the 2023–2024 school year. There were 34 (less than 1 percent) students throughout the district that identify as military-connected (Nevada Department of Education, 2023). In addition to the public schools, there are also several private schools throughout Churchill and Lyon Counties which also have students from military families.

The Child and Youth Programs provided at NAS Fallon include the NAS Fallon Child Development Center, School Age Care, and the Youth Activities Programs. The Child Development Center near the existing PPV housing provides childcare services for children ages 6 weeks to 5 years. This facility has a waitlist of 25 children. The School Age Care program is authorized dependent care for children ages 5–12 (grades K–12) at the Youth Activities Center. The School Age Care program offers winter, spring, and summer break activities as well as daily activities. There is also a Teen Center that is a recreational program for youth in grades 7–12 or ages 13-18 (Military One Source, 2024). There are several other licensed childcare facilities throughout the study area; but similar to many other parts of the nation, there is a shortage of available and affordable childcare services in the study area (Churchill County, 2021).

3.10.3 Environmental Consequences

Analysis of impacts to socioeconomics is focused on the effects of the alternatives on population, housing, economic activity (employment and income), and schools.

3.10.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to the socioeconomics of the local area or region. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

3.10.3.2 Alternative 1

The study area for socioeconomic analyses for the Proposed Action is defined as Churchill and Lyon Counties, located in Nevada.

Construction

There would be no permanent change in population within the study area associated with Alternative 1. Construction employment would be filled by the local labor force. Since there would be no in-migration of workers, there would be no impacts to population, housing, and schools.

There would be a temporary increase in the number of people present on the station during construction. Minor and short-term beneficial impacts to the local economy would result from the increased demand for labor and materials during construction. There would be a positive and minor impact to employment and income generated during construction activities under Alternative 1.

Operation

During operation, there would be no change to the number of military personnel or dependents that would impact population growth. However, the number of people residing on the station and off the station would change. Up to 172 miliary families renting in the community would be housed on the station and, therefore, would result in additional 172 off-station rental units available, which would be a benefit to the current housing availability. As stated in Section 2.3.2, *Alternative 1* (*Preferred Alternative)* , maintenance would continue to be similar to current conditions and would not result in significant impacts to employment or income.

Since there are no DoD schools located on NAS Fallon, military dependents of school age (PK to 12th grade) in the community would likely continue to attend the same school within the study area, since most of the active-duty military families live off the station within Churchill County and the city of Fallon (Churchill County, 2021). Active-duty military dependents who live off the station in areas outside Churchill County could continue to attend a school outside their district since the state of Nevada offers an open enrollment policy that allows students to request a variance to attend a school outside of their county. Due to the shortage of childcare services on the station and in the community, it would be expected that military families enrolled in childcare services would remain enrolled at their existing location, and those that are on a waiting list would continue to be on a waiting list for services. Therefore, no significant changes to childcare services under this alternative would be expected.

Therefore, implementation of the Proposed Action would not result in significant impacts to the socioeconomics of the local area or region.

This page intentionally left blank.

4 Cumulative Impacts

This section (1) defines cumulative impacts; (2) describes past, present, and reasonably foreseeable future actions in the ROI; and (3) analyzes the incremental interaction the proposed action may have with other reasonably foreseeable actions.

4.1 Definition of Cumulative Impacts

Cumulative impacts are defined in 40 CFR 1508.1(g) as “effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.”

Cumulative impacts arise when a relationship exists between a proposed action and other actions expected to occur in a similar location and/or during a similar time period. To identify cumulative effects, the analysis addresses the following three fundamental questions.

- Does a relationship exist such that affected environmental components of the proposed action might interact with the affected environmental components of past, present, or reasonably foreseeable actions?
- If one or more of the affected environmental components of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
- If such a relationship exists, does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

4.2 Past, Present, and Reasonably Foreseeable Actions

Actions included in the cumulative impacts analysis are shown in Table 4-1.

Table 4-1 Past, Present, and Reasonably Foreseeable Actions Associated with Proposed PPV MFH at NAS Fallon

Action	*Year*	*Description*
SDFH PPV Phase IV	Past	SDFH PPV Phase IV was to lease, operate, construct, and maintain the inventory of 219 MFH units and related facilities at NAS Fallon, using a privatization program of the type authorized by the Military Housing Privatization Initiative. The LLC renovated Neighborhood Park, located between the Blue Sky and Desert Winds housing areas; renovated tot lots and installed a small water park/play area with shade structure; and constructed a 2,000 SF maintenance building and new community facilities to include children's play areas (“tot lots”), parks, athletic facilities and community centers.

_Hlk159491234 *Action*	*Year*	*Description*
Reclamation Authorization of NAS Fallon Stormwater Discharge	Past, Present, and Reasonably Foreseeable	In 2015, Reclamation authorized the continued discharge and conveyance of stormwater from NAS Fallon through Newlands Project drainage facilities at then existing estimated stormwater discharge volumes and flow rates. Based on a 2015 EA, Reclamation found that the continued NAS Fallon stormwater discharge and conveyance was not a major Federal action that would significantly affect the quality of the human environment and issued a FONSI on December 11, 2015 (Reclamation, 2015). NAS Fallon continues to be responsible for complying with and renewing the NDEP permit (Stormwater General Permit NVR050000 for Stormwater Associated with Industrial Activity) for the continued discharge of this stormwater. NAS Fallon also continues to implement the SWPPP, IRP, Installation Stormwater Site Inspection Program, and structural and non-structural BMPs for stormwater discharges, as required by the State of Nevada.
Conveyance of Non-Project Treated Effluent Water in Newlands Project Lower Deep Diagonal Drain	Past, Present, and Reasonably Foreseeable	Reclamation consent is required for conveyance of non-project water in Reclamation facilities. Effluent water from the NAS Fallon had been conveyed through Reclamation's Lower Diagonal Deep Drain to Stillwater National Wildlife Refuge since the 1950s. NAS Fallon constructed a WWTP in 1995 and the treated effluent water had been conveyed in the Lower Diagonal Deep Drain to Stillwater National Wildlife Refuge since that time without Reclamation consent. However, in 2009, Reclamation authorized the continued conveyance of NAS Fallon treated effluent water through the Lower Diagonal Deep Drain to wetlands at Stillwater National Wildlife Refuge. Expected flows at the time were approximately 320-acre feet per year up to a maximum of 840-acre feet per year (Reclamation, 2009). A Memorandum of Agreement with Reclamation, Navy, and USFWS (2009) defines the roles and responsibilities of the three entities for the use of federal water diversion, storage, and conveyance facilities to deliver water to Lahontan Valley Wetlands and Stillwater National Wildlife Refuge.
Airfield Operations at NAS Fallon	Past, Present, and Reasonably Foreseeable	The Navy evaluated existing and future airfield operations at NAS Fallon in an EA (Navy, 2013). The Navy planned to maintain current/baseline airfield operations, conduct airfield operations with new types of aircraft, and increase airfield operations to support future potential training conditions. Airfield operations at NAS Fallon currently support advanced tactical training events by carrier air wings and other aviation units. As aircraft transitions occur, carrier air wings and other aviation units arrived at NAS Fallon to participate in training events with newer aircraft. The Navy progressively transitioned aging aircraft to newer aircraft beginning in 2015, with the transition to be complete by 2028. Training courses with the F-35C began in 2017. Proposed facility development required to support aircraft missions at NAS Fallon included space for aircraft maintenance, crew and equipment, administration, training, and an unmanned aircraft system runway and staging area.

_Hlk159491234 *Action*	*Year*	*Description*
Implementation of the NAS Fallon INRMP	Past, Present, and Reasonably Foreseeable	The most recent update to the NAS Fallon INRMP was completed in July 2014 (NAS Fallon, 2014a). The INRMP is currently under revision to include the updated FRTC-Modernization and associated land expansion. The plan fulfills the requirements for the INRMP in accordance with the Sikes Act (16 USC sections 670a et seq.), as amended, DoD Instruction 4715.03, and Chief of Naval Operations Instruction 5090.1D. The INRMP was prepared and reviewed in coordination with U.S. Department of Interior, USFWS, and Nevada Department of Wildlife. The purpose of the INRMP is to provide NAS Fallon with a viable framework for future management of natural resources on lands it owns or controls.
Implementation of the NAS Fallon ICRMP	Past, Present, and Reasonably Foreseeable	The most recent update to the NAS Fallon ICRMP was completed in 2013. The ICRMP is currently under revision to include the updated FRTC-Modernization and associated land expansion. The ICRMP is used as a management resource tool to achieve compliance with Sections 106 and 110 of the NHPA and other federal preservation laws. The NHPA charges federal agencies to identify and evaluate historic and archaeological resources under their stewardship and to nominate eligible properties to the NRHP. In addition, the NHPA calls for federal agencies to consider the effects of planned activities on NRHP-listed or eligible properties. ICRMPs include measures for avoiding, minimizing, and compensating for impacts to cultural resources.
FRTC Modernization	Past, Present, and Reasonably Foreseeable	In 2020, NAS Fallon completed an EIS for the renewal and expansion of the FRTC Modernization (Navy, 2020). The EIS analyzed the environmental impacts of modernization to include: (1) renewal of the Navy's current public land withdrawal, (2) land range expansion through the additional withdrawal of public lands and the acquisition of non-federal land, (3) airspace expansion and modifications, and (4) upgrades to range infrastructure. Aviation and ground training would not increase from the types and tempos currently conducted. The Navy signed a Record of Decision on March 12, 2020. The selected alternative involved the renewal of 201,762 acres of the current federal land withdrawal, withdrawal of an additional 600,564 acres of federal land, and the purchase of 66,551 acres of non-federal lands to retain and expand the range complex. Congress approved expansion of the FRTC in the Fiscal Year 2023 NDAA in December 2022. Congress' approval authorizes full operational use of the modernized ranges, but only after relevant land acquisition, airspace modifications, and follow-on relocations of Nevada Route 361 and the Great Basin Pipeline Company's natural gas pipeline have been completed, which would ideally occur by 2027. Initial operational use of individual modernized ranges would occur as land acquisition, and road and pipeline relocation make it possible to use these areas. The existing Bravo ranges and FRTC airspace would remain operational throughout the expansion.
Combined Child Care and Youth Center	Reasonably Foreseeable	The Navy plans to construct and provide new Consolidated Child Care and Youth Activity Center to support the NAS Fallon mission and the Navy's effort to increase the accessibility of high quality on-base care for children across the fleet. The facility would be adjacent to and east of the existing Child Development Center.

_Hlk159491234 *Action*	*Year*	*Description*
Renovate WWTP	Reasonably Foreseeable	The Navy would renovate the existing WWTP. Renovations include constructing an equalization tank and high flow pumps; the tank will be supported on a pile foundation. Other renovations include repairs to the WWTP include installing cover plates over the treatment tank wall notches to prevent solids carrying over to the clarifier and aerobic digester, installing pumps in treatment tanks to increase hydraulic flow to clarifiers, and reconfiguring flow sensors in treatment tanks. The renovations will allow the existing WWTP operators to handle surges in incoming flows caused by weather events along with changes in base population during training events.
Greenbelt and Agriculture Outlease Management Plan, NAS Fallon, Nevada	Past, Present, and Reasonably Foreseeable	The Agriculture Outlease Program at NAS Fallon is intended to enhance safety at NAS Fallon by creating a “green” vegetative buffer zone (the “Greenbelt”) around the airfield and to contribute to the local economy by providing an opportunity for agricultural production on Navy-managed lands where such use is compatible with the Navy’s mission (NAVFAC SW, 2023a). In addition, in the interest of water conservation, the Greenbelt is managed in such a way that direct surface deliveries of water are reduced “to the maximum extent practicable,” although water conservation is of secondary concern to achieving safety. The Navy is responsible for implementing and maintaining a scientifically sound, balanced, and integrated program for the management and protection of natural resources occurring on its lands in a way that balances the interests of the public and the needs of the Navy.
Churchill County 2020 Master Plan	Past, Present, and Reasonably Foreseeable	The Churchill County 2020 Master Plan (Churchill County, 2021) provides the framework foundation for decision making on matters relating to growth and development in Churchill County. The Master Plan focuses on land use and development issues facing Churchill County and establishes goals and policies that address countywide issues and concerns. The land use element of the Master Plan establishes a planned pattern for the development of Churchill County.
Housing Development in the City of Fallon	Reasonably Foreseeable	A Housing Needs Assessment-Churchill County, Nevada concluded that there is a significant shortage in housing in Fallon and Churchill County due to job growth and housing development not keeping up with demand (EKAY Economic Consultants, Inc. 2021). Several housing development opportunities have been identified and approved in the county and just outside of the city of Fallon. Projects that have been recently approved include the following: • The Old Stone Ranch Planned Unit Development is comprised of about 107.2 acres north and south of Birch Lane in Churchill County. The current proposal is for 619 single-family homes and multi-family residences (Nevada Appeal, 2023). • The Fallon Paiute Shoshone Tribe plans to build 22 townhomes, a community building, and playground on the Fallon Paiute Shoshone Indian Colony in Fallon, Nevada, after receiving a 2023 allocation of Low-Income Housing Tax Credits from the Nevada Housing Division (Travois, 2022).

Legend: BMP = Best Management Practice; DoD = Department of Defense; EA = Environmental Assessment; EIS = Environmental Impact Statement; FONSI = Finding of No Significant Impact; FRTC = Fallon Range Training Complex; ICRMP = Installation Cultural Resources Management Plan; INRMP = Integrated Natural Resources Management Plan; IRP = Installation Restoration Plan; LLC = Limited Liability Company; MFH = Military Family Housing; NAS = Naval Air Station; NAVFAC SW = Naval Facilities Engineering Systems Command Southwest; NDAA = National Defense Authorization Act; NDEP = Nevada Division of Environmental Protection; NHPA = National Historic Preservation Act; NRHP = National Register of Historic

Cumulative Impacts

Places; PPV = Public Private Venture; Reclamation = Bureau of Reclamation; SDFH = San Diego Family Housing; SF = square foot/feet; SWPPP = Stormwater Pollution Prevention Plan; U.S. = United States; USC = United States Code; USFWS = United States Fish and Wildlife Service; WWTP = Wastewater Treatment Plant.

4.3 Cumulative Impact Analysis

4.3.1 Air Quality

The study area for assessing cumulative air quality effects from criteria pollutants includes Churchill County. Churchill County currently attains all ambient air quality standards. The immediate area surrounding the proposed MFH site at NAS Fallon is the focus of localized cumulative effects, as this area would experience the highest ambient impacts from project emissions. A past project (SDFH PPV Phase IV) with construction impacts would not pose cumulative air quality effects when considered with the Proposed Action since the project is complete. Projects with new construction in the same time period and location as the Proposed Action could pose potential cumulative air quality effects. These projects include the Fallon Range Training Complex Modernization, Combined Child Care and Youth Center, and renovations to the WWTP.

The main sources of cumulative emissions that could combine with emissions from the Proposed Action and generate cumulative effects include an increase in the number of vehicles that access the NAS Fallon main gate and aircraft that operate at the station. Vehicle traffic generated by proposed operations would be the main source of regional impacts from project emissions. This traffic would disperse through regional roadway systems; therefore, its contribution to localized cumulative impacts would decrease with distance from NAS Fallon. The proposed Combined Childcare and Youth Center would generate additional traffic and air emissions; however, the Proposed Action and the Childcare and Youth Center would provide service for existing active-duty military members and their families.

Projects that could pose cumulative air quality effects include Airfield Operations at NAS Fallon and Fallon Range Training Complex Modernization. Airfield Operations at NAS Fallon currently support advanced tactical training events by carrier air wings and other aviation units. Current operations and air emissions were included under the affected environment. Projected future changes were estimated in NEPA documents.

4.3.1.1 Cumulative Effects Analysis

As described in Section 3.1, *Air Quality*, construction associated with the Proposed Action would generate annual emissions that would remain well below all thresholds of concern. Implementation of conservation measures to control fugitive dust would minimize emissions of PM_{10} and $PM_{2.5}$, respectively, from proposed construction activities. The transport of these relatively minor amounts of emissions from the project area would quickly disperse to low levels off NAS Fallon. Contributions from cumulative sources identified above and in Section 4.2, *Past*, *Present*, *and Reasonably Foreseeable Actions*, to localized off-site project impacts would be limited by the geographical separation of the cumulative projects. Transport of these emissions to the locality surrounding the project area would result in ambient impacts below levels of concern, as demonstrated by the attainment status of all ambient air quality standards in the study area. As a result, construction emissions from the Proposed Action, in combination with emissions from cumulative projects, would not contribute to an exceedance of an ambient air quality standard. Therefore, criteria pollutant impacts from project construction would not result in significant cumulative effects.

As shown in Table 3-1, operational activities associated with the Proposed Action would generate minor amounts of annual emissions due the operation of natural gas-fired space and water heaters within project residential and auxiliary buildings and a diesel-powered emergency generator within the pump station. The transport of these relatively minor amounts of emissions would quickly disperse to low levels off NAS Fallon. Project vehicle trips would result in intermittent emissions that would disperse to low levels across the project region. The contribution of ambient pollutant impacts from cumulative sources to project impacts would not contribute to an exceedance of an ambient air quality standard. Therefore, criteria pollutant impacts from project operations would not result in significant cumulative effects.

4.3.1.2 Greenhouse Gases

The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as worldwide sources of GHGs contribute to climate change. Table 3-1 presents estimates of GHG emissions that would occur from construction and operation of the Proposed Action. These data show that construction over 3 years would emit 1,923 metric tons of CO_2e, and operation of the full project buildout would emit 1,525 metric tons of CO_2e per year. These emissions would incrementally contribute to future climate change, some effects of which are identified in Section 3.1.1.6, *Greenhouse Gases*.

Climate change could impact implementation of the Proposed Action at NAS Fallon and the adaptation strategies needed to respond to future conditions. For the region surrounding the station, the main effect of climate change is increased temperature and its associated effects, as documented by climate analyses presented in Section 3.1.1.6, *Greenhouse Gases*. Current operations at NAS Fallon have adapted to droughts and wildfires. However, exacerbation of these conditions in the future could impede site activities during extreme events. Due to federal and Navy mandates, NAS Fallon would develop adaptation measures to compensate for future climatic events.

4.3.2 Noise

The proposed Action would take place at NAS Fallon on Navy property. Projects that could interact with Proposed Action noise impacts include Airfield Operations at NAS Fallon, Combined Child Care and Youth Center, and renovations to the WWTP. Other projects that involve construction on or near NAS Fallon (Combined Child Care and Youth Center and renovations to the WWTP) would also generate temporary and localized noise level increases. These projects would occur in the same area, but the time period may be different. However, even assuming all projects would be constructed during the same time as the proposed MFH, combined noise levels would not be expected to result in significant noise impacts. If certain aircraft types currently assigned to NAS Fallon were to be replaced with other aircraft types, noise levels on and near the station could increase (NAS Fallon, 2013). However, potential noise level increases in the project area associated with the past aircraft replacements considered would be expected to be relatively minor. The proposed MFH would likely remain compatible with potential future noise levels. Therefore, noise impacts from project operations would not result in significant cumulative effects.

4.3.3 Biological Resources

The Proposed Action would take place at NAS Fallon on Navy property. Projects that could interact with Proposed Action impacts to biological resources include Airfield Operations at NAS Fallon, Combined Child Care and Youth Center, implementation of the NAS Fallon INRMP, and Greenbelt and Agriculture

Outlease Management Plan (see Table 4-1). Cumulative biological resources impacts from past, present, and future actions within the Proposed Action area would be less than significant because all actions undertaken by NAS Fallon are required to adhere to the requirements of the ESA, the MBTA, the NAS Fallon INRMP, Bird/Wildlife Aircraft Strike Hazard Management Plan, and other applicable legal requirements. The Proposed Action has the potential to incrementally increase habitat loss, fragmentation, and visual and aural disturbance to biological resources. However, cumulatively, while any project on the installation may have the potential to impact individual species and habitats, the overall distribution of wildlife populations, habitats, and ecosystem functions and values would not be significantly affected as the Proposed Action would be restricted to only a small fraction of the total available habitat on NAS Fallon, and the size of the project footprint is designed such that the proposed work would also avoid playa wetlands, *Asclepias* plants, and black greasewood habitat as much as possible. Additionally, the Proposed Action would be implemented over multiple years. This temporal spacing would further minimize the overall disturbance footprint created by work activities. Therefore, it is anticipated that the incremental contribution of the Proposed Action, when added to the cumulative impacts of all other past, present, and reasonably foreseeable future actions, would not result in measurable additional impacts to biological resources on NAS Fallon.

4.3.4 Cultural Resources

The study area for cumulative impacts analysis is the project area and lands adjacent to the project area. As described in Section 3.4.2, *Affected Environment*, this area includes prehistoric and historic archaeological sites as well as historic canals associated with the Newlands Project, which was one of the first Reclamation projects in the country. Relevant cumulative projects are other projects in the study area that include ground-disturbing activities that could affect archaeological sites and/or new facilities (i.e., new buildings, landscaping, lighting) that could affect the viewshed of nearby historic properties. Examples of relevant projects described in Section 4.2, *Past*, *Present*, *and Reasonably Foreseeable Actions*, include the construction of new housing under the SDFH PPV Phase IV project, new facilities proposed to support future airfield operations at NAS Fallon, upgrades to range infrastructure under the Fallon Range Training Complex Modernization plan, and construction of a new Combined Child Care and Youth Activity Center.

Cumulative impacts to cultural resources from past, present, and reasonably foreseeable actions within the study area would be less than significant because these projects have been and would similarly be required to avoid or mitigate impacts to cultural resources. In addition, the Proposed Action, with incorporation of conservation measures described in Section 3.4.3, *Cultural Resources*, *Environmental Consequences*, would have no effect on historic properties and would not have the potential to meaningfully contribute to any cumulative impacts, significant or otherwise. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable actions, would not result in significant impacts within the study area and would be in accordance with procedures identified in preserving cultural resources in the NAS Fallon Integrated Cultural Resources Management Plan.

4.3.5 Land Use

The Proposed Action would take place at NAS Fallon on Navy property. Projects that could interact with Proposed Action impacts to land use include Airfield Operations at NAS Fallon, Combined Child Care and Youth Center, Greenbelt and Agriculture Outlease Management Plan, and Churchill County 2020 Master Plan (see Table 4-1). The Master Plan designates the area west of the project area as NAS Fallon

Buffer/Agriculture. Within this area, agriculture is the preferred land use. Most of this area is zoned as agricultural, with some exceptions. As such, it is reasonable to assume that land use impacts associated from past, present, and reasonably foreseeable projects list in Table 4-1 would not combine to create cumulatively significant land use impacts. Furthermore, there are no known incompatible development projects adjacent or in proximity to the project location. The Proposed Action would be compatible with existing land uses. Therefore, cumulative impacts to land use due to the Proposed Action combined with the past, present, and reasonably foreseeable actions, are expected to be less than significant.

4.3.6 Infrastructure

The study area for cumulative effects on infrastructure includes the area surrounding the proposed MFH site. Past, present, and reasonably foreseeable actions listed in Table 4-1 have a potential to interact with the Proposed Action and to result in cumulative effects on demands on one or more utility infrastructure systems. Utilities and infrastructure that could be cumulatively affected from implementation of the Proposed Action include potable water, wastewater, stormwater, solid waste, and energy. Current utilities have sufficient capacity to handle the Proposed Action and cumulative projects except for wastewater treatment. Current station capacity shortfalls for wastewater treatment would be addressed by construction of a sanitary sewer pump station and a force main sewer pipeline under the Proposed Action to convey wastewater generated by the MFH project to the WWTP. In addition, the proposed renovations to the WWTP would be a cumulative project (see Table 4-1). Other cumulative projects include the Reclamation Authorization of NAS Fallon Stormwater Discharge project and the Conveyance of Non-Project Treated Effluent Water in Newlands Project Lower Deep Diagonal Drain.

Both the proposed MFH and the Combined Child Care and Youth Center would generate additional wastewater requiring treatment. Renovating the WWTP would pose beneficial effects to overall wastewater treatment and capacity at NAS Fallon. The renovations would allow the existing WWTP operators to handle surges in incoming flows caused by weather, surges in base population during training events, and additional wastewater from proposed projects. In addition, formalizing the water discharge agreements would pose a beneficial cumulative impact because it would ensure the continued discharge of wastewater and stormwater from NAS Fallon that is important for wetland preservation at the Stillwater National Wildlife Refuge. As a result, cumulative effects from the Proposed Action combined with the past, present, and reasonably foreseeable actions, would not result in significant cumulative effects.

4.3.7 Hazardous Materials and Wastes

The study area for cumulative effects on hazardous materials and wastes includes the area surrounding the proposed MFH site. None of the cumulative actions identified in Table 4-1 are considered to be relevant to the Proposed Action and hazardous materials and wastes. Construction contractors would implement BMPs for safe storage of hazardous materials and the prevention of, and response to, any spills related to the operation of construction equipment to minimize risks. Contractors would also be required to follow all federal and local requirements with respect to storage, transportation, and handling any hazardous materials. All hazardous wastes would be handled and disposed of in accordance with federal and local regulations. Therefore, a detailed cumulative effects analysis for this resource was not performed.

4.3.8 Transportation

The study area for transportation was defined as the area of the nine intersections considered in the traffic study (see Section 3.8, *Transportation* and Appendix F). Cumulative projects are other projects in the study area that would add traffic to the local circulation system in the near future. Based on research and coordination with Churchill County staff, no cumulative projects were identified (Linscott, Law & Greenspan, Engineers, 2024). Per the Churchill County 2020 Master Plan (Churchill County, 2021), Churchill County's population is expected to increase by 1 percent annually. Therefore, a growth rate of 1 percent per year for 5 years was applied to existing conditions traffic volumes. Projects at NAS Fallon that could generate additional traffic include the Combined Child Development and Youth Center and the renovation of the WWTP.

Cumulative transportation effects could occur with implementation of the Proposed Action associated with the proposed new Combined Child Development and Youth Center, renovations of the WWTP, and annual population growth.

The location of the Proposed Action would be adjacent to the existing PPV housing and NAS Fallon Child Development Center as well as the potential future Combined Child Development and Youth Center. These facilities could pose potential cumulative effects to transportation since all would be concentrated in one area. Although the MFH residents currently commute to the station, their specific location of residence is unknown. The model incorporated assumptions regarding commuting patterns and spouse trips. Queuing at the main gate is currently occurring; therefore, MFH and cumulative projects in that same area could result in congestion. However, co-locating housing and childcare facilities could reduce vehicle trips. Some families that currently live in surrounding communities and drive to the site or multiple childcare facilities to drop off and pick up children could walk to the facilities from the housing. In addition, some military personnel may choose to walk or bike to the station. The renovation of the WWTP could also contribute due to construction workers entering the main gate. Queues at the main gate in the morning and afternoon during peak hours would continue to occur and would likely increase. Annual population growth along with the Proposed Action could also pose cumulative transportation effects. The transportation analysis included 1 percent population growth over 5 years; therefore, it presents a cumulative analysis. With the new MFH units located close to the childcare facilities and the main gate, the potential cumulative effects may be offset by people walking or biking. The station could consider adding sidewalks and bike lanes, adding additional gate security staff, or other gate changes during peak hours to mitigate queues at the gate, depending on funding. As a result, cumulative effects to transportation would not be significant.

4.3.9 Public Health and Safety

The public health and safety analysis addresses health and well-being of military personnel and civilians living on or in the vicinity of NAS Fallon—specifically, emergency services, APZs, and environmental health and safety risks to children. The study area includes the location of the proposed new MFH units, which is on Navy property, surrounding areas, and the APZs. Projects listed in Table 4-1 that could pose cumulative effects on public health and safety include Airfield Operations at NAS Fallon with any potential changes to APZs; the proximity of the Combined Child Care and Youth Center, and the WWTP renovation; and the safety enhancing Greenbelt and Agricultural Outlease Management Plan.

The Proposed Action is consistent with the airfield operations since the site is not located within APZs. Any future changes in aircraft or operations would not likely affect the proposed new MFH units, existing

PPV housing, and childcare facilities since the APZs are typically located at the ends of the runways. Any new aircraft or operational changes would evaluate impacts on these facilities. The Greenbelt and Agricultural Outlease Management Plan serves to create a green buffer around NAS Fallon to reduce incompatible development and enhance safety. This plan is beneficial for public safety.

The proximity of the proposed new MFH units and the Combined Childcare and Youth facility could result in additional need for emergency services. The site plan has not yet been developed, but would be designed in accordance with emergency services requirements, such as those found in Unified Facilities Criteria 4-022-03, *Security Fences and Gates*; National Fire Protection Association; or similar. Based on coordination with NAS Fallon, the traffic study suggests that primary site access could be via Cottonwood Drive. The traffic study recommends that access should occur at least 300 feet west of Juniper Drive, which currently serves the NAS Fallon Child Development Center, or via a new access point to Cottonwood Drive west of the Cottonwood Drive/Juniper Drive intersection. In addition, access points could be provided to the site via Pasture Road. This access can be day-to-day or emergency only (Linscott, Law & Greenspan, Engineers, 2024).

Renovating the WWTP would improve the wastewater treatment and capacity. This project would enhance the health and safety of active-duty military members and their families. The Navy has determined that there are no environmental health and safety risks associated with the Proposed Action that would disproportionately affect children. Therefore, cumulative public health and safety impacts associated with implementing the Proposed Action, when considered with other proposed projects, could occur, but would be minor considering preventative measures, such as locating the proposed new MFH units outside of APZs, maintaining the greenbelt safety zone, and upgrading the WWTP.

4.3.10 Socioeconomics

The study area for socioeconomics includes Churchill and Lyon Counties in the state of Nevada. Past, present, and reasonably foreseeable future actions include the housing developments near the city of Fallon detailed in Table 4-1. Cumulative socioeconomic impacts from past, present, and future actions within the study area would be less than significant because there would be no population change associated with the Proposed Action that would impact housing, economic activity, or schools. There would be beneficial impacts to the local community during construction from the use of local labor and supply. There would be an overall benefit to housing in the region with 172 military families moving to new housing, thus making 172 off-station rental units available to the community. The addition of the planned housing in the city of Fallon would improve housing availability and affordability. Therefore, implementation of Proposed Action combined with the past, present, and reasonably foreseeable future projects, would not result in significant cumulative effects within the study area. Cumulative socioeconomic impacts that could occur include minor but beneficial impacts to housing availability and affordability.

5 Other Considerations Required by NEPA

5.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations

In accordance with 40 CFR section 1502.16(c), analysis of environmental consequences shall include discussion of possible conflicts between the Proposed Action and the objectives of federal, regional, state and local land use plans, policies, and controls. Table 5-1 identifies the principal federal and state laws and regulations that are applicable to the Proposed Action, and describes briefly how compliance with these laws and regulations would be accomplished.

Table 5-1 Principal Federal and State Laws Applicable to the Proposed Action

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	***Status of Compliance***
NEPA; CEQ NEPA implementing regulations; Navy procedures for Implementing NEPA; Reclamation procedures for Implementing NEPA	This EA has been prepared in accordance with NEPA, CEQ regulations implementing NEPA, Navy NEPA procedures, and Reclamation NEPA procedures.
Clean Air Act	Implementation of the Proposed Action would generate emissions below *de minimus* levels and not exceed air quality standards. As such, the Navy has prepared a Record of Non-Applicability demonstrating CAA conformity (Appendix D).
Clean Water Act	The Navy has determined the Proposed Action would be in compliance with the Clean Water Act. The use of BMPs would limit potential erosion and runoff.
National Historic Preservation Act	No historic properties are located within the area of potential effects for the Proposed Action. The Nevada SHPO concurred with the Navy's finding of "No Historic Properties Affected" (Nevada SHPO, 2024).
Endangered Species Act	No threatened or endangered plant or wildlife species or critical habitat occur in the project footprint and Proposed Action would not result in impacts to threatened or endangered plant or wildlife species.
Migratory Bird Treaty Act	The Proposed Action would result in potential impacts to terrestrial wildlife species, including potential impacts to species protected under the Migratory Bird Treaty Act. Table 2-2 lists conservation measures that would be implemented as part of the Proposed Action to protect natural and biological resources, including migratory birds.
Bald and Golden Eagle Protection Act	The Proposed Action would result in potential impacts to terrestrial wildlife species, including potential impacts to bald and golden eagles. Table 2-2 lists conservation measures that would be implemented as part of the Proposed Action to protect natural and biological resources, including bald and golden eagles.
Comprehensive Environmental Response, Compensation, and Liability Act	There are no sites regulated by the Comprehensive Environmental Response, Compensation, and Liability Act located in the Proposed Action project area.

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	*Status of Compliance*
Resource Conservation and Recovery Act	Hazardous materials and wastes would be handled and disposed of in accordance with the NAS Fallon Hazardous Waste Management Plan and all applicable federal, military, state, and local laws and regulations.
Farmland Protection Policy Act	Areas of prime farmland if irrigated and reclaimed of excess salts and sodium within the Proposed Action project area would be avoided.
Executive Order 11988, Floodplain Management	The Proposed Action project area is not located within a 100-year floodplain. None of the activities associated with the Proposed Action would impact floodplains
Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks	The Proposed Action would not result in environmental health risks and safety risks that may disproportionately affect children.
Executive Order 13175, Consultation and Coordination with Indian Tribal Government	The Navy is consulting with Tribal Governments.
Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds	Impacts to habitat used by migratory birds would be avoided.

Legend: BMP = Best Management Practice; CAA = Clean Air Act; EA = Environmental Assessment; CEQ = Council on Environmental Quality; NAS = Naval Air Station; NEPA = National Environmental Policy Act; SHPO = State Historic Preservation Office.

5.2 Irreversible or Irretrievable Commitments of Resources

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel, and natural or cultural resources. These resources are irretrievable in that they would be used for this project when they could have been used for other purposes. Human labor is also considered an irretrievable resource. Another impact that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of those resources.

The No Action Alternative would not generate irreversible or irretrievable commitments of resources.

The Proposed Action requires the use of fuel, oil, lubricants, and a variety of building materials during the construction process that would be consumed on a long-term/permanent basis. The loss of vegetation would not be considered a significant irreversible or irretrievable commitment of resources because this is minor relative to natural habitat values in the vicinity. Construction and operation of the proposed facilities would also require human labor, which would be irreversible and irretrievable. Operation of the proposed new MFH would require minimal additional resources. Implementing the Proposed Action would not result in significant irreversible or irretrievable commitment of resources.

5.3 Unavoidable Adverse Impacts

This EA has determined that the alternatives considered would not result in any significant unavoidable adverse impacts.

5.4 Relationship between Short-Term Use of the Environment and Long-Term Productivity

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development site reduces future flexibility in pursuing other options, or that using a parcel of land or other resources often eliminates the possibility of other uses at that site.

In the short term, effects to the human environment with implementation of the Proposed Action would primarily relate to the construction activity itself, including elimination of vegetative ground cover within the project area. Air quality and noise would be impacted in the short term. The construction and operation of MFH would not significantly impact the long-term natural resource productivity of the area. The Proposed Action would not result in any impacts that would significantly reduce environmental productivity or permanently narrow the range of beneficial uses of the environment.

This page intentionally left blank.

6 References

Baskerville, M. (2024). NAS Fallon Cultural Resources Inventory for the Expansion of Family Housing at NAS Fallon, Churchill Counties, Nevada. Technical Report Number: 164.

BBA Pumps. (2024). *BBA Pumps*. Retrieved from Determine the pump noise level: https://www.bbapumps.com/determine-the-pump-sound-level. February 28.

Bowers, R. (2009). A Class III Cultural Resource Survey for the Kent Property ELMR, NAS Fallon, Churchill County, Nevada. On file at NAS Fallon.

Bureau of Economic Analysis. (2023). *CAEMP25N Total Full-Time and part-time employment by NAICS Industry*. Retrieved from Regional Data GDP and Personal Income. November 16.

Bureau of Labor Statistics. (2023a). *Labor Force Data by County, 2022 Annual Averages*. Retrieved from Local Area Unemployment Statistics: https://www.bls.gov/lau/laucnty22.txt. April 1.

Bureau of Labor Statistics. (2023b). *Unemployment Rates for States, 2022 Annual Averages*. Retrieved from Local Area Unemployment Statistics Unemployment Rates for States: https://www.bls.gov/lau/lastrk22.htm. March 1.

Churchill County. (2021). *Churchill County 2020 Master Plan*. Adopted on April 21, 2021, by the Churchill County Board of County Commissioners . Available at: https://www.churchillcountynv.gov/214/Land-Use-Zoning-Land-Development.

Churchill County. (2023). *Fire Department*. Available at: https://www.churchillcountynv.gov/156/Fire-Department. December 21.

CNIC. (2010). *Environmental Compliance Guide for Commanding Officers of Navy Installations Version 2*.

CNIC. (2020). 2020 Housing Requirements Market Analysis. 21 August.

CEQ. (2023). *National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change (issued Jan. 9, 2023)*. Council on Environmental Quality. Available at: https://ceq.doe.gov/guidance/ceq_guidance_nepa-ghg.html.

Countess Environmental. (2006). *WRAP Fugitive Dust Handbook*. Prepared for the Western Governors' Association, Table 3-7 for water application every 2.1 hours. Retrieved February 12, 2024. Available at: https://serdp-estcp.org/focusareas/landing.

Creger, C. Cliff. (1995). *An Intensive Cultural Resource Survey for the Water Line, Naval Air Station Fallon, Churchill County, Nevada*. Naval Air Station Fallon Archaeological Technical Report Series No. 7. Nevada State Museum Report Number 1-459. On file at NAS Fallon.

Desert Research Institute. (2023). *California Nevada Adaption Program*. Retrieved February 11, 2024. Available at: https://www.dri.edu/cnap/.

DoD Strategic Environmental Research and Development Program. (2023). *Focus Areas - Installation Resilience. Department of Defense*. Retrieved February 11, 2024. Available at: https://serdp-estcp.org/focusareas/landing.

Department of the Navy. (2022). *Department of the Navy Climate Action 2030*. Washington DC: Department of the Navy, Office of the Assistant Secretary of the Navy for Energy, Installations, and Environment. Available at: https://www.navy.mil/Portals/1/Documents/Department%20of%20the%20Navy%20Climate%20Action%202030.pdf. May.

EKAY Economic Consultants, Inc. (2021). *Housing Needs Assessment-Churchill County, Nevada*. Available at: https://www.churchillcountynv.gov/DocumentCenter/View/16071/Churchill-County-Housing-Needs-Assessment--10-2021.

Estes, M. (2015). Draft A Class III Cultural Resources Inventory of 3,008.2 Acres on Main Station, Naval Air Station Fallon, Churchill County, Nevada. On file at NAS Fallon.

Federal Emergency Management Agency. (2008). Flood Insurance Rate Map. Churchill County Nevada and Incorporated Areas. Panel 1775 of 2800. Map Number 32001C1775F, effective September 26, 2008.

Federal Highway Administration. (2006). *Roadway Construction Noise Model User's Manual*.

Intergovernmental Panel on Climate Change. (2021). *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Geneva, Switzerland: Cambridge University Press.

Jones, R., and Dougherty, J. (2016). A Class III Cultural Resources Inventory in Support of Construction and Operation of a Solar Photovoltaic System at Naval Air Station Fallon, Nevada. On file at NAS Fallon.

Kimbrough, K., and Stroud, T. (2014). *Wastewater Treatment Design: NAS Fallon WWTP*. Reno, Nevada: University of Reno, Nevada.

Linscott, Law and Greenspan, Engineers. (2024). *Transportation Impact Analysis NAS Fallon Public-Private Venture Housing*. San Diego.

McAfee, S., Restaino, C., Ormerod, K.J., Dettinger, M., McEvoy, D., Kalansky, J., Cayan, D., Lachniet, M., Moser, S., VanderMolen, K., and Wall, T. (2021). *Climate Change Impacts in Nevada*. Climate Change Impacts in Nevada. Reno: University of Nevada. Retrieved February 11, 2024. Available at: https://extension.unr.edu/publication.aspx?PubID=3957#:~:text=PRECIPITATION%20AND%20DROUGHT,Nevada%20and%20across%20the%20West.

Military One Source. (2024). *Naval Air Station Fallon, Services, Child Care Over*view. Retrieved April 8, 2024. Available at: https://installations.militaryonesource.mil/military-installation/naval-air-station-fallon/child-and-youth-services/child-care.

Natural Resources Conservation Service. (2024). Custom Soil Resource Report for Fallon-Fernley Area, Nevada, Parts of Churchill, Lyon, Storey and Washoe Counties.

NAS Fallon. (2002). *Air Installations Compatible Use Zones Report*.

NAS Fallon. (2008). *Stormwater Pollution Prevention Plan (SWPPP)*. Fallon, Nevada: NAS Fallon.

NAS Fallon. (2013). *Airfield Operations EA*.

NAS Fallon. (2014a). *Final Integrated Natural Resource Management Plan for Naval Air Station Fallon*. July.

NAS Fallon. (2014b). *Environmental Assessment for Proposed Addition of Training Activities and Range Enhancements at Naval Air Station Fallon on Training Range Bravo-16*. Fallon, Nevada: NAS Fallon.

NAS Fallon. (2015). *Vegetation and Rare Plant Surveys Naval Air Station Fallon*.

NAS Fallon. (2016). *NAS Fallon Economic Impact Assessment*. May.

NAS Fallon. (2020). *Water Conservation Plan Naval Air Station Fallon with Centroid Electronic Warfare Facility*. Fallon, Nevada: NAS Fallon.

NAVFAC. (2004). *Technical Report TR-2254-ENV Facilities Management Guide for Asbestos and Lead*. Port Hueneme, CA: NAVFAC Engineering Service Center.

NAVFAC SW. (2014). *NAS Fallon Installation Master Plan*. May.

NAVFAC SW. (2022). *Final Site Inspection Report Basewide Site Inspection of Per- and Polyfluoroalkyl Substances (PFAS), NAS Fallon*. Fallon.

NAVFAC SW. (2023a). *Greenbelt and Agriculture Outlease Management Plan Naval Air Station Fallon, Nevada*. September.

NAVFAC SW. (2023b). *Annual Consumer Confidence Report for Calendar Year 2022 on the Quality of Drinking Water for the Naval Air Station Fallon Water System*. NAVFAC SW.

NAVFAC SW. (2024a). *Environmental Condition of Property (ECP) for San Diego Family Housing (SDFH) Phase VII Naval Air Station (NAS) Fallon*. San Diego, CA: NAVFAC Southwest.

NAVFAC SW. (2024b). *Personal communication between Ronald Kelly (CIV USN) and Amanda Peyton (USN NAVFAC SW SAN CA) via email on January 17, 2024 regarding NAS Fallon PPV Housing*.

Navy. (2013). Final Environmental Assessment for Airfield Operations at NAS Fallon.

Navy. (2016). *Final Environmental Assessment for Construction and Operation of a Solar Photovoltaic and/or Battery Energy Storage System at Naval Air Station Fallon, Nevada*. Fallon.

Navy. (2020). Final Environmental Impact Statement for the Fallon Range Training Complex Modernization.

Navy. (2023). *Schools*. Retrieved from Navy Life SW, NAS Fallon, MWR. Available at: https://fallon.navylifesw.com/programs/84516822-2909-474b-8967-84cc39fed2cd.

Nevada Appeal. (2023). County approves huge housing developments. January 25. Available at: https://www.nevadaappeal.com/news/2023/jan/25/county-approves-huge-housing-developments/.

NDEP. (2017). *State of Nevada Solid Waste Management Plan*. Carson City, NV: State of Nevada.

NDEP. (2019). *Stormwater General Permit NVR050000*. Carson City, Nevada: Bureau of Water Pollution Control, Neveda Department of Environmental Protection.

Nevada Department of Education. (2023). *Enrollment for Nevada Public Schools 2023-2024 School Year*. Available at: https://doe.nv.gov/datacenter/enrollment-data/.

Nevada Department of Taxation. (2022). *Nevada County Population Projections 2022 to 2041.* Available at: https://tax.nv.gov/Publications/Population_Statistics_and_Reports/.

Nevada Division of Natural Heritage. (2023). Plant and Animal Watch List - July 2023.

Nevada Division of Natural Heritage. (2024). At-Risk Plant and Animal Tracking List - February 2024.

Nevada SHPO. (2024). Technical Report Number 164 Cultural Resources Inventory for the Expansion of Family Housing; Churchill County; SHPO UT#2024-8419; 35843.

Office of Economic Adjustment. (2015). *NAS Fallon Joint Land Use Study*.

Reclamation. (2008). Engineering and O&M Guidelines for Crossings: Bureau of Reclamation Water Conveyance Facilities (Canals, Pipelines, and Similar Facilities). April.

Reclamation. (2009). Conveyance of Non-Project Treated Effluent Water in Newlands Project Lower Deep Diagonal Drain. Environmental Assessment. October 2008. Lahontan Basin Area Office, Carson City, Nevada.

Reclamation. (2015). Authorization of Naval Air Station Fallon Stormwater Discharge. Environmental Assessment LO-2012-1027.

Reclamation. (2018). License to use the Project Drains for Storm Water Drainage at Naval Air Station Fallon (NASF) in Fallon, Nevada.

Reclamation. (2021). Bureau of Reclamation's Guide for Implementing the Multiple Property Documentation Form: Evaluating the National Register of Historic Places Eligibility of Newlands Project Built-Environment Resources. July.

Reclamation, Navy, and USFWS (2009). Conveyance of Non-Project Treated Effluent Water in Newlands Project Lower Deep Diagonal Drain. Environmental Assessment. October 2008. Lahontan Basin Area Office, Carson City, Nevada.

Solutio Environmental. (2022). *Air Conformity Applicability Model (ACAM)*. Retrieved February 12, 2024. Available at: https://aqhelp.com/acam.html.

TranSystems Corporation Consultants. (2020). Fallon Urban Area 2020 Transportation Plan. Final Report. Prepared for City of Fallon/Churchill County, Nevada. January. 123 pages.

Travois. (2022). Fallon Paiute Shoshone Tribe #1 Fallon, Nevada. Available at: https://travois.com/developments/fallon-paiute-shoshone-tribe-1/.

U.S. Census Bureau. (2022a). *Quickfacts*.

U.S. Census Bureau. (2022b). *Selected Housing Characteristics*. Retrieved from American Community Survey 5-Year Estimates 2018-2022.

U.S. Census Bureau. (2022c). *Selected Economic Characteristics*. American Community Survey 5-Year Estimates Data Profiles, Table DP03. Available at: https://data.census.gov/table/ACSDP5Y2022.DP03?q=DP03&g=010XX00US_040XX00US32_050XX00US32001,32019_160XX00US3224100,3224900,3267200.

U.S. Department of Agriculture. (2007). Technical Note, USDA-Natural Resources Conservation Service, Boise Idaho – Salt Lake City, Managing Black Greasewood Sites.

U.S. Department of Agriculture. (2015). Natural Resources Conservation Service Plant Guide, Black Greasewood.

USEPA. (N.D.). *Fallon, NV: Pooling Resources to Construct Arsenic Treatment Facility*. U.S. Environmental Protection Agency.

USEPA. (1974). *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with and Adequate Margin of Safety. EPA 550/9-74-004*. Washington, DC: Office of Noise Abatement and Control.

USEPA. (2023). Stormwater Phase II Rule, Who's Covered? Designation and Waivers of Regulated Small MS4s. Available at: https://www.epa.gov/system/files/documents/2023-09/EPA-Stormwater-Phase-II-Final-Rule-Factsheet-2.1-Who-is-Covered.pdf. August.

USEPA. (2024). *Nonattainment Areas for Criteria Pollutants (Green Book)* . Retrieved February 12, 2024. Available at: https://www.epa.gov/green-book.

USFWS. (2024a). Information for Planning and Consulting. Retrieved February 9, 2024. Available at: https://ipac.ecosphere.fws.gov/location/RPLELDQOTVC7FHS344SAARLAKY/resources.

USFWS. (2024b). Listed species believed to or known to occur in Churchill, Nevada.

U.S. Global Change Research Program. (2018). *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Vol. II*. Washington, D.C.: U.S. Global Change Research Program. Available at: https://nca2018.globalchange.gov/.

This page intentionally left blank.

7 List of Preparers

This EA was prepared collaboratively between NAVFAC SW, NAS Fallon, and contractor preparers.

NAVFAC SW

Ron Bochenek, NEPA Project Manager

Susan Hulbert, Counsel

Ron Kelley, Navy Program Manager, PPV

Tamara Molly, NAVFAC PPV

Amanda Peyton, Community Planner

Camille Rybar, Counsel

Eleanor Tarrant, Contract Specialist

Michael Waters, Counsel

Adina Zerboni, Navy PPV

NAS Fallon

Nathan Arcoraci, Installation Environmental Program Director

Michael Baskerville, Cultural Resource Program Manager

Ashley Brooks, Environmental Planner

Toni Burton, Tribal Relations Coordinator

Kish D LaPierre, Tribal Liaison Officer

Ann Schofield, Natural Resources Program Manager/Conservation Manager

Robin Schofield, Community Planning and Liaison Officer

Reclamation

Rena Ballew, Resources Division Manager

Rob Martinez, Newlands Project Manager Civil Engineer

Selena Werdon, Natural Resource Specialist

Contractor

Alyssa Andrews (Stantec), Cumulative, 2 years' experience
B.S., Environmental Science

Jay Austin (Leidos), Noise, 22 years' experience
M.S., Environmental Science

John Boarman, Registered Civil Engineer, Traffic Engineer (Linscott, Law & Greenspan, Engineers), Transportation, 32 years' experience
M.S., Civil Engineering

Raul Castillo (Stantec), DOPAA and land use, 5 years' experience
M.U.P., Urban Planning

Jackie Clark (Stantec), Public Involvement, 12 years' experience
B.S., Business Administration

Stephanie Clarke (Stantec), GISP, GIS Analyst, 8 years' experience
B.S., Biology and Environmental Studies

J. Scott Coombs (Stantec), Project Manager and DOPAA, 24 years' experience
M.S., Marine Science

Chris Crabtree (Leidos), Air Quality / GHG / Climate Change, 35 years' experience
B.A., Environmental Studies

Josh De Guzman (Stantec), Biological Resources, 8 years' experience
B.S., Wildlife Management and Conservation

Renald Espiritu, (Linscott, Law & Greenspan, Engineers), Transportation, 11 years' experience
B.S., Civil Engineering

Peggy Farrell, PMP, QEP, CHMM (Leidos), Transportation, 44 years' experience
M.S., Natural Sciences and Environmental Studies

Karen Foster, RPA (Leidos), Cultural Resources, 32 years' experience
Ph.D. Anthropology

Tania Fragomeno (Stantec), Public Involvement, 20 years' experience
B.A., Psychology

Pam McCarty (Leidos), Socioeconomics and Public Health and Safety, 16 years' experience
M.S., Industrial and Systems Engineering; M.A. Economics

Daniel Ortega (Stantec), Land Use, 4 years' experience
B.S., Biological Sciences

Vincent Passaro (Leidos), Infrastructure and Hazardous Materials and Wastes, 22 years' experience
M.S., Environmental Science

Trevor Pattison (Leidos), Project Manager, 25 years' experience
B.S., Geological Sciences

Clint Scheuerman (Stantec), CWB, Biological Resources, 16 years' experience
M.A., Biological Sciences

Kimberly Wilson (Stantec), Technical Editor, 41 years' experience

Lisa Woeber (Stantec), Quality Assurance/Quality Control, 26 years' experience
B.A.A., Business Administration

Appendix A
Relevant Laws, Regulations, and Policies

This page intentionally left blank.

Appendix A
Relevant Laws, Regulations, and Policies

The Department of the Navy (Navy) has prepared this Environmental Assessment (EA) based upon federal and state laws, statutes, regulations, and policies that are pertinent to the implementation of the proposed action, including the following:

- National Environmental Policy Act (NEPA) (42 United States Code [USC] section 4321, et seq., as amended)
- Council on Environmental Quality (CEQ) regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations (CFR) parts 1500–1508)
- Department of Navy Regulations for implementing NEPA (32 CFR part 775)
- Department of the Interior Regulations for Implementing NEPA (43 CFR part 46)
- American Indian Religious Freedom Act (42 USC section 1996)
- Archaeological Resources Protection Act (16 USC sections 470aa–470mm)
- Bald and Golden Eagle Protection Acts (16 USC sections 668–668d)
- Clean Air Act (CAA), as amended (42 USC sections 7401–7671q), including 1990 General Conformity Rule
- Clean Water Act (CWA) (33 USC section 1251)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC section 9601)
- Endangered Species Act (ESA) (16 USC sections 1531–1544)
- Executive Order (EO) 11593 – Protection and Enhancement of the Cultural Environment
- EO 11988 – Floodplain Management
- EO 13007 – Indian Sacred Sites
- EO 13045 – Protection of Children from Environmental Health Risks and Safety Risks
- EO 13175 – Consultation and Coordination with Indian Tribal Governments
- EO 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds
- EO 14096 – Revitalizing Our Nation’s Commitment to Environmental Justice for All
- Migratory Bird Treaty Act (16 USC section 703-712)
- National Historic Preservation Act (54 USC section 300101 et seq.)

- Native American Graves Protection and Repatriation Act (25 USC section 3001 et seq.)
- Noise Control Act
- Occupational Safety and Health Act of 1970 (29 USC section 651)
- Pollution Prevention Act of 1990 (42 USC section 651 et seq.)
- Resource Conservation and Recovery Act (RCRA) (Solid Waste Disposal Act) (42 USC section 6901)
- Safe Drinking Water Act (42 USC section 300f)

This page intentionally left blank.

Appendix B
Public Involvement

This page intentionally left blank.

Appendix C
Interagency and Tribal Coordination and Consultations

This page intentionally left blank.

Appendix D
Air Quality

This page intentionally left blank.

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: RENO-TAHOE IAP (surrogate location to match the project location)
State: Nevada
County(s): Churchill
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Construction and Operation of Public Private Venture Housing at Naval Air Station Fallon, Nevada

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2026

e. Action Description:

The Proposed Action includes the leasing of additional Government land, as well as the construction, operation, and maintenance of up to 172 new Public Private Venture (PPV) privatized military family housing (MFH) units at Naval Air Station (NAS) Fallon to address approximately 90 percent of the 192-unit housing deficit.

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

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

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 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.

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:

2026

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.416	100	No
NOx	2.224	100	No
CO	2.758	100	No
SOx	0.007	100	No
PM 10	34.221	100	No
PM 2.5	0.090	100	No
Pb	0.000	25	No
NH3	0.002	100	No
CO2e	713.0	NA	

2027

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	3.418	100	No
NOx	0.918	100	No
CO	1.448	100	No
SOx	0.003	100	No
PM 10	0.052	100	No
PM 2.5	0.040	100	No
Pb	0.000	25	No
NH3	0.001	100	No
CO2e	297.3	NA	

2028

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	2.407	100	No
NOx	2.026	100	No
CO	2.798	100	No
SOx	0.009	100	No

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

PM 10	0.267	100	No
PM 2.5	0.099	100	No
Pb	0.000	25	No
NH3	0.002	100	No
CO2e	1106.1	NA	

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

2029 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.082	100	No
NOx	1.338	100	No
CO	0.624	100	No
SOx	0.013	100	No
PM 10	0.111	100	No
PM 2.5	0.111	100	No
Pb	0.000	25	No
NH3	0.000	100	No
CO2e	1677.7	NA	

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.

_____ _____

Chris Crabtree, Air Quality Meteorologist DATE

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

This page intentionally left blank.

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: RENO-TAHOE IAP
State: Nevada
County(s): Churchill
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Construction and Operation of Public Private Venture Housing at Naval Air Station Fallon, Nevada

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2026

- Action Purpose and Need:

The purpose of the Proposed Action is to provide adequate, affordable housing for military personnel and their families in the NAS Fallon area, in accordance with Office of the Secretary of Defense and Department of Defense (DoD) standards.

- Action Description:

The Proposed Action includes the leasing of additional Government land, as well as the construction, operation, and maintenance of up to 172 new Public Private Venture (PPV) privatized military family housing (MFH) units at Naval Air Station (NAS) Fallon to address approximately 90 percent of the 192-unit housing deficit.

- 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.	Construction / Demolition	Site Preparation
3.	Construction / Demolition	Road Construction
4.	Construction / Demolition	House Construction
5.	Construction / Demolition	Other Buildings Construction
6.	Construction / Demolition	Construct Pump Station and pipeline
7.	Heating	Natural gas-fired space and water heaters - Residential Units
8.	Heating	Natural gas-fired space and water heaters - Other Buildings
9.	Emergency Generator	Emergency Generator for the Pump Station

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.

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: Churchill

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Site Preparation

- Activity Description:
The project area footprint encompasses 99 acres in the western portion of NAS Fallon, although only approximately 55 to 70 acres of development would occur within this footprint. Large amounts of fill material will be needed for site grading to provide for adequate drainage.

Assume this activity occurs over 75 acres and lasts for 3 months, so simulate 25 acres continuous (*Note*: the calculations used 75 acres as a worst-case assumption to ensure that they would bound any possible spillover of activities beyond the proposed 70-acre project footprint). Also, assume 50 truckload of debris would be removed from the site, so 50 * 20 cy/truck load = 1,000 cy.

- Activity Start Date
Start Month: 1
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 3
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.234127
SO_x	0.004261
NO_x	1.283680
CO	1.443938
PM 10	32.549424

Pollutant	Total Emissions (TONs)
PM 2.5	0.049403
Pb	0.000000
NH_3	0.000483
CO_2e	424.7

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Month: 1
Start Quarter: 1
Start Year: 2026

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

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 1089000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 1000

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	3	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

2.1.3 Site Grading Phase Emission Factor(s)

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

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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	000.230	000.002	000.108	003.125	000.005	000.004		000.024	00306.700
LDGT	000.241	000.003	000.190	003.492	000.007	000.006		000.026	00398.463
HDGV	000.999	000.006	000.942	014.154	000.028	000.025		000.051	00920.710
LDDV	000.066	000.001	000.085	003.332	000.003	000.002		000.008	00310.871
LDDT	000.072	000.001	000.128	002.264	000.003	000.003		000.008	00361.491
HDDV	000.109	000.004	002.586	001.564	000.042	000.039		000.032	01251.371
MC	003.093	000.003	000.745	013.322	000.025	000.022		000.053	00388.920

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

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

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

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

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

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

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

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

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location

County: Churchill
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Road Construction

- Activity Description:

After completion of site prep, assume a 3-month gap in activities to allow surveying of site.

Activity takes 2 months.

Assume new roads cover 5% of the total project area = 75 acres * 0.05 = 3.75 acres, or 163,350 sf, or 81,675 sf/month (*Note*: the calculations used 75 acres as a worst-case assumption to ensure that they would bound any possible spillover of activities beyond the proposed 70-acre project footprint).

9" of base material delivered in the grading activity+ 3" asphalt delivered in the paving activity. Also, 3" of base material for concrete sidewalks added to grading activity for a total of 163,350 sf * 1' / 27 cf/cy = 6,050 cy to import base material.

Sidewalks adding to paving activity - 1 acre of sidewalks, or 43,560 sf . Total paving area = 163,350 + 43,560 = 206,910 sf.

- Activity Start Date

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Month: 7
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 8
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.089540
SO_x	0.001341
NO_x	0.481547
CO	0.590284
PM 10	1.645989

Pollutant	Total Emissions (TONs)
PM 2.5	0.020948
Pb	0.000000
NH_3	0.000643
CO_2e	139.7

3.1 Site Grading Phase

3.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2026

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

3.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 81675
Amount of Material to be Hauled On-Site (yd^3): 6050
Amount of Material to be Hauled Off-Site (yd^3): 100

- Site Grading Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6

Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20

Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

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

3.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.230	000.002	000.108	003.125	000.005	000.004		000.024	00306.700
LDGT	000.241	000.003	000.190	003.492	000.007	000.006		000.026	00398.463
HDGV	000.999	000.006	000.942	014.154	000.028	000.025		000.051	00920.710
LDDV	000.066	000.001	000.085	003.332	000.003	000.002		000.008	00310.871
LDDT	000.072	000.001	000.128	002.264	000.003	000.003		000.008	00361.491
HDDV	000.109	000.004	002.586	001.564	000.042	000.039		000.032	01251.371
MC	003.093	000.003	000.745	013.322	000.025	000.022		000.053	00388.920

3.1.4 Site Grading Phase Formula(s)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Fugitive Dust Emissions per Phase

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

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

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

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

3.2 Paving Phase

3.2.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2026

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

3.2.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 206910

- Paving Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	2	6
Rollers Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

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

3.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.230	000.002	000.108	003.125	000.005	000.004		000.024	00306.700
LDGT	000.241	000.003	000.190	003.492	000.007	000.006		000.026	00398.463
HDGV	000.999	000.006	000.942	014.154	000.028	000.025		000.051	00920.710
LDDV	000.066	000.001	000.085	003.332	000.003	000.002		000.008	00310.871
LDDT	000.072	000.001	000.128	002.264	000.003	000.003		000.008	00361.491
HDDV	000.109	000.004	002.586	001.564	000.042	000.039		000.032	01251.371
MC	003.093	000.003	000.745	013.322	000.025	000.022		000.053	00388.920

3.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

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

- Off-Gassing Emissions per Phase

$VOC_P = (2.62 * PA) / 43560$

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

4. Construction / Demolition

4.1 General Information & Timeline Assumptions

- Activity Location

County: Churchill

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: House Construction

- Activity Description:

Construct 172 total homes, 50/50 split between 1- and 2-story structures. EA Table 2-1 says sizes for 3-/4-bedroom houses = 1,760/2,220 sf, or an average of 1,990 sf.

- Activity Start Date

Start Month: 7

Start Month: 2026

- Activity End Date

Indefinite: False

End Month: 6

End Month: 2028

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	5.219566
SO_x	0.006120
NO_x	1.836215
CO	2.896026
PM 10	0.103893

Pollutant	Total Emissions (TONs)
PM 2.5	0.079937
Pb	0.000000
NH_3	0.001892
CO_2e	594.5

4.1 Trenching/Excavating Phase

4.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 7

Start Quarter: 1

Start Year: 2026

- Phase Duration

Number of Month: 24

Number of Days: 0

4.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft^2): 100
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings

Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Trenchers Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

Average Worker Round Trip Commute (mile):20

- Worker Trips Vehicle Mixture (%)

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

4.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

- 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	000.564	000.008	000.646	004.713	000.012	000.010		000.034	00381.611
LDGT	000.757	000.010	001.122	007.670	000.013	000.012		000.034	00509.626
HDGV	001.484	000.016	003.262	026.860	000.032	000.028		000.046	00792.718
LDDV	000.238	000.003	000.331	003.679	000.007	000.006		000.008	00389.699
LDDT	000.560	000.005	000.894	007.563	000.008	000.008		000.008	00607.044
HDDV	000.833	000.014	009.217	002.874	000.390	000.359		000.029	01603.366
MC	003.141	000.008	000.853	014.886	000.027	000.024		000.049	00395.048

4.1.4 Trenching / Excavating Phase Formula(s)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Fugitive Dust Emissions per Phase

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

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

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

NE: Number of Construction Equipment

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

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

4.2 Building Construction Phase

4.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 24
Number of Days: 0

4.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Single-Family
Area of Building (ft^2): 1990
Height of Building (ft): N/A
Number of Units: 172

- 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

4.2.3 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	0.0680	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	000.230	000.002	000.108	003.125	000.005	000.004		000.024	00306.700
LDGT	000.241	000.003	000.190	003.492	000.007	000.006		000.026	00398.463
HDGV	000.999	000.006	000.942	014.154	000.028	000.025		000.051	00920.710
LDDV	000.066	000.001	000.085	003.332	000.003	000.002		000.008	00310.871
LDDT	000.072	000.001	000.128	002.264	000.003	000.003		000.008	00361.491
HDDV	000.109	000.004	002.586	001.564	000.042	000.039		000.032	01251.371
MC	003.093	000.003	000.745	013.322	000.025	000.022		000.053	00388.920

4.2.4 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

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

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

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

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

- Worker Trips Emissions per Phase

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

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

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

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

- Vender Trips Emissions per Phase

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

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

NU: Number of Units
0.11: Conversion Factor units to trips
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

4.3 Architectural Coatings Phase

4.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2027

- Phase Duration
Number of Month: 18
Number of Days: 0

4.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Single-Family
Total Square Footage (ft^2): N/A
Number of Units: 172

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

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

- Worker Trips Vehicle Mixture (%)

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

4.3.3 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	000.230	000.002	000.108	003.125	000.005	000.004		000.024	00306.700
LDGT	000.241	000.003	000.190	003.492	000.007	000.006		000.026	00398.463
HDGV	000.999	000.006	000.942	014.154	000.028	000.025		000.051	00920.710
LDDV	000.066	000.001	000.085	003.332	000.003	000.002		000.008	00310.871
LDDT	000.072	000.001	000.128	002.264	000.003	000.003		000.008	00361.491
HDDV	000.109	000.004	002.586	001.564	000.042	000.039		000.032	01251.371
MC	003.093	000.003	000.745	013.322	000.025	000.022		000.053	00388.920

4.3.4 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

$VOC_{AC} = (NU * 1800 * 2.7 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
NU: Number of Units
1800: Conversion Factor units to square feet (1800 ft^2 / unit)
2.7: Conversion Factor total area to coated area (2.7 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

5. Construction / Demolition

5.1 General Information & Timeline Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Location

County: Churchill

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Other Buildings Construction

- Activity Description:

Assume 10% of the housing construction, so 18 total structures, average of 1,990 sf.
8 month duration.

- Activity Start Date

Start Month: 4

Start Month: 2028

- Activity End Date

Indefinite: False

End Month: 12

End Month: 2028

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.510166
SO_x	0.001367
NO_x	0.485262
CO	0.676496
PM 10	0.030825

Pollutant	Total Emissions (TONs)
PM 2.5	0.022846
Pb	0.000000
NH_3	0.000495
CO_2e	134.6

5.1 Trenching/Excavating Phase

5.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 4

Start Quarter: 1

Start Year: 2028

- Phase Duration

Number of Month: 8

Number of Days: 0

5.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft^2): 100

Amount of Material to be Hauled On-Site (yd^3): 0

Amount of Material to be Hauled Off-Site (yd^3): 0

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Trenching Default Settings

Default Settings Used: No

Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Trenchers Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20

Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

Average Worker Round Trip Commute (mile):20

- Worker Trips Vehicle Mixture (%)

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

5.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

- 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	000.564	000.008	000.646	004.713	000.012	000.010		000.034	00381.611
LDGT	000.757	000.010	001.122	007.670	000.013	000.012		000.034	00509.626
HDGV	001.484	000.016	003.262	026.860	000.032	000.028		000.046	00792.718
LDDV	000.238	000.003	000.331	003.679	000.007	000.006		000.008	00389.699
LDDT	000.560	000.005	000.894	007.563	000.008	000.008		000.008	00607.044
HDDV	000.833	000.014	009.217	002.874	000.390	000.359		000.029	01603.366
MC	003.141	000.008	000.853	014.886	000.027	000.024		000.049	00395.048

5.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

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

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5.2 Building Construction Phase

5.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2028

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

5.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Multi-Family
Area of Building (ft^2): 1990
Height of Building (ft): N/A
Number of Units: 18

- 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
Cranes Composite	1	4
Forklifts Composite	1	4
Tractors/Loaders/Backhoes Composite	1	4

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40

- Vendor Trips Vehicle Mixture (%)

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

5.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

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	000.230	000.002	000.108	003.125	000.005	000.004		000.024	00306.700
LDGT	000.241	000.003	000.190	003.492	000.007	000.006		000.026	00398.463
HDGV	000.999	000.006	000.942	014.154	000.028	000.025		000.051	00920.710
LDDV	000.066	000.001	000.085	003.332	000.003	000.002		000.008	00310.871
LDDT	000.072	000.001	000.128	002.264	000.003	000.003		000.008	00361.491
HDDV	000.109	000.004	002.586	001.564	000.042	000.039		000.032	01251.371
MC	003.093	000.003	000.745	013.322	000.025	000.022		000.053	00388.920

5.2.4 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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Vehicle Exhaust Emissions per Phase

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

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

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

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

- Worker Trips Emissions per Phase

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

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

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

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

- Vender Trips Emissions per Phase

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

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

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

V_{POL}: Vehicle Emissions (TONs)

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

5.3 Architectural Coatings Phase

5.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 9
Start Quarter: 1
Start Year: 2028

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

5.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 35820
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

5.3.3 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	000.230	000.002	000.108	003.125	000.005	000.004		000.024	00306.700
LDGT	000.241	000.003	000.190	003.492	000.007	000.006		000.026	00398.463
HDGV	000.999	000.006	000.942	014.154	000.028	000.025		000.051	00920.710
LDDV	000.066	000.001	000.085	003.332	000.003	000.002		000.008	00310.871
LDDT	000.072	000.001	000.128	002.264	000.003	000.003		000.008	00361.491

HDDV	000.109	000.004	002.586	001.564	000.042	000.039		000.032	01251.371
MC	003.093	000.003	000.745	013.322	000.025	000.022		000.053	00388.920

5.3.4 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)
2000: Conversion Factor pounds to tons

6. Construction / Demolition

6.1 General Information & Timeline Assumptions

- Activity Location

County: Churchill
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Construct Pump Station and pipeline

- Activity Description:

Pump station = 2,000 sf - will take 6 months to complete.

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

At the location of the pump station, they will excavate down to level of existing gravity sewer pipe about 20 feet below grade. Volume excavated = 2,000 sf * 20’ = 40,000 cf / 27 cf/cy = 148 cy / 20 cy/truck trip = 7.4 truck trips.

4,500' of pipeline. Trenched area = 4,500' and 1' = 4,500 sf - will take 3 months to complete.

Assume 10 truck trips to deliver pipe.

- Activity Start Date

Start Month: 4

Start Month: 2028

- Activity End Date

Indefinite: False

End Month: 11

End Month: 2028

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.163010
SO_x	0.003017
NO_x	0.659212
CO	1.208883
PM 10	0.176074

Pollutant	Total Emissions (TONs)
PM 2.5	0.021852
Pb	0.000000
NH_3	0.000699
CO_2e	287.8

6.1 Site Grading Phase

6.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 4

Start Quarter: 1

Start Year: 2028

- Phase Duration

Number of Month: 1

Number of Days: 0

6.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft^2): 2000

Amount of Material to be Hauled On-Site (yd^3): 40

Amount of Material to be Hauled Off-Site (yd^3): 148

- Site Grading Default Settings

Default Settings Used: No

Average Day(s) worked per week: 5

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20

Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

Average Worker Round Trip Commute (mile):20

- Worker Trips Vehicle Mixture (%)

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

6.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Excavators Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70

- 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	000.230	000.002	000.108	003.125	000.005	000.004		000.024	00306.700
LDGT	000.241	000.003	000.190	003.492	000.007	000.006		000.026	00398.463
HDGV	000.999	000.006	000.942	014.154	000.028	000.025		000.051	00920.710
LDDV	000.066	000.001	000.085	003.332	000.003	000.002		000.008	00310.871
LDDT	000.072	000.001	000.128	002.264	000.003	000.003		000.008	00361.491
HDDV	000.109	000.004	002.586	001.564	000.042	000.039		000.032	01251.371
MC	003.093	000.003	000.745	013.322	000.025	000.022		000.053	00388.920

6.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

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

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

6.2 Trenching/Excavating Phase

6.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 4
Start Quarter: 1
Start Year: 2028

- Phase Duration

Number of Month: 3
Number of Days: 0

6.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft^2): 4500
Amount of Material to be Hauled On-Site (yd^3): 200
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

6.2.3 Trenching / Excavating Phase Emission Factor(s)

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

Excavators Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70

- 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	000.230	000.002	000.108	003.125	000.005	000.004		000.024	00306.700
LDGT	000.241	000.003	000.190	003.492	000.007	000.006		000.026	00398.463
HDGV	000.999	000.006	000.942	014.154	000.028	000.025		000.051	00920.710
LDDV	000.066	000.001	000.085	003.332	000.003	000.002		000.008	00310.871
LDDT	000.072	000.001	000.128	002.264	000.003	000.003		000.008	00361.491
HDDV	000.109	000.004	002.586	001.564	000.042	000.039		000.032	01251.371
MC	003.093	000.003	000.745	013.322	000.025	000.022		000.053	00388.920

6.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

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

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

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

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

6.3 Building Construction Phase

6.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 4
Start Quarter: 1
Start Year: 2028

- Phase Duration

Number of Month: 8
Number of Days: 0

6.3.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft^2): 2000
Height of Building (ft): 12
Number of Units: N/A

- Building Construction Default Settings

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

- Construction Exhaust (default)

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

- Vehicle Exhaust

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

- Vendor Trips

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

- Vendor Trips Vehicle Mixture (%)

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

6.3.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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	000.230	000.002	000.108	003.125	000.005	000.004		000.024	00306.700
LDGT	000.241	000.003	000.190	003.492	000.007	000.006		000.026	00398.463
HDGV	000.999	000.006	000.942	014.154	000.028	000.025		000.051	00920.710
LDDV	000.066	000.001	000.085	003.332	000.003	000.002		000.008	00310.871
LDDT	000.072	000.001	000.128	002.264	000.003	000.003		000.008	00361.491
HDDV	000.109	000.004	002.586	001.564	000.042	000.039		000.032	01251.371
MC	003.093	000.003	000.745	013.322	000.025	000.022		000.053	00388.920

6.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

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

- Vender Trips Emissions per Phase

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

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

6.4 Architectural Coatings Phase

6.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 10
Start Quarter: 1
Start Year: 2028

- Phase Duration

Number of Month: 1

Number of Days: 0

6.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Non-Residential

Total Square Footage (ft^2): 2000

Number of Units: N/A

- Architectural Coatings Default Settings

Default Settings Used: Yes

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

6.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.230	000.002	000.108	003.125	000.005	000.004		000.024	00306.700
LDGT	000.241	000.003	000.190	003.492	000.007	000.006		000.026	00398.463
HDGV	000.999	000.006	000.942	014.154	000.028	000.025		000.051	00920.710
LDDV	000.066	000.001	000.085	003.332	000.003	000.002		000.008	00310.871
LDDT	000.072	000.001	000.128	002.264	000.003	000.003		000.008	00361.491
HDDV	000.109	000.004	002.586	001.564	000.042	000.039		000.032	01251.371
MC	003.093	000.003	000.745	013.322	000.025	000.022		000.053	00388.920

6.4.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

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

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

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

WT: Average Worker Round Trip Commute (mile)

PA: Paint Area (ft^2)

800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

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

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

- Off-Gassing Emissions per Phase

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

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

7. Heating

7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Churchill
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Natural gas-fired space and water heaters - Residential Units

- Activity Description:

1,990 sf/unit * 172 units = 342,280 sf.

- Activity Start Date

Start Month: 9
Start Year: 2028

- Activity End Date

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.070013

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.096745

SO_x	0.007638
NO_x	1.196578
CO	0.509182
PM 10	0.096745

Pb	0.000000
NH_3	0.000000
CO_2e	1532.5

7.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft^2): 342280
Type of fuel: Natural Gas
Type of boiler/furnace: Residential (<0.3 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0781

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

7.3 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	94	40	7.6	7.6			120390

7.4 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

8. Heating

8.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Churchill
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Natural gas-fired space and water heaters - Other Buildings

- Activity Description:
1,990 sf/unit * 18 units = 35,820 sf.

- Activity Start Date
Start Month: 11
Start Year: 2028

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.006511
SO_x	0.000710
NO_x	0.118377
CO	0.099436
PM 10	0.008997

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.008997
Pb	0.000000
NH_3	0.000000
CO_2e	142.5

8.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 35820
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): 0.0694

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

8.3 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

8.4 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

9. Emergency Generator

9.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Churchill
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Emergency Generator for the Pump Station

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Description:

Used default metrics with operations starting in Nov 2028.

- Activity Start Date

Start Month: 11
Start Year: 2028

- 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

9.2 Emergency Generator Assumptions

- Emergency Generator

Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

- Default Settings Used: Yes

- Emergency Generators Consumption

Emergency Generator's Horsepower: 135 (default)
Average Operating Hours Per Year (hours): 30 (default)

9.3 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

9.4 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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

This page intentionally left blank.

Appendix E
Noise Supporting Information

This page intentionally left blank.

Noise Supporting Information

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the human ear. Sound is all around us. The perception and evaluation of sound involves three basic physical characteristics:

1. Intensity – the acoustic energy, which is expressed in terms of sound pressure, in decibels (dB).
2. Frequency – the number of cycles per second the air vibrates, in hertz (Hz).
3. Duration – the length of time the sound can be detected.

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although continuous and extended exposure to high noise levels (e.g., through occupational exposure) can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise; perceived importance of the noise; its appropriateness in the setting, time of day, type of activity during which the noise occurs; and sensitivity of the individual.

E.1 Basics of Sound and A-Weighted Sound Level

The loudest sounds that can be detected comfortably by the human ear have intensities that are a trillion times higher than those of sounds that can barely be detected. This vast range means that using a linear scale to represent sound intensity is not feasible. The dB is a logarithmic unit used to represent the intensity of a sound, also referred to as the sound level. Table E.1-1 provides a comparison of how the human ear perceives changes in loudness on the logarithmic scale.

Table E.1-1 Subjective Responses to Changes in A-Weighted Decibels

Change	*Change in Perceived Loudness*
3 dB	Barely perceptible
5 dB	Quite noticeable
10 dB	Dramatic—twice or half as loud
20 dB	Striking—fourfold change

Legend: dB = decibel

All sounds have a spectral content, which means their magnitude or level changes with frequency, where frequency is measured in cycles per second or Hz. To mimic the human ear's nonlinear sensitivity and perception of different frequencies of sound, the spectral content is weighted. For example, environmental noise measurements are usually on an "A-weighted" scale that filters out very low and very high frequencies to replicate human sensitivity. It is common to add the "A" to the measurement unit to identify that the measurement has been made with this filtering process (dBA).

Figure E.1-1 (Cowan, 1994) provides a chart of A-weighted sound levels (dBA) from typical noise sources. Some noise sources (e.g., air conditioner, vacuum cleaner) are continuous sounds that maintain a constant sound level for some period of time. Other sources (e.g., automobile, heavy truck) are the maximum sound produced during an event like a vehicle pass-by. Other sounds (e.g., urban daytime, urban nighttime) are averages taken over extended periods of time. A variety of noise metrics have been developed to describe noise over different time periods, as discussed below.

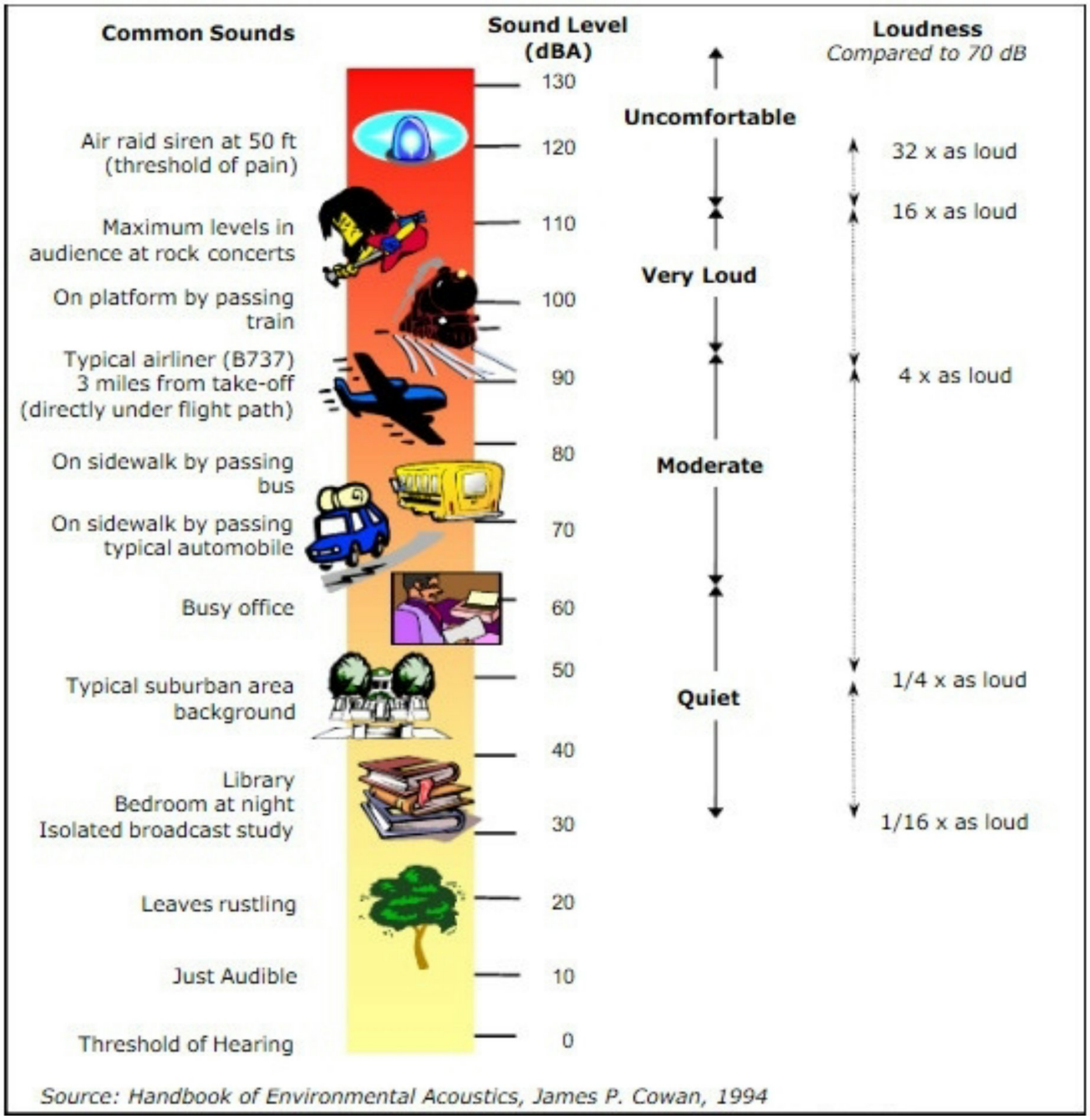

Figure E.1-1 A-Weighted Sound Levels (dBA) from Typical Sources

E.2 Noise Metrics

A metric is a system for measuring or quantifying a particular characteristic of a subject. Since noise is a complex physical phenomenon, different noise metrics help to quantify the noise environment. This Environmental Assessment uses the metrics maximum sound level (L_{max}) and day-night average sound level (DNL).

Maximum Sound Level. The highest sound level measured during a single event where the sound level changes value with time is called the maximum sound level or L_{max}. The sound of a passing truck, for example, starts at the ambient or background noise level, rises to the maximum level as the truck comes

closest to the observer, and returns to the background level as the truck recedes into the distance. L_{max} defines the maximum sound level occurring for a fraction (typically one eighth) of a second (American National Standards Institute, 1988).

Day-Night Average Sound Level. The DNL metric is the energy-averaged sound level measured over a 24-hour period, with a 10-dB penalty assigned to noise events occurring between 10 p.m. and 7 a.m. (known as "acoustic night"). DNL is the primary noise metric used by the United States (U.S.) Department of Housing and Urban Development, Federal Aviation Administration, U.S. Environmental Protection Agency, and Department of Defense to assess community reactions to noise. Research has indicated that about 87 percent of the population is not highly annoyed by outdoor sound levels below 65 dBA DNL (Federal Interagency Committee on Urban Noise, 1980). However, studies on the relationship between DNL and prevalence of annoyance have focused on the noise sources that persist for long periods of time (e.g., years). Community reactions to noise sources of short duration, such as construction noise, are not necessarily predicted with the same degree of accuracy using the DNL metric. Land use compatibility guidelines associated with particular DNL values are intended primarily for application to noise sources that last for long periods of time.

E.3 Noise Effects

Several categories of potential noise effects are summarized below.

E.3.1 Annoyance

As previously noted, the primary effect of noise on exposed communities is annoyance. Annoyance is often triggered by interference of a noise with an activity such as conversation or sleep.

E.3.2 Speech Interference

Speech interference can cause disruption of routine activities, such as enjoyment of radio or television programs, telephone use, or family conversation, giving rise to frustration or irritation. Some degree of speech interference is possible whenever background noise levels exceed 50 dBA. However, people often choose to raise their voices to be heard over moderately loud background noise. People indoors experience lower noise levels as a result of outdoor noise sources. Typical residential construction provides approximately 25 dBA outdoor-to-indoor sound level reduction while windows are closed, and speech interference indoors is unlikely when outdoor noise levels are below 75 dBA.

E.3.3 Sleep Disturbance

Sleep disturbance is often of concern in situations where noise levels would be elevated late at night when most people are asleep. Noise generated during daytime hours is less likely to result in sleep disturbance.

E.4 Noise Modeling

Construction noise levels associated with the proposed construction activities were estimated using methods described in the Federal Highway Administration's Roadway Construction Noise Model (Federal Highway Administration, 2006). Modeling assumes no barriers exist between the noise source and the receiver.

E.5 References

American National Standards Institute. 1988. American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound, ANSI S12-9-1988. New York: Acoustical Society of America.

Cowan, J.P. 1994 Handbook of Environmental Acoustics. New York: John Wiley & Sons.

Federal Highway Administration. 2006. Roadway Construction Noise Model User's Guide.

Federal Interagency Committee on Urban Noise. 1980. Guidelines for Considering Noise in Land Use Planning and Control. Washington, D.C.

Appendix F
Transportation Impact Analysis

This page intentionally left blank.