DRAFT ENVIRONMENTAL ASSESSMENT (EA)
FOR
MANAGEMENT OF WATER TREATMENT AT
JOINT BASE ELMENDORF-RICHARDSON

PREPARED BY:

Department of the Air Force

April 2023

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 Personal home addresses and phone numbers will not be published in the Final EA.

DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)

MANAGEMENT OF WATER TREATMENT AT JOINT BASE ELMENDORF-RICHARDSON

Pursuant to provisions of the National Environmental Policy Act (NEPA), Title 42 United States Code (USC) Sections 4321 to 4347, implemented by Council on Environmental Quality (CEQ) Regulations, Title 40, Code of Federal Regulations (CFR) § 1500-1508, and 32 CFR § 989, Environmental Impact Analysis Process, the U.S. Air Force (USAF) assessed the potential environmental consequences associated with constructing a new Water Treatment Plant (WTP) and dismantling and remediating the existing WTP at Joint Base Elmendorf-Richardson (JBER), Alaska.

The purpose of the Proposed Action is to meet obligations to provide safe drinking water to JBER facilities, including housing and administration facilities. PCBs in coatings, asbestos in building materials, and lead in paint have been detected throughout the existing water treatment facility at concentrations exceeding regulatory criteria, although no safe drinking water thresholds have been exceeded in water tested following treatment. The Proposed Action is needed to consistently provide safe and reliable drinking water that can accommodate existing and future peak demand, while meeting Environmental Protection Agency (EPA) and Alaska Department of Environmental Conservation (ADEC) drinking water regulations at JBER. In addition, the Proposed Action is needed to meet requirements under the Toxic Substances Control Act (TSCA).

The Environmental Assessment (EA), incorporated by reference into this finding, analyzes the potential environmental consequences of activities associated with the Management of Water Treatment at JBER project and provides environmental protection measures to avoid or reduce adverse environmental impacts.

The EA considers all potential impacts of Alternative 1 (Construct New WTP and Demolish Existing WTP) and the No-Action Alternative. The EA also considers cumulative environmental impacts with other projects in the Region of Influence.

ALTERNATIVE 1 (Preferred Alternative)

Under the Proposed Action, the owner of JBER's potable water utility, Doyon Utilities, LLC (DU), would construct a new, primarily gravity-fed WTP that meets JBER's current and expected demand for drinking water, including firefighting capabilities, during all conditions. To use the existing pipes from the raw water source in Ship Creek and two existing 1.5-million-gallon water tanks, the proposed new WTP would be built approximately 250-feet northwest of the existing WTP and adjacent to the existing water storage tanks. The project would occur within a new 8-ft-tall, fenced area of about 13,000 square feet (0.3 acres).

After the proposed new WTP has been commissioned by ADEC and is fully operational, the existing WTP would be dismantled and properly disposed, and the site would be remediated following applicable ADEC, EPA, and US Occupational Safety and Health Administration standards and methods for dismantling, segregating, and disposing building materials, depending on the nature of the waste (non-hazardous or hazardous).

NO ACTION ALTERNATIVE

Under the No Action Alternative, the Preferred Alternative (or any of the action alternatives) would not occur, and the current WTP would continue to operate and be maintained without any changes.

The No Action Alternative would not meet JBER's existing average and peak demand water requirements, since the existing WTP must process drinking water more slowly to meet present-day drinking water standards. The No Action Alternative may also not withstand outside threats and may be unable to provide adequate firefighting flow and pressure. The No Action Alternative would not meet the EPA's Polychlorinated Biphenyls (PCB) cleanup requirements and would have to operate under and comply with interim operating measures and sampling procedures outlined by the EPA. Once the interim measures expire, the EPA could require the WTP to cease operation because of the risk of PCB exposure to JBER's population and on-site workers.

SUMMARY OF FINDINGS

The analyses of the affected environment and environmental consequences of the Preferred Alternative concluded that by implementing standard environmental protection measures during construction and demolition activities, adverse effects to the environment were not likely to occur. This includes the execution of conditions stipulated in a Memorandum of Agreement (MOA) with the State Historic Preservation Office regarding the demolition of the historic WTP.

The USAF has concluded that significant adverse effects are not likely to result to the following resources as a result of the Preferred Alternative: Air installation compatible use zone/land use/noise; biological/natural resources, air quality, water resources, earth resources (geology/soils); socioeconomic resources/environmental justice; and climate and climate change. Significant adverse cumulative impacts are not anticipated to result from activities associated with the Preferred Alternative when considered with past, present, or reasonably foreseeable future projects.

A summary of resources for which an adverse effect finding has been mitigated to support the finding of no significant impact is presented below.

Safety And Occupational Health. WTP workers' health and safety would be improved with construction of the proposed new WTP. While WTP construction and demolition activities would present typical construction site safety risks to workers, which are minimized by complying with occupational health and safety regulations and by implementing standard Best Management Practices, demolition of the existing WTP would increase the short-term risk associated with exposure to PCBs, asbestos-containing materials, and lead-based paints during their removal. To avoid exposure, contractors would be required to establish and maintain employee safety programs. Construction and demolition activities would result in short-term, minor adverse impacts to contractor safety within the project area which would be mitigated by adhering to regulatory requirements and approved safety plans.

Hazardous Materials/Waste. Construction of the proposed new WTP would involve the use of common hazardous materials and petroleum products in construction vehicles and equipment. To ensure the safe handling of hazardous and other waste materials and minimize the potential for spills or accidents during construction, contractors would be required to manage and dispose of all hazardous and nonhazardous materials and wastes in compliance with applicable regulations, USAF policy and procedures, the JBER Integrated Hazardous Material Plan, and the JBER Emergency Management Plan. In addition, all spills and encounters with historic spills will be reported to JBER Fire via 911, per the JBER Spill Management Plan.

During structural demolition of the WTP, hazardous materials will be managed in accordance with applicable EPA and ADEC regulations and agency-approved work plans and USAF and JBER policies and procedures. Ultimately, demolition activities would result in long-term, minor positive impacts to hazardous materials and wastes that exist within the WTP, since hazardous waste would be removed from the WTP site and placed in approved waste facilities.

Cultural Resources*.* Implementation of the Preferred Alternative will adversely and permanently affect the existing WTP, which is a historic property eligible for listing in the National Register of Historic Places. An MOA was prepared to resolve these adverse effects under 36 CFR Part 800. Mitigation established in the MOA includes documentation to Historic American Building Survey Level III standards (architectural drawings, photographs, and written description submitted to the Library of Congress). The MOA also includes installing outdoor interpretive panels discussing the architectural significance of the WTP and how it provided water to JBER. Although the impacts to historic properties will be severe, adverse, and long-term, by implementing the MOA, the impacts to cultural resources from Preferred Alternative will be appropriately mitigated to insignificance. No Alaska Native sites or resources are anticipated to be impacted.

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of NEPA, CEQ Regulations, and 32 CFR §989, I conclude that the Preferred Alternative 1 – Construct New WTP and Demolish Existing WTP would not have significant adverse environmental impact, either by itself or cumulatively with other known projects. Accordingly, an Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact completes the environmental impact analysis process.

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Kevin Osborne, Colonel USAF PACAF/A4C Date

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
ACM	Asbestos-Containing Materials
ACAM	USAF Air Conformity Applicability Model
APDES	Alaska Pollutant Discharge Elimination System
APE	Area of Potential Effect
AQCR	Air Quality Control Region
AQIA	air quality impact analysis
AT	anti-terrorism
AWWU	Anchorage Water and Wastewater Utility
BMP	Best Management Practice
CAP	Criteria Air pollutants
CEMML	Center for Environmental Management of Military Lands
CFR	Code of Federal Regulations
CO	carbon monoxide
CO2e	carbon dioxide equivalent
CGP	Construction General Permit
CHPP	Central Heat and Power Plant
CVTC	Chickaloon Village Traditional Council
DoD	Department of Defense
DU	Doyon Utilities, LLC
EA	Environmental Assessment
EO	Executive Order

EPA	Environmental Protection Agency
°F	degrees Fahrenheit
FONSI	Finding of No Significant Impact
GHG	greenhouse gas
GWP	global warming potential
JBER	Joint Base Elmendorf-Richardson
IICEP	Interagency Intergovernmental Coordination for Environmental Planning
ITLO	Installation Tribal Liaison Officer
LBP	Lead-Based Paint
MGD	Million gallons per day
MMBtu/hr	British thermal units per hour
MMT	million metric tons
MOA	Memorandum of Agreement
MSGP	Multi-Sector General Permit
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NH3	ammonia
NO_2	nitrogen dioxide
NOA	Notice of Availability
O_3	ozone
OSHA	US Occupational Safety and Health Administration
PACAF	Pacific Air Forces
Pb	lead

PCB	Polychlorinated Biphenyls
PFAS/PFOA	Perfluorooctane Sulfonate and Perfluorooctanoic Acid
PM	particulate matter
$PM_{2.5}$	less than or equal to 2.5 microns in diameter
PM_{10}	with less than or equal to 10 microns in diameter
PPM	parts per million
ROI	region of influence
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SWPPP	Storm Water Pollution Prevention Plan
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage and Disposal Facility
USAF	United States Air Force
UST	underground storage tank
WTP	Water Treatment Plant

1.0 PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

This environmental assessment (EA) evaluates the potential environmental effects of implementing alternative actions to provide safe drinking water to Joint Base Elmendorf-Richardson (JBER). The existing JBER Water Treatment Plant (WTP) became operational in 1957. Numerous upgrades over the past 65 years have occurred; however, much of the WTP's components have exceeded their design life and need to be replaced. During planning for the WTP renovation, building materials were sampled to evaluate for the potential presence of hazardous materials. Sampling identified polychlorinated biphenyls (PCB), asbestos-containing materials (ACM), and lead-based paint (LBP). Since the discovery of the PCBs, Doyon Utilities, LLC (DU) has worked with the U.S. Environmental Protection Agency (EPA) to address interim and long-term concerns to ensure safe drinking water continues to be provided to JBER.

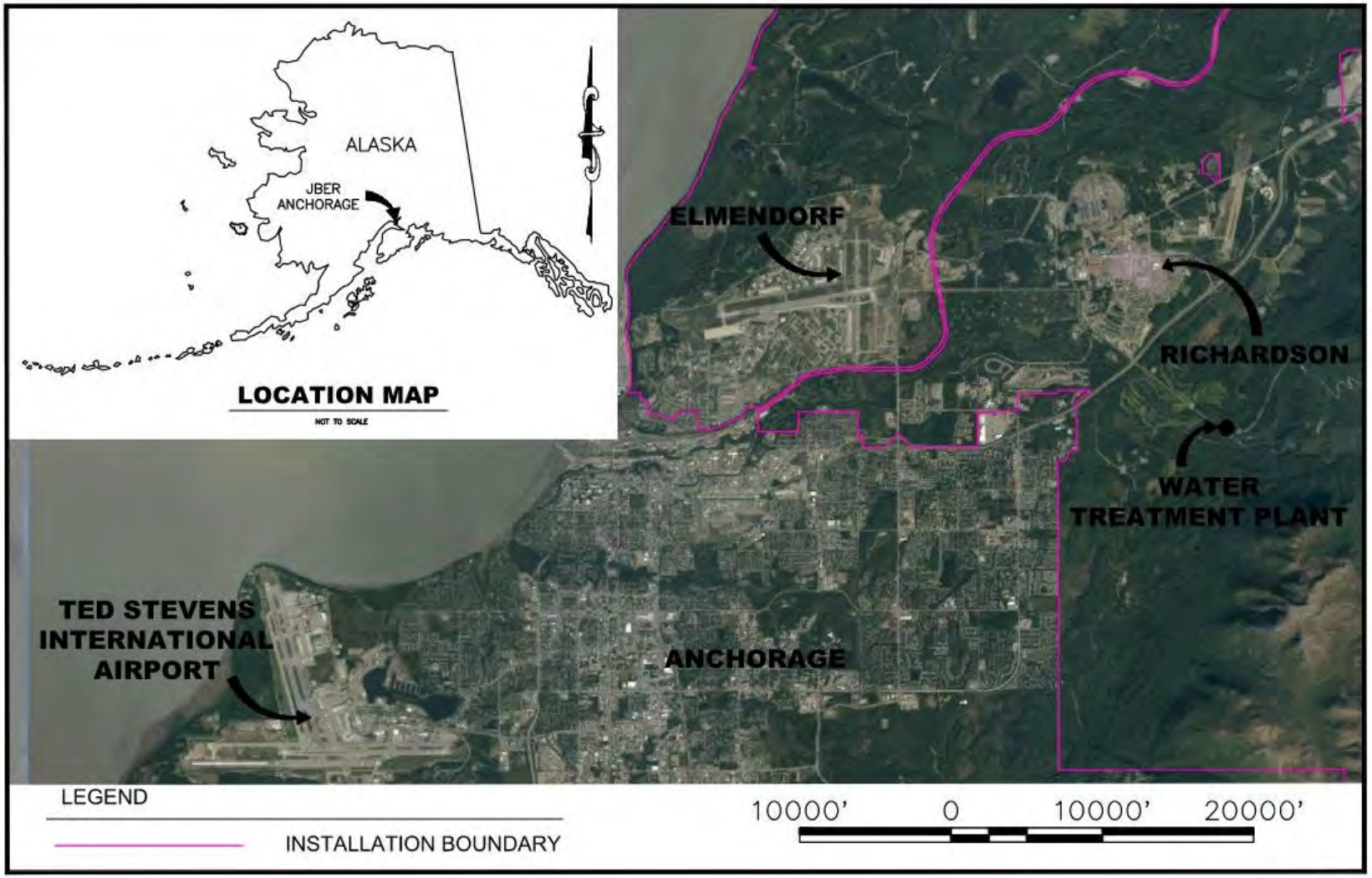
Located north and east of Anchorage, Alaska, JBER consists of the former Elmendorf Airfield and U.S. Army lands formerly known as Fort Richardson (USAF 2020c). Personnel began working at Fort Richardson in February 1941; after World War II, the Army moved its operation to the new Fort Richardson (Figure 1). The USAF assumed control of Elmendorf Airfield, part of the original Fort Richardson, and renamed it Elmendorf Air Force Base, gaining full ownership of Elmendorf and its facilities in 1951. In 2010, Fort Richardson transitioned as part of the Joint Basing initiative. Fort Richardson joined Elmendorf Air Force Base, and the installation became known as JBER.

The Department of Defense (DoD) previously owned and operated four utility systems on Fort Richardson, including potable water distribution, wastewater collection, natural gas distribution, and electric distribution. In 2005, the U.S. Army began a utility privatization (UP) initiative pursuant to 10 USC § 2688. Under the UP, the Army would transfer ownership of these utilities to a third party which would then be obligated to purchase, operate, maintain, and extend the systems as required and in accordance with applicable laws and regulations. DU, along with other bidders, submitted bids for the work. DU was selected and in September of 2007, DU and the DOD entered a 50-year UP contract for regulated services.

The JBER WTP provides water to two main public water systems; JBER-Richardson (AK2212039) and JBER-Elmendorf (AK2211423). As the water purveyor, DU manages the WTP and distribution lines on the JBER-Richardson side and provides water to the JBER-Elmendorf side of the installation. Under the terms of the contracts and its tariffs with the Commission, DU's service area only includes JBER-Richardson. The 673d Civil Engineer Group manages the distribution lines on the JBER-Elmendorf side of the installation (JBER 2022b). The two systems are connected and in essence operate as a continuous system from the WTP to the consumer (**Figure 1-1**). The combined JBER-Richardson and JBER-Elmendorf public water systems serve more than 40,000 persons.

The DU-DoD Contract requires that DU's facilities and operations remain compliant with all laws and regulations, including environmental regulations. In addition, DU holds the Alaska Department of Environmental Conservation (ADEC) approval to operate the water system and must ensure its operations meet the requirements of its permit and State of Alaska and Federal environmental laws and regulations.

Figure 1-1. JBER WTP Vicinity Map



The JBER-Richardson Potable Water Distribution System consists of wells, treatment equipment, storage tanks, pumps, ancillary structures, fire hydrants, valves, meters, and piping. JBER-Richardson has two raw water sources: one is the Ship Creek reservoir and the other includes three supply wells located on JBER-Richardson (**Figure 1-2**). The WTP receives raw water from Ship Creek Dam via a 20-inch water line. The JBER WTP is a conventional water treatment plant that employs the processes of coagulation, flocculation, sedimentation, filtration, and disinfection. The treatment processes are housed in one building. As the water leaves the WTP, final treatment is a disinfection process; it is stored nearby in two, 1.5-million-gallon storage tanks prior to distribution (Figure 1-3). Drinking water is then delivered to JBER-Richardson via a distribution system consisting of 44.7 linear miles of pipe, installed to an average depth of 10 feet below ground surface. The average demand for the entire JBER installation is 3.0 million gallons per day (MGD), and the peak demand is 7.5 MGD.

EPA and ADEC drinking water regulations have changed since the WTP was originally constructed. While the WTP was once able to process enough water to always meet average and peak drinking water demand while meeting water quality regulations, it currently cannot meet EPA and ADEC regulatory drinking water standards and meet the peak production requirement of 7.5 MGD. When the existing WTP is unable to meet JBER's existing average and peak demand water requirements, including adequate firefighting flow and pressures, the system must rely on three potable water wells constructed in the 1950s to prevent water demand from exceeding production.

PCBs in coatings, asbestos in building materials, and lead in paint have been detected throughout the WTP building at concentrations exceeding regulatory criteria. Although no safe drinking water thresholds have been exceeded following treatment for drinking, traces of PCBs below regulatory thresholds have been detected, and there is potential to further contaminate drinking water above the EPA's regulatory standard. Because operation of the WTP does not meet the requirements of the Toxic Substances Control Act (TSCA), the EPA has directed DU to ensure resolution of the WTP's contamination issues by October 2025 (EPA 2022c).

1.2 PURPOSE OF THE ACTION

The purpose of the Proposed Action is to meet obligations to provide safe drinking water to JBER facilities, including housing and administration facilities.

1.3 NEED FOR THE ACTION

The Proposed Action is needed to consistently provide safe and reliable drinking water to accommodate existing and future peak demand, while meeting EPA and ADEC drinking water regulations at JBER. In addition, the Proposed Action is needed for DU to comply with EPA's requirements under TSCA.

1.4 DECISION TO BE MADE

The decision to be made is the selection of an alternative for Pacific Air Forces (PACAF) to meet obligations to provide safe drinking water to JBER facilities. The decision options are:

1) Continue with current operations of the existing WTP (the No Action Alternative);
2) Select an alternative and prepare a Finding of No Significant Impact (FONSI); or
3) Prepare an Environmental Impact Statement if the alternatives would result in significant environmental impacts.

Figure 1-2. JBER Water Supply System Overview Map

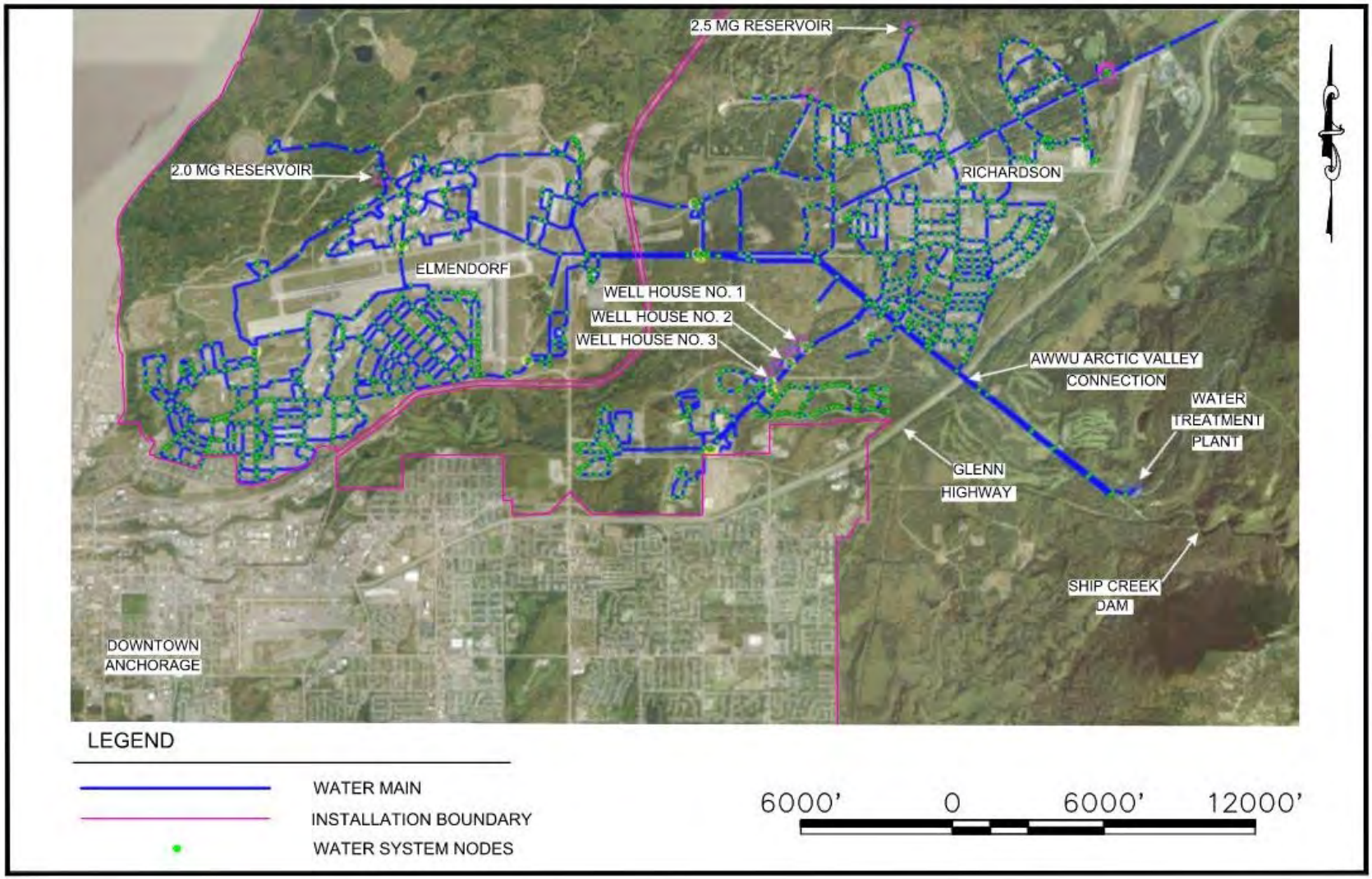
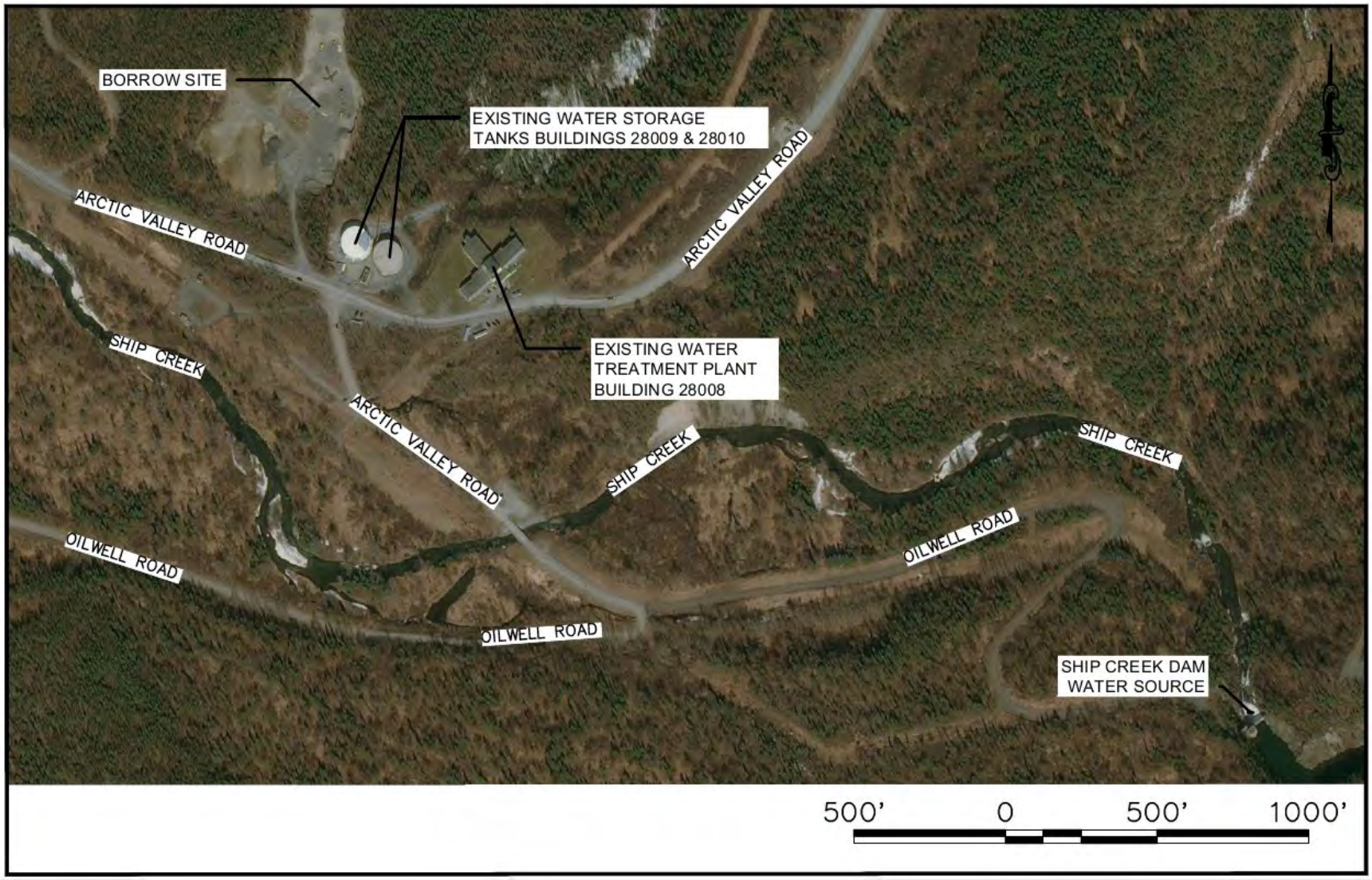


Figure 1-3. JBER WTP and Associated Features



1.5 INTERGOVERNMENTAL COORDINATION/CONSULTATIONS

1.5.1 Interagency and Intergovernmental Coordination and Consultations

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

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

1.5.2 Government to Government Consultations

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

The Native American tribal governments that were coordinated with regarding this action are listed in Appendix A.

1.5.3 Public and Agency Review of EA

A Notice of Availability (NOA) of the Draft EA and FONSI was published in the Anchorage Daily News and Mat-Su Valley Frontiersman, announcing the availability of the Draft EA for review on April 12, 2023. The NOA invited the public to review and comment on the Draft EA. The public and agency review period will end on May 11, 2023. Public and agency comments received prior to release of the Draft EA are provided in Appendix A.

Copies of the Draft EA and FONSI were made available for review at the following locations:

Chugiak-Eagle River Library	Z.J. Loussac Library	JBER Library
12001 Business Blvd. #176 Eagle River Town Center Eagle River, AK 99577	3600 Denali St. Anchorage, AK 99503	Army Education Center Bldg. 7, Chilkoot Ave. JBER, AK 99505

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

DU is proposing to meet its obligations to provide enough safe drinking water to JBER facilities in order to dependably and continuously meet current and future demand in support of JBER's mission. The existing WTP, constructed in the early 1950s, is currently unable to meet the peak demand for safe drinking water and may be at risk for failing due to unanticipated circumstances. In addition, PCBs in coatings, asbestos in building materials, and lead in paint have been detected throughout the WTP. Although no safe drinking water thresholds have been exceeded, some water samples taken at the end of the drinking water treatment process have indicated the presence of PCBs in the drinking water. The EPA has directed DU to ensure resolution of this issue by October 2025.

2.2 SELECTION STANDARDS

The NEPA and Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] § 1502.14(a)), and USAF regulations (32 CFR § 989.8) mandate the consideration of reasonable alternatives for the proposed action. "Reasonable alternatives" are those that could be utilized to meet the purpose of and need for the proposed action, and that "would cause a reasonable person to inquire further before choosing a particular course of action." Per the requirements of 32 CFR Part 989 of the USAF Environmental Impact Analysis Process (EIAP) regulations, selection standards are used to identify reasonable alternatives for meeting the purpose and need for the USAF action.

Potential alternatives to the proposed actions were evaluated according to six selection standards. The proposed action alternatives must meet the following selection standards:

Selection Standard 1: Supply Average and Peak Water Demand

Alternatives carried forward for further consideration must provide enough water to meet JBER's average and peak demands. Unified Facilities Criteria (UFC) provides requirements for typical storage and distribution systems for domestic water, fire protection, and non-potable water for the DoD. Historic use and population projections in accordance with the UFC were used to estimate the current and future average and peak water demands for the JBER system (HDR 2016). The average demand at JBER is 3.0 MGD, and the peak demand is 7.5 MGD. To ensure operational reliability, reasonable alternatives carried forward for consideration should have the capacity to meet the average day (24-hour) demand in 10 hours of operation.

Selection Standard 2: Meet Federal and State Water Quality Regulations

Alternatives carried forward for further consideration must meet all EPA and ADEC regulations for drinking water facilities' construction and operation. Regulations require the EPA and ADEC to approve WTP construction materials, water treatment chemical additives, and operational treatment methods prior to their construction and operation. Regulations also dictate finished water quality parameters.

Selection Standard 3: Meet EPA PCB Cleanup Requirements

Alternatives carried forward for further consideration must ensure the removal of all sources of PCB contamination and full reduction of exposure of PCBs to drinking water as directed under the TSCA. A broad family of man-made organic chemicals, PCBs were domestically manufactured from 1929 until banned in 1979. Due to their non-flammability, chemical stability,

high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications. PCBs have been demonstrated to cause a variety of serious, adverse health effects to the immune system, reproductive system, nervous system, and endocrine system of humans. PCBs have also been demonstrated to cause cancer and other health issues (EPA 2022b).

TSCA provides the EPA with the authority to require reporting, record-keeping and testing requirements, and restrictions relating to the use of chemical substances and/or mixtures that contain PCBs. Current PCB regulations, published pursuant to the TSCA statute, are found in Title 40 CFR Part 761(EPA 2021). The *PCB Site Revitalization Guidance Under the TSCA* (EPA 2005) also provides direction for complying with TSCA regulations for the cleanup and disposal of PCB contamination. Specifically, the TSCA and its implementing regulations at 40 CFR Part 761 generally prohibit the use of PCBs in concentrations greater than 50 parts per million (ppm) in any manner unless authorized by rule. Exceptions to this prohibition of use include where EPA approved encapsulation methods are employed.

The existing WTP is out of compliance with the TSCA. PCBs are found in the WTP in varying concentrations above 50 ppm in most painted surfaces on the interior of the building, in window caulking, and on painted concrete surfaces in the sedimentation tanks, filter bays, and the clear well. PCBs located on the interior surfaces are directly or indirectly in contact with drinking water. Water is sampled throughout the WTP weekly, and to date, there have been no exceedances of EPA drinking water standards, including those for PCBs. Although no drinking water thresholds have been exceeded, traces of PCBs below regulatory thresholds have been detected in water tested following drinking water treatment, and there is potential to further contaminate drinking water.

In addition, PCB-impacted sediment was detected in 2019 in the backwash discharge channel associated with the WTP. Detections of PCBs in soil and sediment exceeded the ADEC soil cleanup level of 1.0 ppm. The presence of PCBs in concentrations above 1.0 ppm presents a risk of exposure to human health and environmental receptors. ADEC regulates PCBs in soil and does not allow for disposal of contaminated soils and/or PCB bulk product wastes (building demolition materials) that contain PCBs greater than 1.0 ppm within the state of Alaska. Based on these detections, the WTP and backwash channel were determined to be out of compliance in 2019.

In 2020, DU requested a Risk Based Disposal Approval (RBDA) from the EPA that allowed DU to implement interim protective measures including construction of engineering controls, implementation of operational changes and routine facility inspections for paint chip debris, and sampling and analysis of the internal process water and final produced drinking water at the JBER WTP (EPA 2020). The purpose of this RBDA was to allow DU to continue operating the non-compliant WTP over the short term, in a manner that is protective of human health and the environment, while developing a plan to either remediate the existing plant or construct a new plant. In their approval the EPA states, “This approval shall expire on October 1, 2023, by which time the EPA expects Doyon to have a new water treatment plant in place. Disposal of PCB coatings in the existing WTP and soils in the exterior backwash channel is expected in the following construction season.” On August 31, 2022, DU requested EPA grant an extension on the approval of the 2020 RBDA to October 1, 2025, which was granted by the EPA on December 15, 2022 (EPA 2022c). All alternatives carried forward for consideration must meet EPA’s remediation or removal requirements as directed and specified under TSCA.

Selection Standard 4: Withstand Outside Threats and Natural Disasters

Alternatives carried forward for further consideration must be able to provide protection against terrorist and cyber-attacks and unexpected changes in water demand, influent water quality, and natural disasters.

Current anti-terrorism (AT) and force protection requirements are outlined in the Facility Risk Assessment and Mitigation Tool (FRAM-T) which examines risk criteria for a facility and provides a recommended standoff distance from roads and other buildings based on occupancy, replaceability, construction materials, and vulnerability to threats based on data from UFC 4-010-01, DoD Minimum AT Standards for Buildings (DoD 2022b). The minimum AT standards must be applied to renovations when the project cost exceeds 50 percent of the replacement cost of the existing building. For this project, the refurbishment cost of the WTP is estimated to be 95% of the replacement cost, so the existing WTP would need to be refurbished to meet the requirements. If a building has substantial blast resistance, roads and other buildings may be as close as 33 feet depending on the score determined by a FRAM-T completed for the project. A reasonable alternative carried forward in this analysis must meet the FRAM-T with the typical WTP construction methods to determine an appropriate risk-based setback distance from a public road of 110 ft.

According to an American Water Works Association funded report (Germano 2021), cyber risk is the top threat facing business and critical infrastructure in the U.S. Government intelligence confirms the water and wastewater sector is under a direct threat as part of a foreign government's multistage intrusion campaign, and individual criminal actors and groups threaten the security of U.S. water and wastewater systems' operations and data. A robust and tested cybersecurity program is critical to protect public health and safety, prevent service disruptions, and safeguard customer and employee personal and financial information. Inadequate cybersecurity measures carry tremendous risk. In addition to serious threats to people, property, operations and data, cybersecurity incidents on military bases could impact the ability to meet missions. A reasonable alternative carried forward here must be secure from cyberattack by having the capacity to deter, detect, deny, delay, and defend the water system's monitoring and control functions from cyber intrusions.

A reasonable alternative carried forward for consideration must be resilient. It should be able to adjust to sudden changes that impact the treatment process or working environment such as influent water quality, treated water demand, or natural disasters (e.g., earthquake, forest fire, volcanic ash). The water system should also be able to be staffed by a single operator in times of staff shortages or other disruptions.

Selection Standard 5: Meet Adequate Firefighting Requirements

Alternatives carried forward for further consideration must meet flow and pressure requirements for firefighting, which are higher than those for typical average and peak use. The 2016 Water System Master Plan (HDR 2016) identified a fire flow design criteria of 5,000 gallons per minute for four hours based on an evaluation of the largest buildings on JBER, their required fire flow per building square foot (which depends on the hazardous/flammability rating of the building), and then applying the calculations into a system-wide water flow. Water must be provided at adequate pressure to maintain a minimum of 20 pounds per square inch throughout the JBER distribution system in order to provide adequate firefighting capabilities.

Selection Standard 6: Use Existing Drinking Water Infrastructure

Alternatives carried forward for further consideration must be able to connect to existing water sources and treatment infrastructure. Air Force Policy Directive 32-10, Installations and Facilities, dictates that new construction should be minimized and requires the use of existing infrastructure to the maximum extent possible (USAF 2019). An alternative must be able employ the existing raw water supply from Ship Creek, chlorine injection system, and the newly constructed 1.5-million-gallon water tanks to avoid the need for new, additional drinking water infrastructure.

2.3 SCREENING OF ALTERNATIVES

The following potential alternatives that might meet the purpose and need to provide safe drinking water to JBER were considered:

1) Alternative 1 – Construct New WTP and Demolish Existing WTP

This alternative would construct a new WTP adjacent to the existing water storage tanks. After the WTP is operational, the existing WTP would be dismantled, materials would be properly disposed of, and the site would be remediated upon demonstration that the new plant is fully operational.

2) Alternative 2 – Construct New WTP and Stabilize Existing WTP

This alternative would construct a new WTP adjacent to the existing plant. In accordance with EPA requirements, the existing WTP would be closed, secured, and stabilized in place for future demolition.

3) Alternative 3 – Remediate Existing WTP

This alternative would maintain the existing WTP. The plant would be remediated to meet TSCA regulations for the cleanup of PCB contamination and EPA and ADEC requirements for cleanup of LBP and ACM, and upgraded to meet future and existing water demand, current operating standards, and current occupational safety standards.

4) Alternative 4 – Connect to Anchorage Water and Wastewater Utility (AWWU) and Stabilize Existing WTP

This alternative would connect the JBER drinking water system to the AWWU system. Water would be purchased from AWWU and acquired through three existing interconnections. In accordance with EPA requirements, the existing WTP would be demolished immediately or closed, secured, and stabilized in place for future demolition.

5) Alternative 5 – Other WTP Locations

This alternative would construct a WTP at another location on JBER. In accordance with EPA requirements, the existing WTP would be demolished immediately or closed, secured, and stabilized in place for future demolition.

6) No Action

This alternative would involve no upgrades, improvements, or remediation to the existing WTP. The plant's operation and maintenance would not change, including the current EPA requirements for monitoring and testing existing contamination within the building.

The selection standards described in Section 2.2 were applied to these alternatives to determine which alternatives could provide safe drinking water to JBER and would fulfill the purpose and need for the action. The alternatives and how they meet the selection criteria are further explained in Sections 2.4 and 2.5.

Alternative Descriptions	Selection Standards					
	Supply Average and Peak Demand	Meet Federal and State Water Quality Regulations	Meet EPA PCB Cleanup Requirements	Withstand Outside Threats	Meet Adequate Firefighting Requirements	Use Existing Drinking Water Infrastructure
	(1)	(2)	(3)	(4)	(5)	(6)
Construct New WTP & Demolish Existing WTP	Yes	Yes	Yes	Yes	Yes	Yes
Construct New WTP & Stabilize Existing WTP	Yes	Yes	No	Partial	Yes	Yes
Remediate Existing WTP	Yes	Yes	No	No	Yes	Yes
Connect to AWWU & Stabilize Existing WTP	Partial	Yes	No	Partial	Yes	No
Construct New WTP at Another Location	Yes	Yes	Yes	Yes	Yes	No
No Action	No	No	No	No	No	Yes

2.4 DETAILED DESCRIPTION OF THE ALTERNATIVE(S)

The application of the selection standards to the six alternatives revealed a single reasonable alternative - Alternative 1. A detailed description of Alternative 1 and the "No-Action" alternative, along with the selection standard analysis, is provided below. Alternatives 2, 3, 4, and 5 are fully described and the rationale for their dismissal from further consideration is explained in Section 2.5.

2.4.1 Alternative 1 (Preferred Alternative). Construct New WTP and Demolish Existing WTP

Alternative 1 would (Figure 2-1 and Figure 2-2):

- Construct a new, primarily gravity-fed WTP that meets JBER's current and expected demand for drinking water, including firefighting capabilities, during all conditions. To use the existing pipes from the raw water source in Ship Creek and two 1.5-million-gallon water tank, the proposed new WTP would be built about 250-feet northwest of the existing WTP and adjacent to the existing water storage tanks. The project would occur within a new 8-ft-tall, fenced area of about 13,000 square feet (0.3 acres). Water pressure would be boosted by raw water feed pumps within the WTP, if needed.

Figure 2-1. Alternative 1 Overview

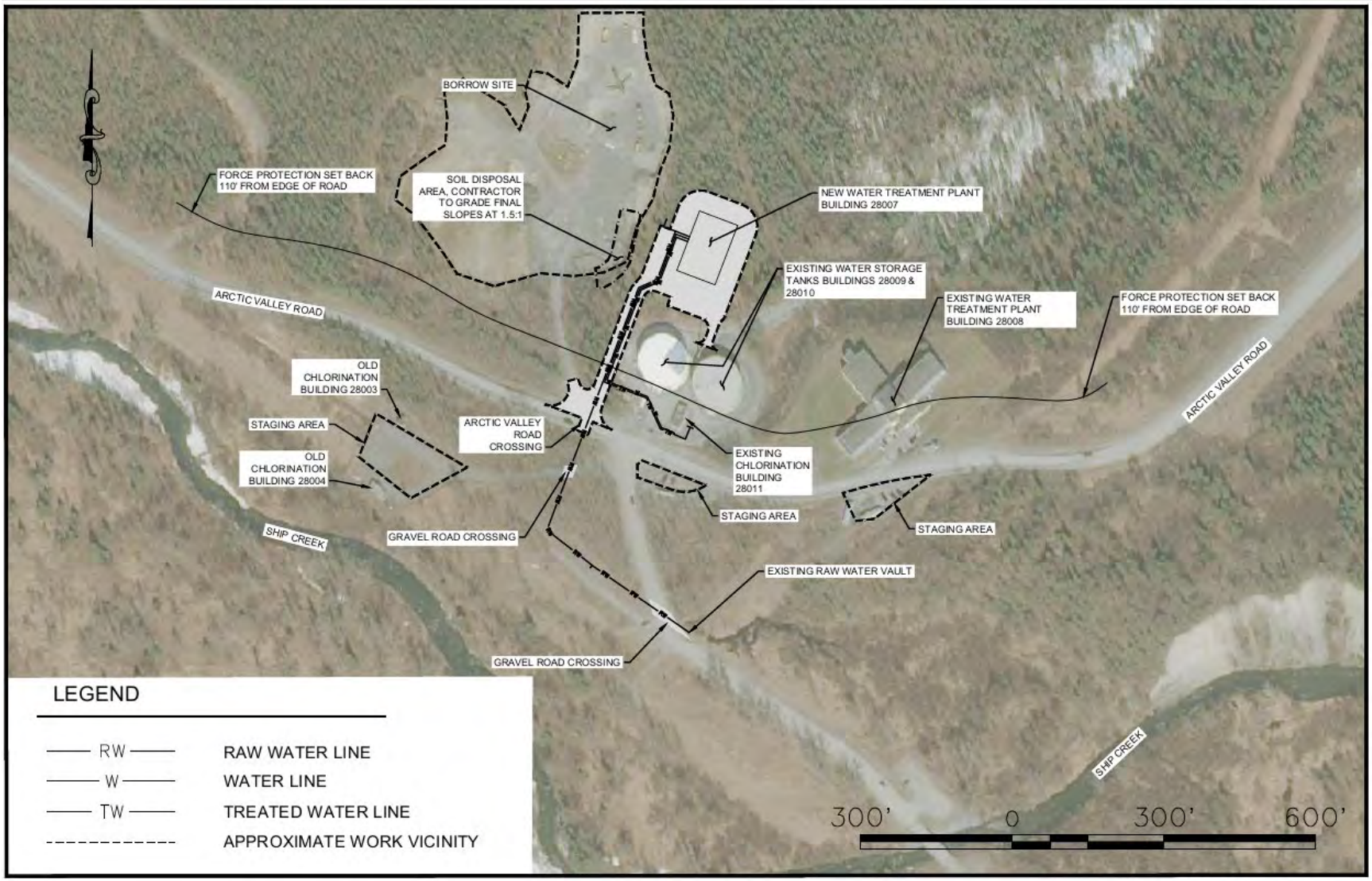
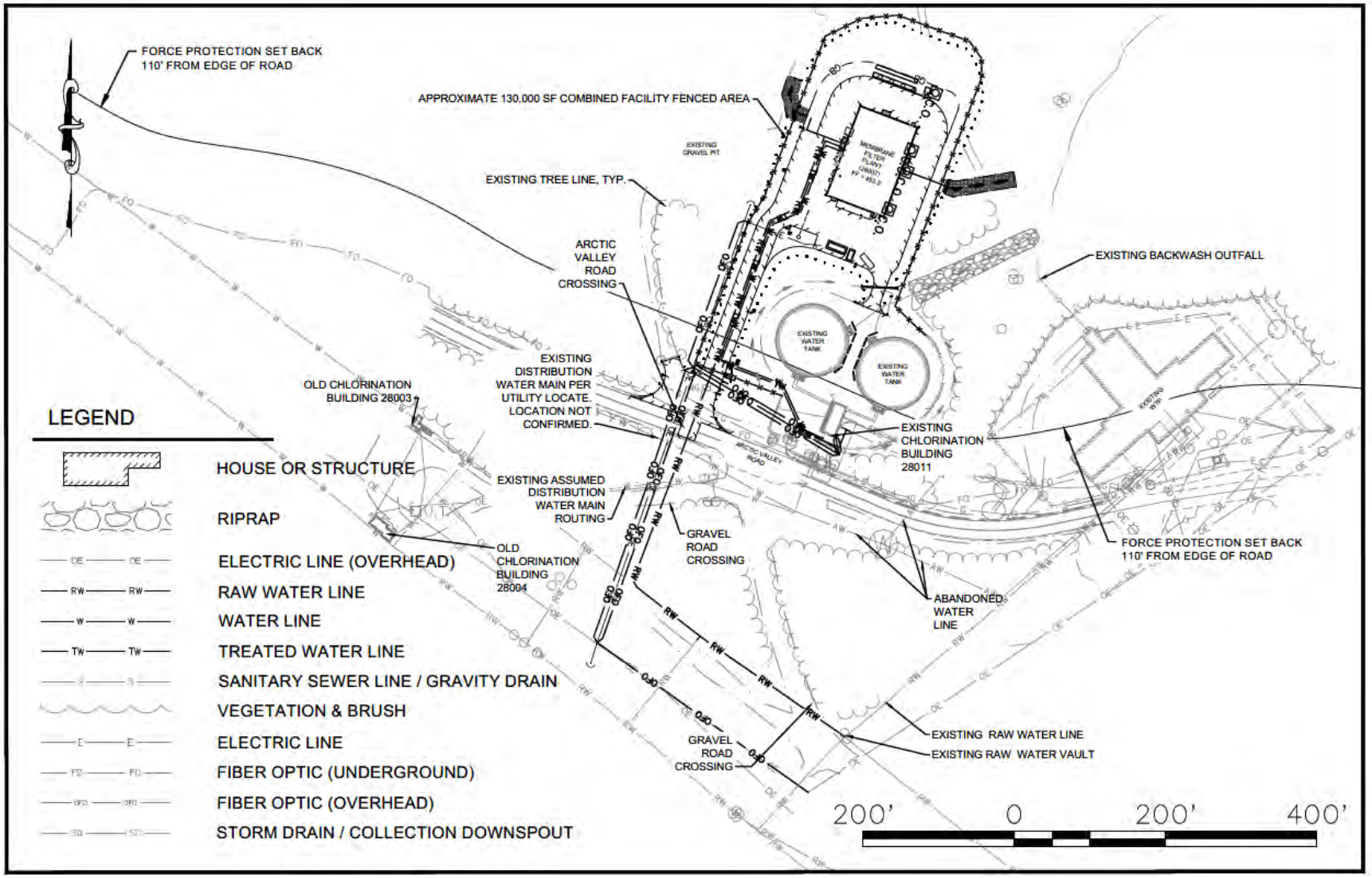


Figure 2-2. Alternative 1 Details



- Implement a WTP process that would include a direct microfiltration treatment process able to treat a wide range of influent water quality over the anticipated flows of the system
- Include an approximately 125-ft by 80-ft (10,000 sq ft), 24-ft tall pre-engineered metal building built on a 6-inch-thick, concrete floor slab foundation with concrete stoop and ramp entrances.
- Install access and security features that would include building setback (meeting DoD Minimum AT Standards for Buildings, DOD 2022b), curbs, gutters, parking spaces, a fire lane, bollards, chain-link fencing, a pivot gate, and a pedestrian gate.
- Install cyber-attack resistant measures within the plant.
- Include a generator and transformer, electrical service, facility lighting, a gas line, water lines, a 2,000-gallon fire guard tank, a 1,500-gallon septic tank, and a dumpster.
- Install a backwash line and outfall, drain fields, paving, and a culvert. Grading, clearing, vegetation removal, and earthwork disturbance (including ditching for the project's utilities) would also occur, and disturbed areas would be revegetated.

In addition, Alternative 1 would use three staging areas and a soil disposal/borrow site area as shown on Figure 1, and project personnel and waste would be transported to the project site via Arctic Valley Road.

Under Alternative 1, once the proposed new WTP has been commissioned by ADEC and is fully operational, the existing WTP would be dismantled and properly disposed, and the site would be remediated. A licensed and certified demolition contractor would develop a work plan following American Society for Testing and Materials (ASTM) E2893-16e1 *Standard Guide for Greener Cleanups* (ASTM 2017), which provides a process for identifying, prioritizing, and implementing activities to reduce the environmental footprint of a cleanup. The work plan would follow the primary federal and state regulations for PCBs - TSCA regulations at 40 CFR Part 761 and Alaska Solid Waste Management regulations (18 Alaska Administrative Code [AAC] 60). The EPA-approved work plan would also include Occupational Safety and Health Administration (OSHA) approved methods for dismantling and segregating building materials, depending on the nature of the waste (non-hazardous or hazardous). The work plan would include approaches to evaluating whether materials can be safely removed mechanically and disposed separately from or with the building components. Importantly, Alternative 1 would also include methods for handling and then disposing materials as follows:

- PCB bulk product waste and remediation waste with PCB concentrations of 50 ppm or greater would be disposed of at a landfill outside of Alaska; the state does not have any landfills permitted to accept large quantities of regulated hazardous wastes, such as PCB-impacted material as defined in 40 CFR Part 761. This PCB bulk product waste would be characterized and properly packaged in approved shipping containers for transportation to an EPA-licensed transporter via truck and barge to an approved hazardous waste landfill, likely in Idaho or Oregon.
- Building demolition wastes with concentrations of PCBs greater than 1 ppm, but less than 50 ppm, cannot be disposed within the state of Alaska because there are currently no municipal landfills permitted to accept PCB bulk product waste over 1.0 ppm. Any other PCB waste generated by the project would be disposed in the same manner as

TSCA regulated PCB bulk product waste (i.e., packaged and shipped out state for disposal at a permitted landfill outside Alaska).

- LBP is found with WTP materials also containing PCBs; therefore, materials containing lead paint would be handled and disposed according to their PCB concentrations (see bullets above).
- ACM, if not contaminated with lead or PCB, would be disposed at a landfill approved to accept ACM, likely the Anchorage Regional Landfill.
- Non-hazardous waste products would likely be disposed at the Anchorage Regional Landfill.

Under Alternative 1, once the existing WTP has been removed from the site, an EPA-approved work plan would be implemented to remediate the backwash channel soil to ensure that PCB levels are within acceptable limits. The work plan would include approaches to evaluating whether soil is disposed at a TSCA-permitted landfill or remediated in place.

Alternative 1 would meet JBER's current and expected future average and peak drinking water demand. Under this alternative, there would be no need to connect into wells or AWWU's system during times of high demand (Selection Standard 1) or to meet firefighting needs (Selection Standard 5). Alternative 1 design would meet current and anticipated future drinking water regulatory requirements (Selection Standard 2); as required by the Safe Drinking Water Act (SDWA) and other state and federal regulations, the treated water would meet water quality standards established by the EPA and adopted and enforced by ADEC (CRW 2021b). The alternative would be designed and sited to be able to connect directly to and use the nearby existing raw water line from Ship Creek, chlorine injection system, and water storage tanks (Selection Standard 6).

Because a new WTP would be constructed, Alternative 1 would eliminate all future risk of PCBs contaminating JBER's drinking water supply, PCB exposure to WTP operators, and the issue of noncompliance with EPA regulations (Selection Standard 3). It would also meet DU's mandate via its contract for utility operations at JBER to ensure compliance with agency orders regarding hazardous or environmental conditions. The existing WTP would be demolished following an EPA-approved plan, which would protect humans and the environment from PCB exposure risks.

Alternative 1 would ensure a resilient and secure water supply for JBER that would withstand outside threats (Selection Standard 4). The proposed new WTP's location, added security measures, and modern cybersecurity improvements would protect against unexpected attacks and safeguard JBER's drinking water supply. Under this alternative, the new, modern building would be capable of handling earthquakes.

2.4.2 No Action Alternative

Under the No Action Alternative, the current WTP would continue to operate and be maintained without any changes. The WTP was originally constructed by the U.S. Army in 1955 and became operational in 1957. Numerous upgrades over the past 65 years have occurred; however, much of the WTP's components are past their design life and need to be replaced.

The existing WTP would remain in place, connected to the existing Ship Creek raw water supply, chlorine injection system, and water storage tanks (Selection Standard 6).

The No Action Alternative would not meet JBER's existing average and peak demand water requirements (Selection Standard 1). Recently, the potable water wells have been used on occasion to supply the required water demand when it exceeded the production capacity of the WTP. The existing wells, however, are not capable of supplying adequate water volumes for extended periods of time. The wells and associated equipment were constructed in the 1950s and are at the end of their design life. The wells need to be refurbished, modernized, and source water protection improved. The upgraded wells would not withstand outside threats since the wells provide water to the installation through a single line with no redundancy.

Drinking water regulations have changed over the past 65 years since the WTP was originally constructed. Due to the aging infrastructure, drinking water must be processed more slowly to meet present-day drinking water standards (Selection Standard 2). The WTP cannot meet current EPA and ADEC regulatory drinking water standards and maintain a peak output of 7.5 MGD, and the operators must limit flow through the plant to less than 3.0 MGD at times of high raw water solids and color. This happens primarily during spring break-up and fall rains.

The existing WTP is currently out of compliance with the EPA because it does not meet the regulatory requirement of the TSCA and 40 CFR Part 761. The No Action Alternative would not meet EPA PCB cleanup requirements (Selection Standard 3) and would operate under and comply with interim operating measures and sampling procedures, which are outlined in the December 2022 EPA's Approval of Interim Measures to Prevent Releases of PCBs and Ongoing Monitoring, Pursuant to 40 CFR Part 761.6l(c) at Doyon Utilities Water Treatment Plant AKR000204883. This includes, but is not limited to, weekly inspections of the paint coatings and sampling of the drinking water (EPA 2022c and EPA 2020). Once the interim measures expire, the EPA could require the WTP to cease operation because of the risk of PCB exposure to JBER's population and on-site workers.

The No Action Alternative would not withstand outside threats (Selection Standard 4). The WTP would continue to be approximately 25 feet from Arctic Valley Road, 85-feet less than the minimum recommended anti-terrorism standoff distance of 110 feet. The building would remain at risk to natural disasters including earthquakes, since existing unreinforced masonry would remain potentially subject to collapse during seismic events, and other safety improvements would not be made. Fire suppression and protection improvements would not occur under the No Action Alternative.

There would be no improvements to the WTP building or cyber security. The supervisory control and data acquisition (SCADA) system monitors the WTP and numerous remote locations in the water distribution system. Although portions of the system were upgraded, and additional improvements to the network connections were made, the WTP needs further modern security safeguards for handling physical or electronic mischief (MWH 2012a).

The No Action Alternative would be unable to provide adequate firefighting flow and pressure (Selection Standard 5). As mentioned above, under normal demand conditions the existing WTP meets water quality standards; however, the WTP is unable to meet current drinking water quality standards while supplying the maximum water demand, and there is a reliance on wells and AWWU's water during times of unusually high water use. Without WTP improvements or replacement, the WTP would not be able to respond to a fire at JBER without using an alternative system. The No Action Alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

2.5 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

As none of the other alternatives that were considered would meet the purpose and need or comply with all the selection standards, the following alternatives have been eliminated from further consideration.

2.5.1 Alternative 2. Construct New WTP and Stabilize Existing WTP

Under this alternative, a new WTP would be constructed as described under Alternative 1. Different from Alternative 1, after the proposed new WTP is commissioned and fully operational, the existing WTP would be stabilized and secured in place for future demolition.

An EPA-approved plan for securing and maintaining the current WTP in place will be developed under Alternative 2 to ensure building security and preventing release of any toxics until eventual demolition. DU has been actively managing PCB paint coatings within the WTP to ensure it does not pose an unacceptable risk of injury to human health or the environment. As part of this program, DU has instituted interim operating measures and sampling procedures which are outlined in EPA's Approval of Interim Measures to Prevent Releases of PCBs and Ongoing Monitoring, Pursuant to 40 CFR §761(c) at Doyon Utilities Water Treatment Plant AKR000204883 (EPA 2022c).

Because the WTP would remain in place under Alternative 2, the Interim Control Measures (including sampling procedures) would be modified for stabilizing and securing PCB coatings in the plant. In addition to the bullets above, it is expected that the procedures would include the following PCB-related measures:

- The building surfaces would be inspected monthly for loose paint chips. All observed paint chips would be placed in an approved and labeled waste container, and disposed in accordance with 40 CFR § 761.62(b);
- DU would maintain records of inspections for five years; and
- Other measures for handling hazardous materials could be added, as required by the EPA.

Under Alternative 2, once the existing WTP is replaced, the building would serve no purpose in providing utility service at JBER and would be secured in place. Future WTP demolition and disposal would follow similar methods to those described under Alternative 1. Differing from Alternative 1, the building's demolition and disposal timeframe are undefined at this time.

Similar to Alternative 1, Alternative 2's proposed new WTP includes a raw water filtration system that would be able to process enough water to maintain average and peak demand (Selection Standard 1). Alternative 2's proposed new WTP design would be approved by ADEC prior to construction and operation and treated water would meet water quality standards established by the EPA and adopted and enforced by ADEC (Selection Standard 2). The Alternative 2 proposed location would allow direct connection and use of the nearby, existing raw water line from Ship Creek, chlorine injection system, and water storage tanks (Selection Standard 6). The WTP would provide enough water to meet JBER's current and expected drinking water needs under all conditions (Selection Standard 2). It would also provide enough water for firefighting needs (Selection Standard 5).

While this alternative meets the purpose and need for the project and most selection standards above, this alternative was dismissed from further consideration because the existing WTP would be at risk to natural disasters, including earthquakes and fire (Selection Standard 4),

since existing unreinforced masonry would remain and no upgrades to the fire suppression system would be made. If the building were to sustain damage during an unexpected event, the remediation effort would be further complicated.

Alternative 2 was also dismissed from further consideration in the document because it would not meet EPA PCB cleanup requirements (Selection Standard 3). As previously stated, DU is currently operating the existing WTP under an approved RBDA with prescribed controls, sampling, analysis, inspection, and reporting requirements because the plant contains paint coating with PCB concentrations equal to or greater than 50 ppm, which are unauthorized per TSCA and its implementing regulations at 40 CFR Part 761. The EPA stated in the approval that they expect the existing WTP to be disposed in the construction season following construction of the proposed new WTP.

2.5.2 Alternative 3. Remediate Existing WTP

Alternative 3 would involve abating the hazardous materials content, upgrading the treatment processes to improve plant capacity and reliability, and other improvements to bring the facility up to current WTP operating requirements and standards.

To abate hazardous materials in the existing WTP, the *PCB Risk-Based Disposal Plan* (Stantec 2019) would be resubmitted for EPA approval. The overall goal of the abatement presented in the disposal plan is to achieve EPA compliance standards and manage risk to occupants and the public. Accordingly, the plan includes removal of PCB-containing coatings:

- From all surfaces adjacent to or in contact with drinking water;
- Where concentrations are at or greater than 50 ppm;
- Where the coating's physical condition is failing (e.g., delaminating, flaking) or impacted by rehabilitation activities; and
- Where physical contact by staff is frequent.

In addition, PCB-containing concrete and coatings with concentrations less than 50 ppm would be encapsulated.

This would be accomplished by:

- Complete removal and replacement of the building component that can be removed and replaced (such as handrails, vinyl, countertops, and caulking);
- Removal of the paint coating from concrete walls and structures by physical methods such as grinding. Contaminated dust would be collected and disposed in an approved landfill;
- PCB-containing waste material from the WTP would be properly packaged in approved shipping containers and transported by an EPA-licensed transporter via truck and barge to an approved landfill;
- PCBs have been documented migrating from the paint into the WTP's concrete walls and floors. After abatement is completed, if PCBs are still present in the underlying material in concentrations less than 50 ppm, the surface or material would be coated or encapsulated with a coating that is EPA-approved for contact with drinking water. The coating would prevent the remigration of PCBs out of the concrete and into the drinking water; and

- The settling basins, filter bays, and clear well would be lined, coated, or encapsulated to prevent drinking water from coming into contact with any residual PCBs. This would likely involve constructing stainless steel tanks within the existing basins.

In addition to the PCB-containing materials, abatement of ACM and LBP would occur under Alternative 3. Waste materials containing lead paint would be handled and disposed according to their PCB concentrations. ACM, if not contaminated with lead or PCBs, would be disposed at a landfill approved to accept ACM, likely the Anchorage Regional Landfill.

Once the remediation is complete under Alternative 3, substantial portions of the existing WTP would be upgraded as follows (GV Jones 2010 and MWH 2012b):

- Because the WTP cast iron process piping has reached or exceeded design life and shows loss of wall thickness, major sections of the large diameter process piping would be replaced;
- The chemical mixing, raw water rapid mix systems, and chemical feed systems would be replaced to address issues with chemical treatment that impairs the coagulation, flocculation, and filtration processes;
- The flocculation and sedimentation basins would be reconstructed to include new flocculation components and plate settlers, with ancillary sludge collection equipment;
- The WTP instruments and controls would be replaced, including the electrical and HVAC systems;
- Control and security technology would be replaced and improved. Existing masonry would be reinforced because several walls have unreinforced masonry and are potentially subject to collapse during seismic events;
- OSHA-required architectural life safety components and worker safety improvements would be installed, including egress, access, occupancy improvements and equipment hazards, handrails, and ladders; and
- Fire suppression and protection improvements would be installed, including a fire suppression system, smoke detection technology, and emergency lighting.

The upgraded water treatment system in Alternative 3 would be able to process enough water for the existing and future needs at JBER (Selection Standard 1) and meet firefighting water requirements (Selection Standard 5). The existing WTP improvements would be approved by ADEC. After the plant is remodeled, drinking water would meet federal and state water quality standards (Selection Standard 2). Further, Alternative 3 would be sited to be able use the nearby, existing drinking water infrastructure (Selection Standard 6).

Alternative 3 was dismissed from further consideration because it does not meet Selection Standard 3 since DU and USAF were unable to secure EPA's approval on a *PCB Risk-Based Disposal Plan* allowing continued use of the existing facility. DU coordinated with the EPA to develop this abatement plan without successful resolution. Despite extensive coordination effort over the course of two years, DU withdrew the abatement plan request and began to develop other alternatives.

Since 2001, the EPA's stated goal is zero ppm PCBs detected in potable water. Keeping an extensively abated WTP building in service, which still contains levels of PCB throughout its entirety, is not aligned with the EPA's site-specific goals for long-term use of the facility. A

records search of EPA databases and a nationwide inquiry of environmental professionals was unable to find any record of where a WTP was placed back into service following PCB abatement. Since there is no known established precedent for this process at any other water treatment facility in the country, and the abatement and encapsulation process could not guarantee that remigration of remaining PCBs would not occur back to the concrete surface, the risk associated with the methods proposed in the WTP Abatement Work Plan remained under question by the EPA.

Further, it is likely that the EPA did not approve the abatement plan because there are locations within the WTP where drinking water comes in direct contact with PCBs, particularly the WTP's concrete filter basins, which are coated with PCB-containing paint. While DU and USAF proposed to empty the concrete filter basins and strip the contaminated paint, TSCA does not authorize the use of "decontaminated" concrete which has been impacted by PCB paint to be in contact with drinking water. DU and USAF completed exhaustive research but were unable to find National Sanitation Foundation (NSF) 61 certified coatings that would adequately encapsulate the PCB-containing materials. DU and USAF also researched NSF-61-accepted basin lining systems that would allow required inspection of the filter basins structural walls needed for worker safety; however, none were found.

DU and USAF vigorously explored several alternate methods to meet EPA's requirements, including designing and installing special stainless-steel tanks to sit within the existing basins. The tanks would eliminate all contact of PCB-containing materials with water. However, these tanks would cause substantial difficulty for the long-term operation and inspection of the WTP. The filter media and tanks would need to be removed periodically for inspection of the underlying concrete structures, and the WTP is too small, and the ceiling is too low, to allow for reasonable removal and replacement of steel tanks.

Remediation and abatement in the existing plant is very complex because PCBs are in over 90 percent of the paint coatings, and PCBs are found in difficult-to-reach locations such as adjacent to filter media, in confined spaces, and behind process piping and electrical components.

It is not feasible to remove 100 percent of the PCBs from the facility while leaving the WTP in place and operational. During initial PCB abatement planning, DU and USAF considered closing half of the WTP, while keeping the other half online to produce water for JBER. This approach was deemed not reasonable because substantial modifications to the building, piping cross-connections, and operating systems would be required to separate the treatment process and create two, individual water treatment process trains (or sequences). Since nearly all the WTP surfaces are covered in non-compliant PCB paint coatings, the plant modifications to prepare for the abatement process could result in the release of PCB particles to drinking water and hazardous situations for WTP operators and construction workers.

PCB abatement would require mechanical removal of the paint coating, including sanding or grinding concrete and other surfaces that cannot be removed from the WTP. Physical methods would drive PCB (and lead) contaminated fine particulates airborne in the operating plant. Although work areas could be partially contained by engineering controls such as temporary walls and plastic sheeting, the controls would be insufficient to prevent contamination of the open process water sedimentary and filter tanks. For example, exit and entry points would be areas where PCBs could be released into the working area of the plant. Remediating PCBs from an active WTP would result in considerable exposure risk to drinking water and to WTP employees.

DU and USAF examined the potential to temporarily close the entire WTP to complete the remediation. Under this option, water would be acquired from the existing groundwater wells for at least two years while the existing WTP is abated and remodeled. This is not a feasible option because water provided from the wells does not meet AFI 48-144 for fluoride injection. The AFI requires installations serving 3,300 persons or more to provide optimally fluoridated water. The combined JBER Richardson and Elmendorf public water systems serve more than 40,000 persons.

In addition, the wells and associated equipment were constructed in the 1950s and are at the end of their design life. The wells need to be refurbished and modernized, and source water protection needs improvement for each well before they could be counted on to provide water while the existing plant is abated and remodeled. This option would not withstand outside threats since the wells provide water to the installation with no redundancy. This option would also pose a risk to the neighborhood surrounding the wells because the chlorine gas containers used to treat water at the wells would need to be replaced often. Alternative 3 cannot reasonably meet EPA PCB clean-up requirements. Due to PCB-containing material in contact with the water being treated for drinking and extensive hazardous materials throughout the WTP, it is not feasible to remove all hazardous materials and verify that hazardous materials are not impacting drinking water and JBER employees and visitors. It is not reasonable to risk the potential exposure of thousands of U.S. military personnel and their families to carcinogens in their drinking water, and DU and USAF remain concerned about the long-term risk of increasing PCBs in the potable water despite an abatement plan.

Alternative 3 was also dismissed from further consideration because it would not meet anti-terrorism requirements (Selection Standard 4). While the addition of building retrofits such as shield structures, systems to catch hazardous debris, and upgrading structural components will help mitigate terrorist attacks, the best way to meet requirements is to keep the threats as far away as possible from the people and buildings. The existing WTP is located approximately 25 feet from Arctic Valley Road. No improvements to the existing WTP would enable the plant to meet the minimum recommended anti-terrorism standoff distance of 110 feet. Changing the building's setback distance from Arctic Valley Road, interior treatment equipment, and piping to move the WTP an additional 85 feet away from the road is not reasonable, since it would require completely rebuilding a substantial portion of the WTP. In addition, rerouting Arctic Valley Road to increase the setback distance is not a reasonable solution. Any road improvements would need to meet current JBER road standards for sight distances and curve radii. Therefore, moving the road to be at least 110 feet away from the WTP would involve a complete reconstruction of at least 600 linear feet of roadway.

2.5.3 Alternative 4. Connect to AWWU and Stabilize Existing WTP

This alternative would connect the JBER drinking water system to AWWU's system. Water would be purchased from AWWU and obtained through three existing interconnections that are currently maintained for emergencies — Arctic Valley, the Housing City By-Pass, and the Hospital City By-Pass. Once the connection to the AWWU system is commissioned and fully operational, the existing WTP would be demolished immediately or stabilized in place as described in Alternative 2.

AWWU is a large utility required to meet all state and federal drinking water standards (Selection Standard 2); therefore, use of the AWWU water at JBER would meet water quality standards. Alternative 4 would also meet JBER's firefighting water requirements (Selection Standard 5).

Alternative 4, was dismissed from further consideration because with AWWU providing all the water to JBER, this alternative would reduce necessary redundancy and may not be able to meet average and peak demand at all times (Selection Standard 1).

Alternative 4, like Alternative 2, was also dismissed from further consideration in the document because it would not meet EPA PCB cleanup requirements (Selection Criteria 3). As detailed under Alternative 2 (Section 2.5.1), DU is currently operating the existing WTP under a RBDA approved by the EPA with the expectation that the existing WTP will be demolished. In addition, remediating the WTP for another purpose is not feasible or reasonable.

This alternative was also dismissed because neither DU nor the USAF would have oversight or control over AWWU's security measures (Selection Standard 4). Furthermore, AWWU currently serves as a backup to DU's water source, providing additional capacity to adjust to sudden changes that impact the treatment process or working environment.

Finally, because a new WTP would not be constructed, Alternative 4 was dismissed from further consideration in this document because it would not use DU's existing drinking water source and treatment infrastructure, including the raw water supply at Ship Creek, the chlorine injection system, and the two, newly constructed 1.5-million-gallon storage tanks (Selection Standard 6).

2.5.4 Alternative 5. Other WTP Locations Alternatives

This alternative would construct a WTP at another location on JBER. In accordance with EPA requirements, the existing WTP would be demolished immediately or closed, secured, and stabilized in place for future demolition.

Although it would meet most Selection Standards, Alternative 5 was dismissed from further consideration because of its distance from the existing water infrastructure, including the raw water supply from Ship Creek, chlorine injection system, and water storage tanks (Selection Standard 6). Other locations would result in a larger project that would require constructing additional new infrastructure, resulting in a larger impact on the surrounding environment and more expense.

USAF policy (AFPD 32-10, Installations and Facilities) dictates that new construction should be minimized and requires the use of existing infrastructure to the maximum extent possible (USAF 2019); however, repurposing an existing building at JBER into a WTP is not feasible and was dismissed from further consideration. Importantly, there are no suitable buildings near the existing raw water line from the water source at Ship Creek and the water storage tanks. If a suitable building were found, new water line extensions would be needed to transport the raw, untreated water from Ship Creek to the plant and from the plant to the water storage tanks. WTPs are specialized buildings that must be able to treat and temporarily store water in a controlled setting. There are few unoccupied buildings on JBER that are large enough and can be remodeled to hold chemicals needed for water treatment and water treatment systems, equipment, and tanks.

Because this alternative would also include closing and maintaining the existing WTP for future demolition, it was also dismissed for the same reasons as Alternative 2 and Alternative 4 (Section 2.5.1 and 2.5.3).

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

NEPA requires that the analysis address areas and components of the environment that may be potentially affected. This section identifies those areas. Locations and resources with little or no potential to be affected are summarized in Section 3.1. Locations and resources with short-term, adverse impacts are summarized in Section 3.2.

Each environmental resource discussion begins with an explanation of the affected environment within an expected geographic scope, known as the region of influence (ROI), and ends with a discussion of potential environmental consequences. The existing condition of each relevant environmental resource is described to provide meaningful points from which the public and agency decision-makers can compare potential future environmental, social, and economic effects.

3.1 SCOPE OF THE ANALYSIS

Based on the scope of the Preferred Alternative, issues with minimal or no anticipated impacts were identified and eliminated from further analysis through a preliminary screening process. The following describes those resource areas not carried forward for a detailed analysis, along with the rationale for their elimination.

Regardless of the alternative selected, the following resources are not likely to be significantly affected by the Preferred Alternative and are not discussed in detail in this EA:

- ***Air Installation Compatible Use Zone/Land Use/Noise***: The Preferred Alternative area is compatible with area land use (noise, accident potential, encroachment, etc.) and is not a hazard to air navigation (Federal Aviation Administration Aeronautical Study No. 2021-AAL-365-OE). The Preferred Alternative would be adjacent to existing drinking water infrastructure in an area that has been used for this purpose for over 65 years. As a result, the USAF anticipates no significant short- or long-term adverse impacts to the air installation compatible use zone, land use, or noise, and this resource area is not carried forward for detailed analysis.
- ***Biological/Natural Resources:*** There are no wetlands in the project area (USACE 2022). There are no federally listed Threatened or Endangered Species, or critical habitat in the proposed project area (USFWS 2022). The Preferred Alternative would be approximately 850 feet from Ship Creek, the nearest anadromous fish stream (Anadromous Waters Catalogue Code 247-50-10060; ADF&G 2022a), and there are no marine waters in the Preferred Alternative area. Best Management Practices (BMPs) to ensure control of fugitive dust from reaching Ship Creek and its riparian areas are described in the Air Quality section of this EA. As there are no anticipated adverse effects to fish habitat, no Essential Fish Habitat analysis is necessary and the National Oceanic and Atmospheric Administration and National Marine Fisheries Service were not consulted. Based on a May 2022 aerial survey, there are no bald eagle nests within 660 feet of the Preferred Alternative area (USAF 2022a). Standard construction practices will be employed at JBER, including vegetation clearing and land disturbance not occurring between May 1 and July 15 to protect migratory birds, including those of Conservation Concern, from potential impacts during their nesting season. The presence of animal dens will be considered prior to tree clearing and ground disturbing activities, particularly between the months of October and May to avoid “take, closed season” under 5 AAC 85.015. All forest resources will be managed in accordance with Air Force

Manual 32-7003. As per standard practice, cut woody materials with a diameter greater than four inches would be delimbed, debarked or bark split, cut to 4 to 6 feet lengths, and made available in JBER's woodlots or in an area accessible to recreators through the personal use firewood cutting program. Little brown bats are a State of Alaska Species of Greatest Conservation Need and are currently under review for potential ESA listing. The proposed project area is within known little brown bat habitat; however, standard management practices described in the JBER Integrated Natural Resource Management Plan (2022b) will be employed to ensure no adverse effect. Bats may not be legally harassed or killed without authorization. Occurrence of bats within the project area will be reported immediately to JBER Conservation. The USAF anticipates no significant short- or long-term adverse impacts to biological or natural resources, and this resource area was not carried forward for detailed analysis.

3.2 ENVIRONMENTAL RESOURCES INCLUDED FOR DETAILED CONSIDERATION

Air quality, water resources, safety and occupational health, hazardous materials/waste, cultural resources, earth resources, socioeconomic resources/environmental justice, and climate and climate change are areas that require analysis to determine their level of impact from the Preferred Alternative and the No Action Alternative. The following subsections provide in-depth analysis.

3.2.1 Air Quality

This section describes the ambient air resources within the ROI and the regulatory framework used to characterize it. Air quality is a measure of the concentration and distribution of natural and man-made pollutants known to be harmful to human health and the environment. As directed by the Clean Air Act (42 USC § 7401 et seq.), the EPA established primary and secondary National Ambient Air Quality Standards (NAAQS) for criteria pollutants in 40 CFR Part 50 (EPA 2022d). The six criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), ozone (O_3), lead (Pb), and particulate matter (PM) with less than or equal to 10 microns in diameter (PM_{10}) and PM with less than or equal to 2.5 microns in diameter ($PM_{2.5}$). The State of Alaska adopted the NAAQS and added an ambient air quality standard for ammonia (NH_3). The EPA designates geographic areas within the United States as either in attainment or nonattainment based on whether the levels of a given criteria pollutant meet the NAAQS. Geographic areas that meet or are cleaner than the NAAQS are described as attainment areas (also referred to as unclassified); while areas that have exceeded one or more of the NAAQS more than once in a year are designated as nonattainment areas. Nonattainment areas are subject to more stringent requirements and must develop a plan to meet the NAAQS. Once a nonattainment area has demonstrated it meets the NAAQS, EPA redesignates it as an attainment area subject to maintenance plan requirements under Section 175A of the Clean Air Act. These areas are referred to as maintenance areas.

The ADEC Division of Air Quality has primacy for implementing and enforcing the CAA regulations in Alaska. To manage ambient air quality, ADEC subdivided Alaska into four Air Quality Control Regions (AQCR). JBER is within the Cook Inlet Intrastate AQCR, which encompasses the greater Anchorage Area Borough, Kenai Peninsula Borough, and the Matanuska-Susitna Borough.

Affected Environment

According to ADEC (2022), JBER is designated as an "attainment area" for all six criteria pollutants. Between 1971 and 2003, an area of Anchorage adjacent to JBER was a non-attainment area for CO; however, it was redesignated to maintenance for CO in July 2004. In March 2013, after being a non-attainment area for PM_{10} for 20 years, Eagle River (just northeast of JBER) was redesignated as a maintenance area (EPA 2022a).

JBER consists of multiple, distinct stationary sources that are owned, operated, and permitted by a few separate organizations. The USAF operates several minor and one major stationary source within the JBER boundary. DU operates multiple utilities within the JBER boundary under a single, major stationary source. DU operates two natural gas-fired boilers with a combined input rating of nine million British thermal units per hour (MMBtu/hr) and one 526 horsepower, diesel-fired emergency generator at the existing WTP. The emissions contribution from these emission units is minor in comparison with the other facilities operated under the DU stationary source. Annual, potential emissions from the existing WTP are presented in Table 3-1.

Environmental Consequences

Air Quality Impact Analysis

An air quality impact analysis (AQIA) was completed to quantify potential impacts to air quality resulting from the Preferred Alternative. The AQIA was performed using the USAF Air Conformity Applicability Model (ACAM) tool in accordance with Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR Part 989); and the General Conformity Rule (GCR, 40 CFR Part 93 Subpart B). The ACAM tool uses a combination of default settings and user inputs to estimate emissions associated with a preferred action or alternative. ACAM is designed to provide planning-level emission estimates based on user inputs and the best available information at the time of the environmental assessment. The ACAM tool for this effort estimated Criteria Air Pollutants (CAP) and greenhouse gas (GHG) emissions (described in Climate and Climate Change Section 3.2.8) on an annual basis during the construction and operating phases of the Preferred Alternative. CAP emissions were estimated using emission factors developed by USAF from several emission factor sets, including the EPA's Compilation of Air Pollutant Emissions Factors.

The ACAM tool requires start and end dates for each activity for which emissions are being estimated. For the purposes of the AQIA, it was assumed that construction would begin in May 2023, would require operations to occur 12 hours per day, five days per week, and would be completed in two years. Initial operation of the proposed new WTP would occur in 2025. Demolition of the existing WTP was assumed to begin in 2030, would occur 12 hours per day, five days per week, and be completed within two years. Default ACAM settings were used for estimating construction and the vehicle fleet inventories required to construct the proposed new WTP and demolish the old facility. User-specific inputs entered into ACAM to estimate emissions also included the following:

1) Total square feet of area that would be disturbed;
2) Volume of material removed during excavation and trenching;
3) Volume of materials delivered to the site during site grading and laying down asphalt;

4) Square footage and height in feet of the proposed new WTP; and

5) Input rating for the emergency generator, boilers, water heater, and diesel storage tank.

Annual emission estimates from each phase of the proposed action are presented in Table 3-1. The inputs and outputs used to estimate air emissions from the Preferred Alternative are summarized below and detailed ACAM reports are provided in Appendix B. These emissions are compared to a set of insignificance indicators established by the USAF to assess whether the proposed action would potentially result in significant effect on air quality. Emissions below the insignificance indicators are deemed insignificant.

Table 3-1. Estimated Air Quality Emissions by Project Phase and Year for the Preferred Alternative

Year	Annual Emissions (Tons/Year)[1,]							
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Construction Phase (New Water Treatment Plant)								
2023	0.27	1.60	1.87	0.05	3.94	0.06	0.00	0.00
2024	0.14	0.70	1.07	0.00	0.03	0.03	0.00	0.00
2025	0.33	5.46	1.97	0.00	0.18	0.18	0.00	0.00
Insignificance Indicator	250	250	250	250	250	100	25	100
Initial Operating Phase (New Water Treatment Plant)								
2026	0.35	12.23	3.39	0.01	0.39	0.39	0.00	0.00
2027	0.35	12.23	3.39	0.01	0.39	0.39	0.00	0.00
2028	0.35	12.23	3.39	0.01	0.39	0.39	0.00	0.00
2029	0.35	12.23	3.39	0.01	0.39	0.39	0.00	0.00
Insignificance Indicator	250	250	250	250	250	100	25	100
Demolition Phase (Existing Water Treatment Plant)								
2030	0.43	12.73	4.17	0.01	0.52	0.41	0.00	0.00
2031	0.47	12.98	4.57	0.01	0.58	0.42	0.00	0.00
2032	0.39	12.48	3.78	0.01	0.45	0.40	0.00	0.00
Insignificance Indicator	250	250	250	250	250	100	25	100
Steady State Operating Phase (New Water Treatment Plant)								
2033	0.35	12.23	3.39	0.01	0.39	0.39	0.00	0.00
Insignificance Indicator	250	250	250	250	250	100	25	100

1. VOC=volatile organic compounds; NO_X=nitrous oxides; SO_X=sulfur dioxides; Pb=lead NH_3=ammonia

Alternative 1 (Preferred Alternative)

Under the Preferred Alternative, potential short- and long-term impacts to air quality are anticipated. These potential air quality impacts would occur across four distinct phases:

1) Construction Phase (New WTP);
2) Initial Operating Phase (New WTP);
3) Demolition Phase (Existing WTP); and
4) Steady State Operating Phase (New WTP)

The potential short-term air quality impacts would occur during phases one and three. The long-term impacts to air quality would occur during phase two when the proposed new WTP initiates operation and in phase four when the facility becomes fully operational, and the existing plant has been demolished.

CAP emissions were estimated for each phase. Short-term air quality impacts were estimated from fuel-fired equipment and from fugitive dust generated from excavation, trenching, and site grading activities during construction of the proposed new WTP for the first phase. CAP emissions were estimated from the diesel-fired emergency generator, diesel storage tank, and natural gas-fired boilers and heaters. Emission estimates from the demolition of the existing WTP during phase three were estimated from fuel-fired construction equipment and fugitive dust expected to be generated from this activity. A summary of annual CAP emissions during each phase is provided in Appendix B.

Based on the annual emissions expected to occur during phases one through four, the Preferred Alternative would not result in a significant impact to air quality (Table 3-2). A very minor increase in long-term, annual emissions of NOx would occur under the Preferred Alternative from installation of a diesel-fired emergency generator, a diesel fuel storage tank, two natural gas-fired boilers, and one gas-fired water heater after the existing WTP emission sources are removed from service. There would still be a net emission increase in NOx as a result of the preferred alternative even when emission reductions from demolition of the existing WTP are complete and all of its associated equipment are taken out of service. To mitigate potential air quality impacts from fugitive dust during phases one and three of the Preferred Alternative, water would be applied to the disturbed soils at least once per day with additional application of water as needed. Ship Creek riparian areas will be monitored to ensure no fugitive dust reaches the creek. Speed limits would be established and enforced for activities within the construction site, when exiting the construction site, and while transporting materials on graded and ungraded roads. Net Change in Emissions from Alternative 1 (Preferred Alternative) is from the operational differences in existing WTP and new WTP.

Table 3-2. Net Change in Emissions from Alternative 1 (Preferred Alternative)

	Annual Emissions (Tons/Year)							
	VOC	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**Pb**	**NH_3**
Existing WTP	0.54	7.92	4.11	0.02	0.58	0.58	0.00	0.00
New WTP	0.35	12.23	3.39	0.01	0.39	0.39	0.00	0.00
Net Change	-0.19	+4.31	-0.72	-0.01	-0.19	-0.19	0.00	0.00

No Action Alternative

Under the No Action Alternative, a new WTP would not be constructed and the existing WTP would not be demolished. The existing conditions would remain the same. As a result, no additional or new impacts related to air quality would be expected.

3.2.2 Safety And Occupational Health

Affected Environment

This section describes the known or potential health and safety hazards in an ROI that includes the existing and proposed new WTP and a 500-foot buffer around the buildings. Contamination at the existing WTP is discussed in Section 3.2.3.

The WTP is routinely staffed by one to five employees and occupied 24 hours per day, seven days a week. Generally, an operator is stationed in the control room while other staff conduct sampling, maintenance, and repairs throughout the WTP, as well as at the off-site well houses and chlorination buildings. The foreman spends much of their time in the office space on the first floor. There are no full-time occupants in the remainder of the facility unless maintenance or repairs are being performed.

The WTP has existing safety and occupational issues. In 2017, an on-site, visual life safety, occupational health inspection was completed at the WTP (Stantec 2017b). The report considered the following regulations when investigating the WTP:

- OSHA regulations and standards;
- National Fire Protection Association (NFPA) 101 Life-safety Code;
- NFPA 5000, Building Construction and Safety Codes;
- Unified Facilities Criteria 1-200-01 – DoD Building Code; and
- National Electric Code

Numerous life-safety conditions were identified, including:

- Architectural life-safety (egress, access, signage, and occupancy);
- OSHA worker safety (clearances, equipment hazards, handrails, and ladders);
- Fire protection (fire suppression, smoke detection, emergency lighting, and fire hazards); and
- Electrical safety

According to the report, the building's exterior load-bearing walls are of concrete construction and cannot be categorized into a construction type per current code. There is no record of manufacturer testing to confirm whether the building materials can meet noncombustible or limited-combustible requirements (Stantec 2017b).

An egress analysis was completed and found that the WTP does not meet the requirements of special industrial occupancies (Stantec 2017b). Specifically, the length of a common path, dead end corridors, and required travel distance to exit the building do not meet code. Panic hardware is missing at the WTP exits, and exit doors are not outfitted with required fire-rated hardware components. In addition, exits on three of the four WTP floors are narrowly accessible and do not meet egress code or are completely missing. First and third floor doors swing directly into the stairway, reducing the travel path clearance. To access the WTP's basement exit to the stairway, a six-foot-high pipe and a rolled concrete threshold exceeding one-inch must be crossed (Stantec 2017b).

According to the report, there is currently no fire alarm system or device(s) in the facility, and the building does not have a sprinkler system (Stantec 2017b).

A stair tower exit connects the four building stories, including the basement. The stair tower is concrete construction with windows and does not meet the required separation distance to the elevator machine room. The window glazing within the stair tower is not tempered, and therefore is not compliant with life-safety requirements. In addition, the windows are failing as the wood framing is decaying and delamination is present (Stantec 2017b).

Indoor Air Quality

Carbon monoxide is an odorless, colorless, and toxic gas. Because it is impossible to see, taste, or smell fumes, CO has the potential to seriously harm employees in the workplace if not properly controlled. NOx, including nitrogen dioxide and nitric oxide, irritates mucosal linings and may contribute to respiratory issues and decreased lung function. OSHA specifies 8-hour total weight average (8h TWA) permissible exposure limit (PEL) for indoor levels of CO and NOx which establish the highest level of exposure an employee may be exposed to these pollutants without incurring the risk of adverse health effects. The level for NOx is 1ppm 8hr TWA or a 5ppm ceiling, and the level for CO is 35 ppm 8h TWA or a 200-ppm ceiling.

Seismic Evaluation

The WTP is in an active seismic zone, and since 2018 the area has experienced multiple earthquakes with magnitudes approaching 5.0. An engineering evaluation of the WTP structural integrity was conducted following the November 30, 2018 magnitude 7.0 earthquake (Stantec 2018b). The WTP showed evidence of significant structural movement. Although no conditions were found that would make it structurally unsafe to occupy, cracking of ceilings, walls, and floors were noted. The report recommended a re-inspection of the damaged areas should the building experience another earthquake of 6.0 or greater.

Site Hazards

The proposed project area is generally undeveloped, and risks to those accessing the site include slips, trips, and falls; exposure to the elements (e.g., heat and cold); and interaction with wildlife such as insects, moose, or bears. The project site's emergency response services are provided by on-base entities; 673d ABW Security Forces Office provides law enforcement, 673d Civil Engineering Squadron/Fire Department provides fire service, and 673d Medical Group provides medical services (USAF 2020c).

Environmental Consequences

Alternative 1 (Preferred Alternative)

The health and safety of WTP workers would be improved with construction of the proposed new WTP because the new facility would be built to meet or exceed current building and safety codes. Workers would no longer be exposed to contaminated materials found in and around the WTP, including PCBs, LBP, and ACM, which have been found to cause cancer and other serious health effects. Currently workers are instructed to use personal protective equipment to ensure they are not exposed. Further, WTP workers would no longer work in a building that has substantial issues with egress and exits, fire suppression and alarms, and may be at risk during large earthquakes.

Without proper building controls, NOx and CO emissions have the potential to impact the proposed WTP's indoor air quality and, in turn, workers' safety. To avoid this, the proposed WTP would include a low NOx certified boiler, and the boiler flue would be terminated a minimum distance of 10 feet from all building intakes in accordance with building code requirements. The proposed WTP is designed to be slightly positively pressured in relation to the interior to avoid air pollutants from entering the building. Also, testing and balancing specification 23 05 93-3.5.L would be followed "to measure building static pressure and adjust supply, return, and exhaust air systems to obtain the required relationship between each to maintain approximately 0.05-inch differential static pressure near building entries." These measures will ensure the proposed WTP is positively pressurized before occupied by workers to reduce the potential for air pollutants to be drawn into the facility.

New WTP construction activities would present typical construction site safety risks to workers, which are minimized by complying with occupational health and safety regulations and by implementing standard site safety BMPs. The construction site would be signed, and public access prohibited. A health and safety plan would be developed and implemented. Workers would practice construction safety measures, such as holding daily safety briefings and wearing appropriate protective footwear, gloves, clothing, and hearing and eye protection.

Although demolition of the WTP would present additional risks, demolition site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, and death. The health and safety of military and civilian workers are safeguarded by DoD and USAF policies designed to comply with OSHA and the EPA. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors.

Demolition activities would increase the short-term risk associated with exposure to PCBs, ACM, and LBP during their removal. Contractors would be required to establish and maintain safety programs for their employees. Additionally, contractors would be required to manage and dispose of all hazardous and nonhazardous materials and wastes in compliance with federal and state laws and regulations. These efforts would be coordinated with the appropriate USAF representative. Specifically, demolition risk would be minimized/mitigated by complying with all occupational health and safety regulations. Workers would be required to be properly trained/certified, wear the proper personal protective equipment as determined by the quantity and type of toxic materials, use proper abatement methods, and the site would have air monitoring and sampling before, during, and after the demolition.

Construction and demolition personnel working near heavy equipment could potentially be exposed to noise levels above 90 decibels; this is above the permissible noise exposure level as defined by OSHA (29 CFR § 1910.95). These levels would be reduced to permissible levels through feasible controls, such as the use of hearing protection equipment. Since the WTP is on Arctic Valley Road, it is possible that workers and the general public could approach the project area and encounter construction equipment and particulates generated during demolition activities. BMPs will be implemented by the contractor through an Alaska Pollutant Discharge Elimination System (APDES) Construction General Permit (CGP) storm water pollution prevention plan (SWPPP). BMPs to be implemented under the SWPPP will include controlled project entrances and exits and periodic dust control watering to minimize fugitive dust.

WTP demolition would permanently remove an unsafe building and would result in long-term, beneficial impacts to WTP worker and visitor health and safety. Construction and demolition activities would result in short-term, minor adverse impacts to contractor safety within the project area which would be minimized by regulatory requirements and approved safety plans. No significant impacts would occur to safety or health under Alternative 1 (Preferred Alternative).

No Action Alternative

Under the No Action Alternative, the health and safety of WTP workers would continue to be at risk. Workers would continue to be exposed to contaminated materials that are over EPA clean-up thresholds in and around the WTP and have to take extra precautions. WTP workers would also continue to work in a building that has improper egress and exits, is lacking updated fire suppression and alarm systems, and may be at risk of serious damage or collapse during large earthquakes. The moderate adverse impacts to WTP workers' health and safety due to the No Action Alternative would continue until the WTP is taken offline.

There would be no health or safety risk to construction or demolition personnel since no new construction or demolition would occur under the No Action Alternative.

While risks to safety and occupational risks would remain under the No Action Alternative, they are not significant.

3.2.3 Hazardous Materials/Waste

Affected Environment

This section describes the hazardous materials and waste in an ROI that includes a 500-foot buffer around the existing and proposed new WTP.

As discussed in Chapter 2, the existing WTP building contains PCBs, LBP, and ACM. The presence of these materials has been documented in numerous reports since 2016 when the planning for building upgrades began, including:

- Refurbish Water Treatment Plant Condition Assessment (Stantec 2016);
- Hazardous Materials Survey Report (Stantec 2017a);
- Plant Abatement Hazardous Material Data Report (Stantec 2018a);
- Initial Preliminary Assessment/Site Investigation for the Backwash Outfall Area (EMI 2018) and
- PCB Removal Work Plan WTP Backwash Channel (Stantec 2020)

Polychlorinated Biphenyls

Hazardous material investigations have documented PCB contamination throughout WTP building materials and structural components. In early 2017, PCBs were documented in paints on the WTP interior and exterior, along with coatings in contact with drinking water in process tanks. Additional sampling of materials within the building in later 2017 confirmed PCBs in paints and migration of the PCBs into concrete wall substrates. In 2018, four separate building material sampling events confirmed PCBs in paint, concrete, sludge, caulk, and mastic within the WTP. Incremental sampling of concrete (0.25-inch, 0.50-inch, and one-inch depths) has found PCB penetration to the maximum one-inch depth sampled.

PCB concentrations in the WTP range from "non-detect" (concentrations less than the laboratory detection limit) to 88,400 ppm. Building material samples which were non-detect for PCB Aroclors[1] had reporting limits below 1 ppm. The use of PCBs is not authorized for use under TSCA, which regulates the use, cleanup, and disposal of PCBs. PCB-containing building materials greater than 50 ppm are classified as PCB bulk product waste under 40 CFR § 761.3. Bulk product waste (in this case paint) with PCB concentrations greater than 50 ppm must be removed to less than or equal to 50 ppm.

Deterioration and wear of submerged coatings is evident in water-containing tanks. Remaining coatings are in dry locations, are very well adhered, and were difficult to remove for sampling efforts. Similarly, the paint on concrete walls and ceilings, as well as metal framing, is well-adhered and intact except in the Boiler Room B15 and throughout the basement where moisture has caused coatings to deteriorate.

A survey of WTP lighting fixtures found PCBs in various types of fluorescent luminaires at the WTP. The results of the survey stated that all luminaires that have not been replaced or do not have the label "NO PCBs" likely contain PCBs. As the electrical equipment and cables are in use, no sampling of these components has been undertaken; however, there is the potential for electrical equipment, wire insulation, and heat transfer systems to also contain PCBs.

PCB coatings exceeding EPA's threshold of 50 ppm are found in concrete tanks that hold process or drinking water (Stantec 2017a). Between 2008 and 2017, drinking water samples analyzed once every three years reported non-detectable concentrations of PCB compounds. In 2017, once PCBs were detected in WTP paint and coatings, sampling frequency was increased to a weekly program (EPA 2020).

PCBs and drinking water are discussed in the Water Resources (Section 3.2.4), and PCB soil contamination is discussed in Earth Resources (Section 3.2.5).

[1] Aroclor is a PCB mixture produced from approximately 1930 to 1979. It is one of the most commonly known trade names for PCB mixtures. There are many types of Aroclors and each has a distinguishing suffix number that indicates the degree of chlorination (EPA 2022b).

Lead-Based Paint

Surveys have documented lead levels in paint coatings throughout the WTP. However, only those that are at or above 5,000 ppm for bulk samples are classified as "lead-containing" under 40 CFR § 745.220. Sampled WTP components included:

- Windows, doors, and associated components;
- Metal guardrails and handrails;
- Interior wall concrete;
- Metal tanks; and
- Janitor closet's porcelain sink

Lead detected in surface soil surrounding the perimeter of the WTP roof drip line is discussed in Earth Resources (Section 3.2.5).

Asbestos-Containing Materials

ACM have been documented at the WTP in the following building materials (Stantec 2016; Stantec 2017a; Stantec 2018a):

- Vinyl asbestos floor finishes and underlying mastic located in the lab, control room, and adjacent staff break area (the material is concealed at the control room and staff break area by the existing floor tile finish);
- Cement asbestos board wall panels that are used as a protective finish in various locations of the facility, including within the:
    - Fume hood located in the laboratory;
    - Chemical room of the third level;
    - Filter bay and adjacent electrical room, vestibule of the second level; and
    - Pipe gallery of the basement;
- Hard insulation fittings on elbows and couplings of thermal system pipe runs identified at various locations of the facility, including the stairwell, control room located at the second level, and in the basement;
- Caulking at perimeter of exterior window frames located within the stairwell and in the chemical room; and
- Solid-core laboratory countertops

To avoid the potential for releasing asbestos into the WTP, the roof of the facility was not sampled; however, due to the building's age and method of construction, it is assumed that the roof also contains asbestos (Stantec 2018a).

Leaking Underground Storage Tanks

There is an active contaminated site due to diesel leaking from two 1950s-era, 10,000-gallon underground storage tanks (USTs 48 and 49) at the WTP (USAF site TU101 – Building 28-008 [formerly CC-FTRS-01] ADEC File No.: 2102.26.028). The USTs were removed and site investigations conducted by USAF found that contamination extends within groundwater and soil beneath the WTP building (USAF 2014). Diesel groundwater contamination is discussed in Water Resources (Section 3.2.4), and diesel soil contamination is discussed in Earth Resources (Section 3.2.5).

Universal Wastes

Universal wastes are a special group of hazardous wastes that are widely generated by businesses. To streamline the proper management of these wastes, the Universal Waste Rule

exempts certain wastes from the hazardous waste rule requirements as long as they are managed to prevent release to the environment and properly recycled or disposed of. The WTP contains various universal wastes including batteries, fluorescent lamps, mercury-containing thermostats, and control devices.

Environmental Consequences

Alternative 1 (Preferred Alternative)

New WTP Construction

Construction of the proposed new WTP would involve the use of common hazardous materials and petroleum products. Vehicles and equipment would contain fuel, oils, and lubricants. Construction equipment may be fueled on-site, and minor repairs may be conducted on-site; however, routine or major repairs would be done off-site at an appropriate maintenance facility. In addition, construction could generate some waste such as used oil or oily rags, and leaks or accidental spills or releases could occur. Any spills will be reported in accordance with the JBER Spill Management Plan (SMP).

To ensure safe handling of hazardous materials and minimize the potential for spills or accidents during construction, materials would be managed in compliance with applicable regulations, USAF policy and procedures (including 29 CFR 1910.1200, 49 CFR 171-178, federal acquisition regulation clause 52.223-5, federal standard 313, AFMAN 32-7002, AFMAN 23-209, AFI 90-821, JBERI 32-2001), the JBER Integrated Hazardous Material Plan, and the JBER Emergency Management Plan. DU and its contractors will be responsible for identification, proper handling, use, storage, transportation, and disposal of all hazardous material brought on JBER, including securing advanced approval of use of hazardous material on JBER and maintaining proof of approval. Management of hazardous material on JBER will be coordinated with the DU Contracting Officer Representative and submitted to the JBER Hazardous Material Coordinator.

All spills and encounters with historic spills will be reported to JBER Fire via 911, per the JBER SMP. The contractor will work with the JBER Spill Manager to ensure proper spill reporting to the agencies. All military, civilian, and contractor personnel operating on JBER will abide by the most current version of the JBER SMP for reporting spills.

While there could be some minor adverse impacts at the proposed project site, there would be no significant impacts to the human or natural environment from hazardous materials and waste from construction of the proposed new WTP under Alternative 1 (Preferred Alternative).

Existing WTP Demolition

During structural demolition of the WTP, hazardous materials will be managed in accordance with applicable EPA and ADEC regulations and agency-approved work plans that would be prepared by a qualified third-party contractor, as well as in accordance with USAF and JBER policies and procedures described above. The selected contractor would have experience with drafting and implementing required work plans and working with ADEC and EPA to obtain approval of the building demolition plans and other contaminated site cleanup, focused on removal and disposal of PCBs, LBP, and ACM. The approved work plans would include details on how hazardous and non-hazardous waste streams would be characterized and packaged for disposal. As working documents, the work plans would be updated and approved by the EPA and ADEC if unexpected conditions arise as work progresses.

The selected contractor's initial steps would be to identify building materials that could be locally recycled or salvaged as construction debris defined by ADEC Solid Waste Program 18 AAC 60. The selected contractor will follow ASTM E2893-16e1 Standard Guide for Greener Cleanups which provides a process for identifying, prioritizing, selecting, implementing, documenting, and reporting activities to reduce the environmental footprint of a cleanup. This would include identifying any material with PCB concentrations less than 1ppm which can be placed in most of the permitted landfills in Alaska. Waste identified with PCB concentrations greater than 1 ppm must be disposed in a landfill approved for PCB bulk product waste or PCB bulk remediation waste as defined in 40 CFR 761. This material is considered regulated PCB waste and must be disposed of in an EPA-licensed Treatment, Storage and Disposal Facility (TSDF) outside of Alaska.

It is expected that the WTP demolition will generate approximately 52 tons of PCB bulk product waste with concentrations of 1.0 ppm or greater,[2] and this waste would be transported out of state for disposal at a TSCA-approved landfill. Sample results indicate PCBs have migrated into the concrete at depths of over 1 inch. If PCB paint coating could not be successfully removed from the concrete and other painted materials and the concrete could not be abated to less than 1.0 ppm PCBs, the PCB bulk product waste is expected to be as much as 27,000 tons. PCB bulk product wastes would be properly packaged and shipped via an approved carrier to aTSDF outside Alaska.

Much of the LBP waste stream at the WTP is comingled with PCBs and cannot be separated due to the nature of the contaminated coatings. Therefore, the same quantity of LBP contaminated material as PCB-contaminated material would be expected to be generated during the WTP demolition. The LBP waste would be considered and treated as TSCA waste and would be containerized and shipped to an EPA-permitted TSDF.

It is expected approximately 28 tons of ACM waste that is not contaminated with lead or PCBs would result from the JBER WTP demolition. The ACM waste would be transported and disposed at a landfill approved to accept ACM, likely the Anchorage Regional Landfill.

It is expected that demolition of the WTP would produce two to five tons of non-hazardous wastes, including general construction debris such as unpainted materials, uncontaminated fixtures, and other solid waste. Because this waste stream is considered non-hazardous, it would be disposed at the Anchorage Municipal Landfill.

Demolition activities would result in long-term, minor positive impacts to hazardous materials and wastes that exist within the WTP. Hazardous waste would be added to approved waste facilities; therefore, no adverse significant impacts are anticipated from hazardous materials or waste under Alternative 1 (Preferred Alternative).

[2] The estimates of hazardous wastes are based on quantities that were characterized, transported, and disposed from the former JBER Central Heat and Power Plant (CHPP) demolition project. The demolition of the WTP is expected to have a similar waste stream, but because the WTP is roughly one-third of the size, the estimated PCB waste stream will be about one-third the volume of the former CHPP's waste stream.

No Action Alternative

Under the No Action Alternative, the hazardous materials within and around the current WTP would remain. As mentioned in Section 2.4.2, the WTP would continue to operate under and comply with the EPA-directed interim operating measures and sampling. WTP workers would continue to be exposed to the health risks due to PCBs, LBPs, and ACM.

While the effects due to hazardous materials, in particular PCBs, could be adverse and long term throughout JBER under the No Action Alternative, they would be less than significant because the WTP would continue to operate under the EPA's interim measures. Once the interim measures expire, the EPA could require the WTP to cease operation because of the risk of PCB exposure to the WTP staff and JBER's population and workers. Because the operation of the WTP complies with EPA measures, no significant adverse effects due to hazardous materials and waste would be expected under the No Action Alternative.

3.2.4 Water Resources

Affected Environment

This section describes water resources in an ROI that includes the JBER area.

Surface Water

The entire project area is located within the Ship Creek watershed. The largest watershed on JBER, Ship Creek watershed flows through the installation for 13.3 miles before emptying into the Knik Arm (USAF 2016b). Ship Creek is located approximately 850 feet from the project area. The proposed project is not within a floodplain (FEMA 2009).

The upper dam on Ship Creek forms a 2.8-acre reservoir, which provides the majority of the potable water for JBER and a portion of the water for the Municipality of Anchorage (described below). The drinking water dam, constructed in 1952, severely affects the creek's downstream hydrology and stream dynamics (USAF 2022b).

To protect surface water quality, JBER limits development and U.S. Army training in the vicinity of Ship Creek to the greatest extent possible (USAF 2022b).

Groundwater

Two freshwater aquifers underlie most of JBER and flow west from the Chugach Mountains to Cook Inlet and are recharged by ground water originating from precipitation in the mountains. The two aquifers lie in different soil strata and are separated by a 60- to 200-foot layer of impermeable Bootlegger Cove Clay (USAF 2022b).

The upper, unconfined aquifer lies in a 30- to 100-foot-deep layer of well-bedded and well-sorted gravel near the surface. This aquifer usually can be accessed at depths of less than 50 feet. There seems to be no interconnection between the two aquifers. Shallow aquifer ground water movement follows, for the most part, that of the surface topography. Flow is to the northwest along the northern limb of the moraine and to the southeast along the southern limb. The ground water divide coincides with the crest of the moraine. This aquifer is not used for drinking water (USAF 2022b).

The lower, confined aquifer lies in a 100- to 200-foot layer of sand and gravel. Impermeable clay above produces artesian conditions and protects the lower aquifer against seepage and pollutants from the surface; thus, water quality of this artesian aquifer is excellent. It is estimated that 75 million gallons of water originating from the mountains recharges the aquifer each day.

This aquifer usually can be accessed at 200 to 400 feet below the surface. JBER does not use this aquifer for its main source of drinking water, but as detailed in Chapter 2, it is a standby drinking water source when surface water supplies cannot meet demand. The Municipality of Anchorage uses water from this aquifer for various services, including industrial, commercial, domestic, and public supply (USAF 2022b).

Data collected during the 2013 site characterization activities conducted for USAF site TU101 – Building 28-008 (introduced in Hazardous Materials, Section 3.2.3) confirms the presence and concentrations of contaminates of potential concern in groundwater around the existing WTP (USAF 2014). Diesel range organics (DRO), residual-range organics, and benzene were detected in groundwater above the 18 AAC 75 Table C Groundwater Cleanup Levels in monitoring wells installed at this site. DRO, gasoline-range organics, benzene, naphthalene, polycyclic aromatic hydrocarbons, and arsenic were detected above screening levels. In addition, arsenic, benzene, and naphthalene were detected above screening levels in the water sample from an upgradient well, and DRO was detected above the screening level in the water sample from a downgradient well. No contaminants exceeded screening levels in water samples from four downgradient wells. Contaminated soil remains on the site and could pose a continuing source of contamination to groundwater (USAF 2014).

The groundwater plume (defined as the extent of DRO above the Table C Groundwater Cleanup Level) extends approximately 200 feet from the WTP toward the northwest and is approximately 220 feet wide. Historically, the depth to the top of the plume varies between approximately 40 and 45 feet below ground surface, and the seasonal water table fluctuation (smear zone) is approximately five feet. Groundwater monitoring completed in 2019 and reported in the *2019 Monitoring of State-Regulated Sites Annual Report* indicates the plume is stable (i.e., not migrating downgradient) and shrinking and that contaminant concentrations in groundwater are not increasing (USAF 2020b). Limited passive free product (diesel) recovery has occurred. Long-term groundwater monitoring continues, and land use controls/institutional controls are in place to prevent access and exposure to contaminated soil and groundwater.

Groundwater conditions were recently documented at seven locations within the project area during a field-based geotechnical analysis focusing on the proposed new WTP location (CRW 2021a). If observed during drilling, groundwater was recorded on the borehole or test pit logs. Also, piezometers were installed in some boreholes and test pits, and groundwater levels were recorded after the completion of drilling/excavating. Groundwater was only observed at one location on the site. A test pit 300 feet southwest of the WTP and 175 feet south of Arctic Valley Road had groundwater at 6.5 feet below the ground surface at the time of excavation. Groundwater was recorded in the test pit two weeks and two months later at 6.4 feet and 7.2 feet below ground surface, respectively.

Water Sources/Rights

JBER has two raw water sources: one source is Ship Creek reservoir and the other includes three supply wells feeding from the lower confined groundwater aquifer described above. JBER's average drinking water demand is 3.0 MGD, and the peak demand is 7.5 MGD.

Water rights for the installation stem from Executive Order 8102, Withdrawal of Public Lands for Use as a Military Reservation; Alaska 4 FR 1726 (May 2, 1939) which established a temporary withdrawal as a military reservation. Executive Order 8102 was amended by Executive Order 9526, 10 FR 2423 (March 2, 1945) when the jurisdiction of the property, including riparian and Federal Reserve Water Rights, was then vested in various departments, in this case the Army.

State of Alaska water use permits incorporating raw water from Ship Creek and the Ship Creek Dam were issued to the 172nd Infantry Brigade (Alaska) with priority appropriation dates in 1941 and 1967 for Ft. Richardson and Elmendorf Air Force Base (Certificate of Appropriation of Water Certificate Numbers 1554 and 1558, respectively).

Water Quality

Surface water quality within JBER's cantonment area is managed by the 673d CES/CEIEC Compliance. As an operator of industrial facilities, JBER is required to operate under ADEC's Multi-Sector General Permit (MSGP) for Storm Water Discharges Associated with Industrial Activity. Under the MSGP, JBER is responsible for ensuring stormwater runoff (rain, snow, snowmelt) that comes into contact with industrial activities (aircraft refueling, quarrying operations, hazardous waste storage) and associated materials does not adversely affect water quality of receiving water bodies. A key condition of the MSGP is the development and implementation of a SWPPP, which describes JBER's stormwater conveyance system, potential pollutant sources, stormwater control measures, water quality monitoring procedures, and facility inspections (USAF 2022b).

Water quality within the Ship Creek reservoir is good. To maintain the water quality of JBER's drinking water source, JBER has limited development along Upper Ship Creek above the dam (USAF 2022b).

As mentioned in Section 2.2, process water is sampled throughout the WTP weekly, and to date, there have been no exceedances of EPA drinking water standards.

Environmental Consequences

Preferred Alternative

Groundwater

The Preferred Action would not impact groundwater. Groundwater was not found in the area where the new WTP is proposed (CRW2021a). While there is diesel-contaminated groundwater in the existing WTP area, it is not expected to be encountered during demolition activities, since work would be limited to removal of the building foundation and adjacent soil. Operation of the proposed new WTP would reduce reliance on groundwater via existing wells. No adverse significant impacts are anticipated to groundwater under Alternative 1 (Preferred Alternative).

Water Sources/Rights

The Preferred Alternative would meet existing average and peak demand water requirements.

Water Quality

The Preferred Alternative is not expected to impact surface water quality. During construction of the proposed new WTP and demolition of the existing WTP, protective measures including a SWPPP would be prepared, and a Notice of Intent to seek coverage under the APDESCGP would be completed prior to construction. The SWPPP would include measures needed to comply with applicable regulations, minimize the potential for spills, and respond to a spill if one occurred. As a result, USAF anticipates no significant short- or long-term adverse impacts as a result of Alternative 1 (Preferred Alternative).

Because a new WTP would be constructed, the Preferred Alternative would eliminate all future risk of PCBs contaminating JBER's drinking water supply and the issue of noncompliance with

EPA regulations. In this case, there would be a benefit to JBER's drinking water quality under Alternative 1 (Preferred Alternative).

No Action Alternative

Groundwater

Under the No Action Alternative, to prevent water demand from exceeding production, groundwater would continue to be used on occasion via existing potable water wells.

Water Sources/Rights

The No Action Alternative would not meet JBER's existing average and peak demand water requirements. Recently, the potable water wells have been used on occasion to prevent water demand from exceeding production. The existing wells, however, are not capable of supplying adequate water volumes for extended periods of time because they are at the end of their design life and need to be upgraded. Even if the wells were upgraded, they would not withstand outside threats since the wells provide water through a single line with no redundancy.

Water Quality

Under the No Action Alternative, as detailed in Section 2.4.2 and above in this section, the existing WTP would continue to produce water to the required drinking water standards. To achieve this, the operators would continue to limit flow through the plant to less than 3.0 MGD at times of high raw water solids and color during spring break-up and fall rains.

The No Action Alternative would cause the WTP to remain out of compliance with the EPA and would continue to operate under and comply with interim operating measures and sampling procedures which are outlined in the EPA's Approval of Interim Measures to Prevent Releases of PCBs and Ongoing Monitoring, Pursuant to 40 CFR § 761.6l(c) at Doyon Utilities Water Treatment Plant AKR000204883 (EPA 2022c and EPA 2020). Once the interim measures expire (or if there are exceedances of PCB concentrations in tested water), the EPA could require the WTP to cease operation because of the risk of PCB exposure through drinking water to JBER's population and workers. Closure of the WTP could result in a significant impact to water resources since there would not be enough drinking water to meet JBER's needs under the No Action Alternative.

3.2.5 Earth Resources (Geology / Soils)

Affected Environment

This section describes the geology and soils in an ROI that includes the existing and proposed new WTP and a 500-foot buffer around the buildings.

Geology

The geology of the JBER area is described in detail in the Integrated Natural Resource Management Plan for JBER (USAF 2022b). The geological deposits consist of alluvial fans, alluvial cones, and emerged deltas. The area is within moderate to high seismicity and is subject to relatively large earthquakes and strong ground motion (CRW 2021a).

Soils

According to a geotechnical analysis completed by a licensed geotechnical engineer (CRW 2021a), soils in the project area are predominantly gravel and are generally well bedded and well sorted. The proposed new WTP site is generally composed of a thin organic mat underlain

by sandy silt/silty sand. Below the sandy silt/silty sand is sandy gravel. The existing WTP is partially mapped as man-made fill, chiefly gravel and sand with some silt and clay-size material (CRW 2021a).

The WTP discharges wastewater resulting from the drinking water treatment process (or process wastewater) primarily from the filter backwash directly to the forested area below the WTP. The backwash channel begins at the WTP basement discharge structure and extends about 400 feet. Flow disperses at the end of the main channel into two minor channels and a wide, flat plain area. Since operations began, paint chips from process water tanks captured in the filters have been discharged during the backwash process to this channel. A soil sampling program for PCBs and LBP was conducted for the backwash channel in 2018. All the soil samples collected during the sampling program have had lead detections levels below the project action level of 400 ppm. The highest lead result was 38.6 ppm. Of the 17 soil sample locations, 11 had detections of PCBs. Eight soil samples had concentrations of PCBs above the project action level of 1 ppm. The highest detected level of PCBs was 6.05 ppm. It was observed that soil samples closer to the outfall source had higher PCB concentrations, and the soil samples from the center of the channel had higher concentrations than the sides (EMI 2018).

PCB coatings and LBP have also been found in soil immediately adjacent to the WTP foundation in the roof drip line and in the backwash channel. Soil samples collected in 2018 at three locations along the building exterior found PCBs ranging from non-detect to 0.308 ppm. Lead detections in the same samples ranged from 16 ppm to 64 ppm.

As mentioned in Hazardous Materials (Section 3.2.3), there is an active contaminated site due to diesel leaking from two, 1950s-era, 10,000-gallon USTs at the WTP (ADEC File No.: 2102.26.028). The USTs were removed and site investigations found that diesel-contaminated soil extends beneath the WTP building.

The proposed project area is not a location where Perfluorooctane Sulfonate and Perfluorooctanoic Acid (PFAS/PFOA) would be expected to be present in soil or groundwater. The area surrounding the WTP was not identified as an aqueous film forming foam solution area in JBER's 2018 Site Inspection Report for Aqueous Film Forming Foam Areas (CH2M Hill 2018) and it is not being examined in JBER's on-going remedial investigation for PFAS/PFOA compounds. The proposed project area does not have a history of PFAS/PFOA compounds being released into the environment (e.g., fire training areas, past fire suppression activities using aqueous film forming foam); therefore, it is not assumed to be at risk for PFAS/PFOA compounds in soil or groundwater.

To date PFAS and PFOA compounds have been non-detect in drinking water supplied to the installation from the JBER WTP. DU conducted drinking water sampling in accordance with the 2017 Department of the Army Memorandum for Supplemental Drinking Water Monitoring Guidance for PFAS/PFOA compounds at the JBER WTP in 2019 and 2022. Water samples collected before treatment (raw water) and after treatment but before distribution were analyzed for PFAS/PFOA compounds by EPA method 537 in 2019 and revised method 537.1 in 2022. Sample results indicated the Ship Creek water supply was non-detect at the method reporting limits of 0.002 micrograms per liter (µg/L) in 2019 and 0.0019 µg/L in 2022, which is below the EPA Lifetime Health Advisory for PFAS compounds of 0.07 µg/L. Based on the current results, sampling will continue once every 3 years in accordance with the 2017 DoD guidance.

Environmental Consequences

Alternative 1 (Preferred Alternative)

Design of the Preferred Alternative will include recommendations contained in the geotechnical report, including seismic design parameters from the American Society of Civil Engineers for the Maximum Considered Earthquake and International Building Code. Fill material for the Preferred Alternative would come from the existing and permitted borrow site just north of the proposed WTP site. Unwanted excavated material would likely be disposed at the same borrow site or at another approved upland location.

The PCB-impacted soil and sediment in the WTP backwash discharge channel that exceeds the ADEC soil cleanup level of 1.0 ppm would be managed under a separate work plan and would be remediated during the building demolition. The contaminated soil would be considered PCB remediation waste and would be managed and disposed outside of the state of Alaska. It is expected that approximately 510 cubic yards (cy) or 825 tons of PCB remediation waste will be generated during cleanup. The contaminated soil and sediment would be packaged and sent for disposal at an EPA-permitted TSDF.

As stated in Hazardous Materials/Waste (Section 3.2.3), there is an active diesel-contaminated site that extends beneath the WTP building, and institutional controls are in place that restrict soil excavation without ADEC approval.

Earth resources would be improved under the Preferred Alternative because contaminated soils would be removed for proper disposal; therefore, no adverse significant impacts are anticipated to earth resources under Alternative 1 (Preferred Alternative).

No Action Alternative

Under the No Action Alternative, no new WTP would be constructed, and PCB- and LBP-contaminated soil would remain. The WTP would continue to operate under and comply with the EPA-directed interim operating measures and sampling. Once the interim measures expire, the EPA could require the WTP to cease operation, and PCB and LBP soil clean up measures would likely be initiated. Under the no action alternative, diesel-contaminated soil would continue to be actively managed by USAF as the designated Responsible Party on record with ADEC. Because the EPA and ADEC would continue to have oversight of soil contamination at the WTP, no significant adverse effects to earth resources would be expected under the No Action Alternative.

3.2.6 Cultural Resources

Affected Environment

This section describes cultural resources in an ROI that includes the proposed project's direct and indirect Area of Potential Effect (APE). The direct APE includes the area where the proposed new WTP is planned, where the WTP would be demolished, and areas where material borrow, soil disposal, and project staging would occur. The indirect APE includes a 500-ft buffer area around the proposed new WTP and a 100-foot buffer around direct APE areas outside the 500-foot buffer.

Two archeological investigations were conducted within the Preferred Alternative's APE. In 2005, archaeologists from the Center for Environmental Management of Military Lands (CEMML) surveyed the portion of the APE north of Arctic Valley Road. CEMML's pedestrian

survey included transects and systematic shovel tests in areas with a higher probability of containing cultural deposits. Neither the pedestrian survey nor the shovel testing identified any cultural resources within the APE (Raymond-Yakoubian 2006).

In June 2022, another field-based archeological survey of the APE was conducted at the request of the Chickaloon Village Traditional Council (CVTC). The survey consisted of pedestrian transects spaced at 15-meter intervals and shovel tests. Three cultural depressions that are assumed to be foxholes or training positions, a bark-stripped birch tree, an old electrical pole, and staircase were discovered during the survey; however, no features were found within the footprint of the proposed new WTP. No cultural materials were found during shovel testing. None of the discovered features were determined to be eligible for the National Register of Historic Places (CRC 2022a).

The existing WTP was constructed prior to 1951 and was added on to between 1951 and 1957. The WTP was evaluated for eligibility for the National Register of Historic Places in 2022 (CRC 2022b). Based on the evaluation completed by historical architects and archaeologists, the WTP was recommended as eligible for listing on the National Register of Historic Places under Criterion C as a significant example of the International Style.[3] Generally, the most common characteristics of International Style buildings are rectilinear (sides meeting at right angles) forms; plane surfaces with no applied ornament or decoration; flat roofs; open interior spaces; and the use of glass and steel with usually less-visible reinforced concrete (Chicago Architecture Center 2022). Further, the WTP retains a high level of all seven aspects of integrity (i.e., it has the ability to convey its significance) and, despite some condition issues and very minor exterior changes, its historic character is nearly intact (CRC 2022a).

Other known cultural resources in the general area, but outside the Preferred Alternative's ROI or APE, include prehistoric and historic sites. South of the existing WTP is a boulder spall (ANC-03334) and the Ship Creek Bridge (ANC-01831). West of the WTP is the Alvin Meyer Homestead site (ANC-01166) and "Five Historic and Prehistoric Features" (ANC-00822). To the northwest is the Moose Run Golf Course (ANC-01335) that includes three Quonset huts (ANC-01332, ANC-01333, ANC-01334), the clubhouse (ANC-01336), and the irrigation pump building (ANC-04484). To the north, ANC-02592 is a concentration of five stone tools, flakes, and a hearth (CRC 2022a).

Environmental Consequences

Alternative 1 (Preferred Alternative)

USAF transmitted a finding of no historic properties affected by construction of a new water treatment plant to the State Historic Preservation Office (SHPO), Anchorage Historic Preservation Commission, and Tribal entities, including the Native Village of Eklutna, CVTC,

[3] Criterion C is the "Embodiment of the distinctive characteristics of a type, period, or method of construction, or representation of the work of a master, or possession of high artistic values, or representation of a significant and distinguishable entity whose components may lack individual distinction." (NPS 2002).

Knik Tribal Council, Native Village of Tyonek, Chickaloon Moose Creek Native Association, Tyonek Native Corporation, Eklutna, Inc., and Cook Inlet Region Incorporated on January 28, 2022. The SHPO concurred with the finding on February 11, 2022; however, in a February 18, 2022 letter, CVTC requested that the area be re-examined for cultural resources. USAF agreed, and a work plan for the survey was submitted for SHPO and CVTC review on April 15, 2022. Although the SHPO found that the survey plan was appropriate, CVTC made several recommendations for additions to the methods and reporting, and many of these changes were incorporated prior to the survey.

The entire ROI/APE was surveyed and subsurface testing was completed on June 1 and 2, 2022. Three depressions, a bark-stripped birch tree, and recent structural material were documented. The stratigraphy, morphology, and placement on the landscape of the three depressions are consistent with fighting positions (foxholes). The bark-stripped tree was dated to approximately 20 years old and is unlikely to be associated with Dene activity (as a marker, for making material culture objects, or other function). The structural remains were deemed most likely associated with a structure that was built in the 1960s and demolished by 1999. None of the abovementioned items were found to be eligible for the National Register of Historic Places. USAF transmitted a finding of no historic properties affected in the direct APE and no adverse effect to historic properties within the indirect APE to the SHPO and Tribes on September 15, 2022. The SHPO concurred with the finding on October 28, 2022. No responses from Tribes were received.

On October 25, 2022, USAF notified the SHPO, Tribal entities, and the Anchorage Historic Preservation Commission that the WTP was eligible for the National Register of Historic Places and demolition would result in adverse effects to historic properties. The SHPO concurred on November 10, 2022. No comments were received from Tribal entities or the Anchorage Historic Preservation Commission.

Implementation of the Preferred Alternative will adversely and permanently affect the WTP, which is a historic property eligible for listing in the National Register of Historic Places under Criterion C — as a significant example of the International Style. A Memorandum of Agreement (MOA) was prepared to resolve these adverse effects under 36 CFR Part 800 (MOA; Appendix A). Mitigation established in the MOA includes documentation to Historic American Building Survey Level III standards (architectural drawings photographs, and written description submitted to the Library of Congress). The MOA also includes installing outdoor interpretive panels discussing the architectural significance of the WTP and how it provided water to JBER. Although the impacts to historic properties will be severe, adverse, and long-term, by implementing the MOA, the impacts to cultural resources from Alternative 1 (Preferred Alternative) will be appropriately mitigated to insignificance.

No Action Alternative

The No Action Alternative would result in no change to the WTP or the landscape. No impacts related to cultural or historic resources would be expected.

3.2.7 Socioeconomic Resources / Environmental Justice

Affected Environment

This section describes socioeconomic resources and environmental justice populations in the ROI that includes JBER.

The total payroll at JBER is about $1.1 billion, the overall operations and maintenance expenditures are about $477 million, and JBER's economic impact in Alaska is about $1.9 billion (JBER 2022a). JBER's median annual household income is $60,721. The median income for JBER residents under the age of 25 (the majority of JBER's population) is about $35,000 (U.S. Census 2020).

According to the 2021 Defense Spending report for Alaska (DoD 2022a), there are a total of 9,808 active-duty personnel assigned to JBER. JBER is also the home base for 769 reserve and 2,554 guard personnel and employs an additional 3,338 civilians. The total number of dependents of all personnel is 15,534. According to the U.S. Census Data (2020), 13,317 people live on base. The median age of JBER residents is 22 and most (55%) are male. Of the 3,156 households on base, about 83% are families and 63% of the households (about 2,000) have children. There are about 5,600 children under the age of 19 living at JBER (US Census 2020).

Housing at JBER is varied. Dormitories are provided for unaccompanied personnel between the ranks of E1 through E3 and E4 with less than three years of service. For higher-ranked military members and members with families, there are 19 distinct housing neighborhoods in JBER split between the Elmendorf and Richardson sides of base. There is a utility allowance program for gas and electric. Water, sewer, refuse, and recycling are free to residents. Housing on base is a public-private partnership with Aurora Military Housing, which owns the family housing and is responsible for maintaining, repairing, and managing the community (My Base Guide 2021).

There are four child development centers on base that care for children between the ages of six weeks and five years (JBER Life 2022). Elementary schools on JBER lands include Aurora Elementary (493 students), Orion Elementary (469 students), Government Hill Elementary School (457 students), and Mountain View Elementary (293 students) (Anchorage School District 2022). Ursa Major Elementary School also typically operates on JBER; however, the school is not currently in operation due to 2019 earthquake damage.

The ethnicity and poverty status at JBER was compared to data for the Municipality of Anchorage and the State of Alaska census area population to determine if minority or low-income communities exist in the area that could be disproportionately affected by the Preferred Alternative. Table 3-3 outlines the total population, median household income, percent of people living below the poverty level, and percent of people who identify as a minority population for JBER, the Municipality of Anchorage, and the State of Alaska.

The demographics of JBER are generally reflective of the wealth distribution and ethnic diversity of Anchorage and the State of Alaska. Approximately 41% of the total population of the State of Alaska is a minority (non-white) and about 42% of Anchorage is a minority. The JBER community has a racial makeup like the Anchorage and Alaska census areas, with minorities making up 35% of the total population. JBER and its adjacent communities have a slightly higher percentage of low-income residents than the Municipality of Anchorage, but a lower percentage of low-income residents than the State of Alaska census area. Approximately 16% and 9% of Anchorage and the State of Alaska Census Area populations live below the poverty level, respectively, while 10% of the JBER population lives below the poverty level (U.S. Census Bureau 2013).

Table 3-3. Socioeconomic and Environmental Justice Data for JBER, the Municipality of Anchorage, and the State of Alaska

Area	Total Population	Median Household Income (2021)	Below Poverty Level	Minority Population
JBER [1]	13,317	$60,721	10%	35%
Municipality of Anchorage	291,247	$86,654	9%	42%
State of Alaska	733,391	$77,845	16%	41%

1. Based on data for zip codes 99505 and 99506. (Source: U.S. Census Bureau 2020).

Environmental Consequences

Alternative 1 (Preferred Alternative)

Activities related to construction of a new WTP and existing WTP demolition were evaluated to determine if they would disproportionately impact a minority or low-income population. Because the demographics of JBER are generally reflective of the wealth distribution and ethnic diversity of Anchorage and the State of Alaska, the Alternative 1 (Preferred Alternative) would not disproportionately impact environmental justice populations.

The Preferred Alternative would result in minor beneficial effects on socioeconomic resources. It is expected that a portion of the implementation costs for construction and demolition activities would be expended in the Anchorage regional economy, increasing revenues in the local construction and engineering industries for the duration of the project. This direct benefit would also result in additional beneficial effects throughout the regional economy during this period, including indirect increases in revenue for suppliers to the construction and engineering industries and related increases in employee income, which is expected to result in additional spending on other goods and services in the region.

Under the Preferred Alternative, JBER's 3,150 households (approximate, including about 5,600 children), unaccompanied personnel dormitories, five child daycare centers, two elementary schools, and others working on the base would no longer be exposed to drinking water that comes in direct contact with PCBs.[4] The Preferred Alternative would also benefit JBER residents and employees because the new, modern WTP would provide safe and reliable drinking water even during most natural disasters and installation security breaches.

Adverse impacts from Alternative 1 (Preferred Alternative) are not anticipated.

[4] Although no safe drinking water thresholds have been exceeded in water tested following treatment for drinking, traces of PCBs below regulatory thresholds have been detected, and there is potential to further contaminate drinking water above the EPA's regulatory standard.

No Action Alternative

Under the No Action Alternative, there would be minor adverse effects on socioeconomic resources since JBER residents would continue to use drinking water exposed to PCBs.[5] However, because of the ongoing and intensive drinking water sampling program, the risk to the population while the WTP operates under the EPA's interim measures the potential impacts are low. Once the interim measures expire, closure of the WTP could result in significant repercussions to JBER residents, since there would not be enough drinking water to meet JBER's long-term needs under the No Action Alternative.

3.2.8 Climate and Climate Change

Affected Environment

According to the Western Regional Climate Center (WRCC), JBER lies in a transitional climatic zone between the maritime climatic zone of coastal Alaska and the continental climatic zone of interior Alaska. In the transition zone, temperatures are typically moderate with long, cool winters and short, warm summers (WRCC 2023b). The Chugach Mountains to the east-southeast influence the climate of the Anchorage Bowl by partially blocking the moist air that moves in from the Gulf of Alaska and Prince William Sound. In the winter, Anchorage is protected by the Alaska Range to the north, which prevents arctic air masses with extreme cold, from moving south into the region. In July, the average maximum temperature is 65.9 degrees Fahrenheit (°F) and the average minimum temperature is 49.4°F. In January, the average maximum temperature is 20.2°F and the average minimum temperature is 5.1°F. The average annual precipitation total is 14.63 inches with a total average annual snowfall of 56.6 inches (WRCC 2023a). The frost-free period for Anchorage ranges from 105 to 135 days per year on average (USDA NRCS 2019).

It is well documented that the earth's climate has fluctuated throughout its history. However, recent scientific evidence indicates a correlation between increasing global temperatures over the past century and the worldwide proliferation of GHG emissions by mankind. Climate change associated with global warming is predicted to produce negative environmental, economic, and social consequences across the globe. These global impacts would be manifested as impacts on resources and ecosystems in Alaska. Recent observed changes due to global warming include rising temperatures, shrinking glaciers and sea ice, thawing permafrost, sea level rise, a lengthened growing season, and shifts in plant and animal ranges. The impacts from climate change are already occurring in Alaska and include coastal erosion, increased storm effects, sea ice retreat, permafrost melt, and increased forest fires. The State of Alaska actively implements an Alaska Climate Change Strategy to adapt to current and anticipated impacts from climate change (State of Alaska 2015).

GHGs are gases that trap heat in the atmosphere by absorbing infrared radiation. GHG emissions occur from natural processes and human activities. GHGs include water vapor, carbon dioxide, methane, nitrous oxide, ozone, and several hydrocarbons and chlorofluorocarbons. Each GHG has an estimated global warming potential (GWP), which equates to the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to carbon dioxide, which has a value of one. To simplify GHG analyses, total GHG emissions from a source are often expressed as a CO2e. The CO2e is calculated by multiplying the emissions of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs. While methane and nitrous oxide have much higher GWPs than carbon dioxide, carbon dioxide is emitted in such greater quantities

that it is the overwhelming contributor to CO2e from both natural processes and human activities.

Annual CO2e emissions measured across Alaska from 1990 to 2015 averaged 47.39 gross and 26.68 net million metric tons (MMT) (ADEC 2018). Annual average CO2e emissions from the military sector for all installations and facilities in Alaska averaged 0.84 MMT (838,370 metric tons [MT]). Annual CO2e emissions within the Municipality of Anchorage averaged 1.0 MMT (1,013,623 MT). The annual CO2e emissions from the existing WTP is about 4,324 MT.

Environmental Consequences

Alternative 1 (Preferred Alternative)

The ACAM tool was used to estimate GHG emissions on annual basis during the construction, demolition, and operating phases of the Preferred Alternative using the inputs listed in 3.2.1 (also found in the summary and detailed ACAM reports provided in Appendix B). The ACAM model is programmed to use a combination of US EPA AP-42 emission factors and emission factors, global warming potentials, and calculation methods described in 40 CFR Part 98 were used estimate GHG emissions. GHG emissions are expressed in terms of carbon dioxide equivalents (CO2e), which includes contributions from carbon dioxide, nitrous oxide, and methane. These emissions are summarized in Table 3-4. Even at their peak in 2031, annual GHG emissions from the Preferred Alternative are about a quarter of the potential emissions from the existing WTP when operating at its full potential. The two boilers, which total 7.0 MMBtu/hr, are the primary source of GHG emissions at the existing WTP. Once the emission sources at the existing WTP are decommissioned and taken out of service, there will be a decrease in CO2e emissions of about 3,409 MT. The short-term increase in GHG emissions associated with the Preferred Alternative are very minor in comparison to the Municipality of Anchorage and Alaska as a whole.

Table 3-4. Estimated GHG Emissions by Project Phase and Year for the Preferred Alternative

Year	Greenhouse Gas Emissions (CO2e in Metric Tons/Year)
Steady State Operating (Existing WTP)	
Current	4,324
Construction Phase (New WTP)*	
2023	510
2024	240
2025	508
Initial Operating Phase (New WTP)*	
2026	915
2027	915
2028	915
2029	915
Demolition Phase (Existing WTP)	
2030	1,061
2031	1,133
2032	988
Steady State Operating Phase (New WTP)	
2033	915

* Does not include existing emissions from the existing WTP.

Under the Preferred Alternative, potential short-term GHG emissions increases would occur during construction of a new WTP and demolition of the existing WTP (Table 3-4). A very minor increase in short-term, annual GHG emissions would occur as a result of the Preferred Alternative during the construction phase. Prior to the demolition of the existing WTP, there would be a minor increase in GHG emissions when the new WTP is operating and the existing WTP still standing but closed and secured. Higher GHG emissions would be expected during the existing WTP demolition. Once the WTP is demolished and its associated emission sources are removed from service, there would be a net decrease in GHG emissions of about 3,409 MT annually because the new WTP would have a newer and more efficient diesel-fired emergency generator, diesel fuel storage tank, gas-fired water heater, and natural gas-fired boilers (2) than those associated with the existing WTP. Based on the annual emissions, the Alternative 1 (Preferred Alternative) would not result in a significant impact to GHG emissions.

No Action Alternative

Under the No Action Alternative, a new WTP would not be constructed and the existing WTP would not be demolished. The existing WTP currently emits approximately 4,324 MT of CO2e each year. The existing conditions would remain the same. As a result, no additional or new impacts related to GHG emissions would be expected and the impact would not be significant.

3.3 OTHER NEPA CONSIDERATIONS

3.3.1 Unavoidable Adverse Effects

This EA identifies any unavoidable adverse impacts that would be required to implement the Preferred Alternative and the significance of the potential impacts to resources and issues. Construction of a new WTP and demolition of the existing WTP would impact the local project area at JBER. The severity of potential impacts would be limited by implementation of BMPs, compliance with ADEC- and EPA-approved hazardous materials management plans during building demolition, mitigation included in a MOA developed with the SHPO, and other regulatory compliance for the protection of the human and natural environment.

Unavoidable short-term adverse impacts associated with implementing the Preferred Alternative would include: a temporary increase in air emissions during construction and demolition activities; potential exposure of workers to construction safety risks and to hazardous materials during demolition activities; and noise from construction activities. These effects are considered minor and would be confined to the immediate area. Use of environmental controls and implementing controls required in permits and approvals would minimize these potential impacts. Unavoidable long-term adverse impacts would occur to cultural resources since a National Register of Historic Places eligible building would be taken down and removed from the site.

For the Preferred Alternative to be accomplished, these impacts would occur. The action is required to provide safe drinking water to JBER facilities. No other alternative would consistently provide safe and reliable drinking water to accommodate JBER's existing and future peak demand, while meeting EPA and ADEC drinking water regulations and complying with the EPA's requirements under TSCA.

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

The relationship between short-term uses and enhancement of long-term productivity from implementation of the Preferred Alternative is evaluated from the standpoint of short-term effects and long-term effects. The Preferred Alternative would result in short-term construction-related impacts such as limited air emissions, dust generation, worker exposure to construction conditions and hazardous materials, and local employment and revenue. These impacts would be temporary, would occur only during construction, and are not expected to alter the long-term productivity of the natural environment.

The Preferred Alternative represents an enhancement of long-term productivity at JBER by providing a safe and reliant water source to support installation activities. The negative effects of short-term construction activity impacts would be minor compared to the positive benefits from replacement of the WTP. Immediate, and long-term, benefits would be realized for operation and maintenance after completion of the Preferred Alternative.

3.3.3 Irreversible and Irretrievable Commitments of Resources

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

The Preferred Alternative results in the demolition of a building that is eligible for the National Register of Historic Places. The demolition of this facility is irreversible. USAF has acknowledged this adverse effect and engaged in consultation with the SHPO to draft an MOA to mitigate these adverse effects (Appendix A).

Material resources irretrievably used for the construction of the WTP would include construction materials, such as wood and metal, and water used for dust control purposes. Such materials are not in short supply and would not be expected to limit other unrelated construction activities in the area. As a result, the irreversible use of material resources would not be considered significant.

Energy resources used for the implementation of the Preferred Alternative would be irretrievably lost. These would include petroleum-based products (e.g., gasoline and diesel) and electricity. During construction, and demolition and transport of hazardous waste outside Alaska, gasoline and diesel would be used for the operation of vehicles. This small-scale project and its consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, significant irreversible energy-related impacts are not expected.

The use of human resources for construction and demolition activities is considered an irretrievable loss only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Preferred Alternative would represent employment opportunities considered beneficial.

3.4 CUMULATIVE EFFECTS

This EA also considers the impacts of cumulative effects as required in 40 CFR Part 1501. Cumulative effects, as defined by the CEQ (40 CFR §1508.1 (g)(3)) are the "…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 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."

Actions announced for the ROI for this project that could occur during the same time period as the proposed action are listed in Table 3-5.

Table 3-5. Past, Present, and Reasonably Foreseeable Projects

Action	Description
Historic Buildings Demolition	At JBER, demolition of the following WWII-era buildings has occurred or is planned: • Building 10550, Urea Storage (Sand Storage) – demolition by neglect; • Building 9268, Liquid Oxygen (Cryogenics) – demolished 2020; • Building 8481, Wildlife Museum – demolished 2022; • Building 7250, Vehicle Operations – scheduled demolition 2023; and • Building 10286, Hangar 7 - planned In addition, demolition of the following Cold War-era buildings has occurred or is planned at JBER: • Building 18176, ANFLR-9 CDAA – demolition by neglect; • Building 7348 Office of Special Investigations– demolished 2011; • Building 16521 Maintenance Hangar 14– demolished 2011; • Building 17722 Warehouse Storage– demolished 2011; • Building 35750 Consolidated Transmitter Facility – demolished 2011; • No building #, Vehicle Maintenance Shop, Upper Site Summit – demolished 2012; • Building 7135 Kashim Enlisted Club– demolished 2012; • Building 39600, partial demolition of Battery Control Building and Barracks, Upper Site Summit – demolished 2012; • Building 38227, Vehicle Maintenance, Lower Site Summit – demolished 2012; • Building 10449 Dental Clinic– demolished 2014; • Building 12737 DLA Disposition Services Office – demolished 2014 • Building 32448 Munitions Maintenance Operations – demolished 2015; • Central Heating and Power Plant (Building 36012) – demolished 2018; and • Building 15658, Hangar 16, Combat Alert Cell – planned
Wildland Fire Management Activities	Wildland fire prevention measures, initiated in May 2022, within the Richardson Training Area to reduce hazardous (wood) fuels that accumulate and could contribute to uncontrollable wildfires.
North Runway Hill Removal Project (USAF 2017)	JBER completed an EA for this project that occurs on the north-south runway, runway 16/34. The runway has existing topographic safety hazards to JBER flight operations in the form of a hill to the north. This project is to continue the removal of the hill and transport soil removed from the hill to a disposal site located north of the North End Borrow Pit. (Another project, the JBER Runway 16/34 Extension, has a combined effect with this project, as they occur on the same area of land)

Action	Description
Arctic Valley Ski Area Strategic Plan Implementation	Goals of the strategic plan include developing a long-range master plan that would include phased implementation of substantial upgrades and enhancements at the ski area; enhancing experiences at the ski area (including upgrades to parking and pedestrian circulation); future infrastructure (including new lifts, lodge renovations, trails, and cabins); and improved recreational opportunities.
JBER-R CHPP Demolition	Site work and demolition of the CHPP, which was contaminated with PCBs, LBP, and ACM, was conducted from summer 2017 to November 2018.

For this EA analysis, these announced actions are addressed from a cumulative perspective and are analyzed in this section. These announced future actions would be evaluated under separate NEPA actions conducted by the appropriate federal agency. The USAF cumulative impact analysis considers these announced actions based on the best available information for these proposals by others.

Descriptions of the cumulative effects for the resource areas follow.

3.4.1 Air Quality

The ROI evaluated for potential cumulative air quality impacts included JBER, the DU Stationary Source, the Municipality of Anchorage, and Eagle River, Alaska. Projects within the ROI included in the cumulative AQIA was limited to the projects listed in Table 3-5. These projects, in conjunction with the proposed action, could have an incremental impact on air quality within the ROI. Currently, JBER is in attainment for all NAAQS. The Eagle River area, located north of JBER, was a moderate nonattainment area for PM_{10}, but was re-designated as a maintenance area in 2013 by the EPA (ADEC 2023a). The Municipality of Anchorage was in nonattainment for CO, but it was re-designated as a maintenance area in 2002 by the EPA (ADEC 2023b).

JBER would emit 662 tons r of emissions per year if all stationary, emission sources owned by JBER operated to their full potential. The stationary source would emit 591 tons of emissions per year for all of its facilities combined when operating at their full potential. The emission contribution from the existing WTP is minor in comparison to emission units operated at the other facilities under the DU stationary source. Potential emissions contributions from the proposed new WTP would be similar to the existing plant. The highest short-term annual emission rate from the Preferred Alternative would occur in 2031 during demolition of the existing WTP with an estimated combined total of 19.0 tons of CAPs. Construction-related emissions from demolition of the existing WTP would contribute 2.3 tons of emissions with the new WTP emission sources contributing the remaining 16.7 tons in 2031. The annual CAP emissions from these new stationary sources represent the long-term emissions impact associated with the Preferred Alternative. Peak CAP emissions during construction of the proposed new WTP and demolition of the existing plant would be insignificant. A minor, net increase in emissions would occur as a result of the installation of new stationary source emission units at the proposed new WTP.

The cumulative effects on air quality within the ROI, when the emissions from Preferred Alternative are added to emissions from other proposed actions, are expected to be insignificant in the short and long term since many of the projects in Table 3-5 involve the demolition of facilities.

3.4.2 Safety and Occupational Health

Cumulative adverse effects of past, present, and reasonably foreseeable actions include commonplace risks to the public and workers such as slips, trips, and falls; exposure to the elements (e.g., heat and cold); and interaction with wildlife. In addition, building demolition has risks to worker health and safety, particularly if the buildings contain hazardous materials. Work safety is protected through the development and implementation of safety plans. Although these types of risks would be associated with most of the projects, they are relatively discrete, and the overall cumulative effects would be negligible. The Preferred Alternative would make a negligible contribution to cumulative adverse effects on safety and occupational health and safety.

3.4.3 Hazardous Materials and Wastes

Most of the past, present, and reasonably foreseeable actions likely involve construction and maintenance activities that use hazardous materials and petroleum products and may generate some waste. These actions would be expected to implement BMPs and compliance measures to safely manage hazardous materials and waste and minimize adverse effects.

Many of the building demolition projects listed in Table 3-5 involve the management and disposal of hazardous waste. During all building demolition projects, hazardous materials would be managed in accordance with applicable EPA and ADEC regulations and approved work plans. It is not likely that excavation of the Preferred Alternative would coincide with another project in time and physical proximity such that cumulative effects would occur. Likewise, building demolition activities in the project area are physically separate from other portions of the installation.

The Preferred Action, when added to other actions listed in Table 3-5, would not result in cumulative effects.

3.4.4 Water Resources

Cumulative adverse effects of past, present, and reasonably foreseeable actions include minor impacts to water quality due to expansion of impervious areas resulting from construction and demolition activities; however, projects with over one acre of ground-disturbing activities are conducted with a SWPPP and CGP in place to minimize impacts. No past, present, or reasonably foreseeable future action is expected to impact water sources or groundwater. No significant cumulative impacts would be expected to water resources.

3.4.5 Earth Resources (Geology/Soils)

Most of the past, present, and reasonably foreseeable actions would involve construction and demolition activities that would impact earth resources. If contaminated soils are encountered during any of the projects listed in in Table 3-5, contamination would be removed for proper disposal following EPA and ADEC regulations and workplans, like the Preferred Alternative. The Preferred Alternative, when added to other projects listed in in Table 3-5, could positively impact earth resources if contamination is present and would not contribute to significant cumulative impacts.

3.4.6 Cultural Resources Impacts

The Preferred Alternative would result in an adverse impact to a single historic property. Any other actions in the vicinity affecting historic properties could potentially interact or compound with detrimental historic property effects.

Altogether, many older buildings have been or will be demolished and removed from JBER (Table 3-5), which when added to the WTP demolition could result in a cumulative impact to cultural resources. It is expected that all building demolition activities including buildings demolished by neglect, would be coordinated with the SHPO. If any of the buildings are found to be eligible for the National Register of Historic Places, it is expected that a MOA would be developed, and mitigation measures would be implemented. Through the use of MOAs, the Preferred Action when added to other actions listed in Table 3-5 would not result in cumulative effects.

3.4.7 Socioeconomic Resources

In combination with other proposed or ongoing construction projects, the proposed project would likely result in a minor increase in the demand for construction-related services. The increase in economic activity associated with these projects would last for the duration of the construction periods. This would be a beneficial cumulative impact to the surrounding community. Further, the positive health and safety impacts of the proposed new WTP to JBER's residents and employees would be added to other new positive developments planned at JBER. As detailed in Section 3.2.7, the proposed project would not limit or otherwise negatively affect the environmental justice populations or the economy of the region and would not contribute to significant cumulative impacts associated with socioeconomic resources.

3.4.8 Climate and Climate Change

The cumulative air quality analysis described in Section 3.4.1 included an analysis of GHG emissions. It found that GHG emissions would peak in 2023 with 554 metric tons and the highest short-term emissions would occur in 2031 during WTP demolition when 1,133 tons of GHG would be emitted. Construction-related emissions from demolition of the existing WTP would contribute 218 tons of GHGs, and 915 tons of GHGs would be emitted by the new, stationary source emission units installed with the proposed new WTP. A minor, net increase in emissions would occur as a result of the installation of new stationary source emission units at the proposed new WTP.

When added to the emissions from Preferred Alternative, the cumulative effects on climate and climate change due to GHG emissions from projects listed in in Table 3-5 are expected to be insignificant in the short and long term.

3.5 POTENTIAL MITIGATION MEASURES

This section identifies BMPs and measures that are recommended to minimize potential environmental consequences of the Preferred Alternative to the highest degree possible. These are in addition to standard construction and resource management practices described for resource areas not otherwise further discussed in this analysis. In some instances, the same BMPs or conservation measures are applied to multiple resource categories.

Air Quality

- Soil stockpiles will be covered.
- Water from water trucks will be applied to fill and excavation areas, access and haul roads, and staging areas as needed to control fugitive dust, especially should risk of dust reaching Ship Creek occur.
- Low speed limit on access driveways will be followed to reduce dust generation.
- Construction vehicles and machinery idling will be restricted to a maximum of five minutes.

Safety and Occupational Health

- Construction Health and Safety Plans, OSHA regulations, and site BMPs will be followed for worker safety.

Hazardous Materials/Waste

- EPA- and ADEC-approved plans for the testing, management, and disposal of hazardous material will be developed and followed.
- All military, civilian, and contractor personnel operating on JBER will abide by the most current version of the JBER Spill Plan (SPCC/CPlan) for reporting spills.
- All spills will be reported to JBER Fire via 911, per the JBER Spill Plan.
- The contractor will work with the JBER Spill Manager for reporting spills to the proper agencies.
- An agency-approved plan for securing and maintaining the existing WTP in place for the short term, between when the proposed new WTP begins operation and when the existing WTP is demolished, will be developed. It is expected the plan will include:
    - Maintaining electrical power into the building in good condition;
    - Keeping the inside WTP temperature above freezing by properly maintaining and monitoring building boilers;
    - Locking, blocking, or removing all WTP ingress and egress points, and ensuring the surrounding fence remains locked and secured; and
    - Continuously monitoring WTP security using CCTV and personnel.

Water Resources

- An APDES CGP SWPPP would be developed to manage stormwater quality during construction

Cultural Resources

- Mitigation measures included in the MOA developed for the demolition of the WTP will be followed.
- In case of inadvertent discovery of cultural or historic resources, all work will be stopped, and cultural resources professionals will be notified.

4.0 LIST OF PREPARERS

This EA has been prepared under the direction of the Air Force Civil Engineer Center, USAF, and PACAF.

The individuals that contributed to the preparation of this EA are listed below.

Table 4-1. List of Preparers

Name/Organization	Education	Resource Area	Years of Experience
Robin Reich, Solstice Alaska Consulting, Inc.	B.S. Biology	NEPA, Socioeconomic Resources/ Environmental Justice	20
Charlene C. Johnson, 673d CES/CEIEC	M.S. Biology	NEPA	23
Amy E. Kearns, 673d CES/CEIEC	A.S. Fire Science, B.S. Forestry, M.S. Natural Resource Management	Air Quality	25
Kathleen Hook, DU	M.S. Environmental Quality Science; B.S. Geology	Water Resources; Hazardous Materials/Waste; Water Resources; Earth Resources	43
Melissa Shippey, CPESC, CISEC, DU	B.S. Natural Resources Management	Hazardous Materials/Waste, Water Resources; Earth Resources	20
Rebecca Venot, PE, CRW Engineering Group	M.S. Civil and Environmental Engineering; B.S. Mechanical Engineering	DOPAA; Occupational Safety	16
Margan A. Grover, 673d CES/CEIEC	M.A. Anthropology	Cultural Resources	26

5.0 PERSONS AND AGENCIES CONSULTED/COORDINATED

The following Persons and Agencies were contacted in the preparation of this EA

Table 5-1. Persons and Agencies Consulted/Coordinated

Federal Agencies	
Bureau of Indian Affairs	U.S. Environmental Protection Agency
Bureau of Land Management	U.S. Fish and Wildlife Service
Federal Aviation Administration	U.S. Department of Interior
National Park Service	U.S. Department of Transportation Federal Highway Administration
U.S. Department of Agriculture	
State Agencies	
Alaska Department of Environmental Conservation	Alaska Department of Natural Resources
Alaska Department of Fish and Game	Alaska State Historic Preservation Office
Alaska Department of Military and Veterans Affairs	Alaska Railroad Corporation
Elected Officials	
Representative Mary Peltola	Senator Lisa Murkowski
Office of the Governor	Senator Dan Sullivan
Local Agencies	
Anchorage Historic Preservation Commission	Port of Anchorage
Anchorage Assembly	Port MacKenzie
Municipality of Anchorage	Ted Stevens Anchorage International Airport
Other Stakeholders	
Eagle River Community Council	Northeast Community Council
Fairview Community Council	South Fork Community Council
Mountain View Community Council	
Tribal Agencies	
CVTC	Native Village of Eklutna
Chickaloon Moose Creek Native Association	Native Village of Tyonek
Eklutna, Inc.	Tyonek Native Corporation
Knik Tribal Council	Cook Inlet Region Incorporated

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APPENDIX A

Interagency/Intergovernmental Coordination and Public Participation

APPENDIX B

Air Quality Impact Analysis Report

APPENDIX C

National Historic Preservation Act Compliance Materials

APPENDIX D

Notice of Availability

PUBLIC NOTICE

NOTICE OF AVAILABILITY

DRAFT ENVIRONMENTAL ASSESSMENT AND

PROPOSED FINDING OF NO SIGNIFICANT IMPACT FOR MANAGEMENT OF WATER TREATMENT AT JOINT BASE ELMENDORF-RICHARDSON (JBER), ALASKA

An Environmental Assessment (EA) has been prepared to evaluate the potential environmental impacts of actions to provide safe drinking water to Joint Base Elmendorf-Richardson (JBER), Alaska. Under the Proposed Action, the owner of JBER's potable water utility, Doyon Utilities, LLC (DU), would construct a new Water Treatment Plant (WTP) and dismantle and remediate the existing JBER WTP once the new plant is fully operational. The project would enable DU to meet its obligations to provide enough safe drinking water to JBER facilities in order to dependably meet current and future demand in support of JBER's mission.

The EA, prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations, and Air Force instructions implementing NEPA; evaluates potential impacts of the Proposed Action and No Action Alternative on the environment. Based on this analysis, the Air Force has prepared a proposed Finding of No Significant Impact (FONSI).

The Draft EA and Draft FONSI, dated April 2023, will be available for review at the following locations:

Chugiak-Eagle River Library	Z.J. Loussac Library	JBER Library
12001 Business Blvd. #176 Eagle River Town Center Eagle River, AK 99577	3600 Denali St. Anchorage, AK 99503	Army Education Center Bldg. 7, Chilkoot Ave. JBER, AK 99505

Electronic copies of the documents can also be found on the JBER website at http://www.jber.jb.mil/Services-Resources/Environmental/NEPA.aspx (under "Public Documents and Notices").

You are encouraged to submit comments through May 11, 2023. Comments should be provided to JBER Public Affairs, 10480 Sijan Ave., Suite 123, JBER, AK 99506. Emailed comments can be submitted to jber.pa@us.af.mil. Comments may also be submitted on the phone at (907) 551-8996.

PRIVACY ADVISORY NOTICE

Public comments on this Draft EA are requested pursuant to NEPA, 42 United States Code 4321, et seq. All written comments received during the comment period will be made available to the public and considered during the final EA preparation. Providing private address information with your comment is voluntary and such personal information will be kept confidential unless release is required by law. However, address information will be used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.