US Army Corps
of Engineers
Alaska District

DRAFT

ENVIRONMENTAL ASSESSMENT

Formerly Used Defense Site (FUDS)
Haines-Fairbanks Pipeline (HFP) F10AK1016-14
Pipeline Milepost MP 17.7 Remediation Project

February 2020

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) report evaluates the potential environmental consequences that would result from alternatives that have been proposed to address fuel-contaminated soils and groundwater at the Haines-Fairbanks Pipeline Milepost 17.7 (PMP 17.7) Formerly Used Defense Site, located near Haines Highway Milepost 15.5, north of Haines, Alaska. Petroleum, oil, and lubricants (POL) contamination at the site is being addressed under the authority of the Defense Environmental Restoration Program (DERP), United States Code, Title 10, Section 2701, et seq. The DERP provides authority to cleanup petroleum contamination if it poses an imminent and substantial endangerment to public health, welfare or the environment. Fuel was released from the Haines-Fairbanks Pipeline at PMP 17.7 through a rupture due to corrosion in 1968. Although partial remediation of the fuel contaminants occurred shortly after the time of release, remaining contamination has been identified in the soils and groundwater through sampling performed by the U.S. Army Corps of Engineers, Alaska District (USACE). Until 2018, the contamination was understood to be confined to the soils and groundwater in the immediate project area shown in Figure 2 of this EA, and was being actively monitored by the USACE. However, a 2019 monitoring survey identified what appeared to be contaminated groundwater emerging from a seep located near the Chilkat River Slough, a tributary to the Chilkat River. The purpose of this action is to address sources to remove the completed pathways to the environment.

The proposed action is needed to reduce soil and groundwater contaminant concentrations below levels that pose an imminent and substantial risk to human health, welfare, or the environment. The source removal action is intended as an intermediate step toward the remedy, rather than a final remedial decision for the project. The objectives of the proposed action are to remove as much of the soil contamination that exceeds Alaska Department of Environmental Conservation (ADEC) default Method Two Cleanup Levels as practicable in order to prevent recreational users from coming in contact with contaminated soil, and to reduce groundwater contamination levels in order protect potential ecological receptors. The USACE has developed a No Action Alternative and three action alternatives to meet these objectives, each of which is evaluated in this EA. Under the selected alternative, Alternative 4, the USACE would excavate and treat up to 17,500 tons of fuel-contaminated soil and use in-situ treatment methods to remediate residual contamination. The excavated area would be backfilled with clean soil. Up to 1 million gallons of groundwater may be treated through a granular activated carbon filtration system. Excavated soils are planned to be landfarmed as described in Section 2.2.5 and/or shipped out of Alaska for disposal at a permitted landfill as necessary to meet the project requirements.

This EA evaluates the range of natural, recreational, and cultural resources and land uses that could be affected by the alternatives, including the No Action Alternative. Although potentially adverse impacts were identified for some resource categories, none of the impacts would be significant.

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ACRONYMS

ACS	U.S. Census American Community Survey
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADOT&PF	Alaska Department of Transportation and Public Facilities
ADPOR	Alaska Department of Natural Resources Division of Parks and Outdoor Recreation
ADT	Annual Daily Traffic
AKEPIC	Alaska Exotic Plants Information Clearinghouse
AQI	Air Quality Index
ARPA	Archeological Resources Protection Act
AT&P	Alaska Telephone and Power
BLM	Bureau of Land Management
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CDO	Community Database Online
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfs	cubic feet per second
CIV	Chilkat Indian Village
COPC	Contaminant of Potential Concern
CSIS	Alaska Department of Commerce, Community, and Economic Development, the Community Subsistence Information System
CWA	Clean Water Act
DERP	Defense Environmental Restoration Program
DOD	Department of Defense
DRO	Diesel range organics
EA	Environmental Assessment
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
EPP	Environmental Protection Plan
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FUDS	Formerly Used Defense Sites
GAC	Granular activated carbon
GRO	Gasoline range organics
HFP	Haines-Fairbanks Pipeline
ICs	Institutional Controls
IPEC	Inside Passage Electric Cooperative
Magnuson-Stevens	Federal Magnuson-Stevens Fishery Conservation and Management Act
MHTA	Mental Health Trust Authority
NAVD	North American Vertical Datum
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
PAH	Polycyclic Aromatic Hydrocarbons
PM2.5	Fine particulate matter
PM10	Coarse particulate matter
PMP	HFP Milepost

Preserve	Alaska Chilkat Bald Eagle Preserve
POL	Petroleum, oils, and lubricants
RCRA	Resource Conservation Recovery Act
ROW	Right of Way
SHPO	State Historic Preservation Office
SPLP	Synthetic Precipitation Leaching Procedure
TAH	Total aromatic hydrocarbon
TAqH	Total aqueous hydrocarbon
TMDL	Total maximum daily load
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bicycle Route
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1 INTRODUCTION

The Haines-Fairbanks Pipeline (HFP) is a decommissioned petroleum-product pipeline that once extended from Haines to Fairbanks, Alaska. The HFP was designed to supply fuel for Department of Defense (DOD) sites. The portion of the pipeline between Haines and the border with Canada was decommissioned in 1972. Portions of the former pipeline are now part of the DOD's Formerly Used Defense Sites (FUDS) program.

The U.S. Army Corps of Engineers (USACE) executes the FUDS program. Congress created the FUDS program in the mid-1980's, and while the Army retains lead agency authority, the USACE executes the program pursuant to the Comprehensive Environmental Response, Compensation, and Liabilities Act, as amended (CERCLA) (USACE 2012). Although Petroleum, Oil and Lubricant (POL) contamination is excluded under CERCLA, the Defense Environmental Restoration Program (DERP) provides the FUDS program with authority to address POL contamination that poses an imminent and substantial endangerment to human health and the environment.

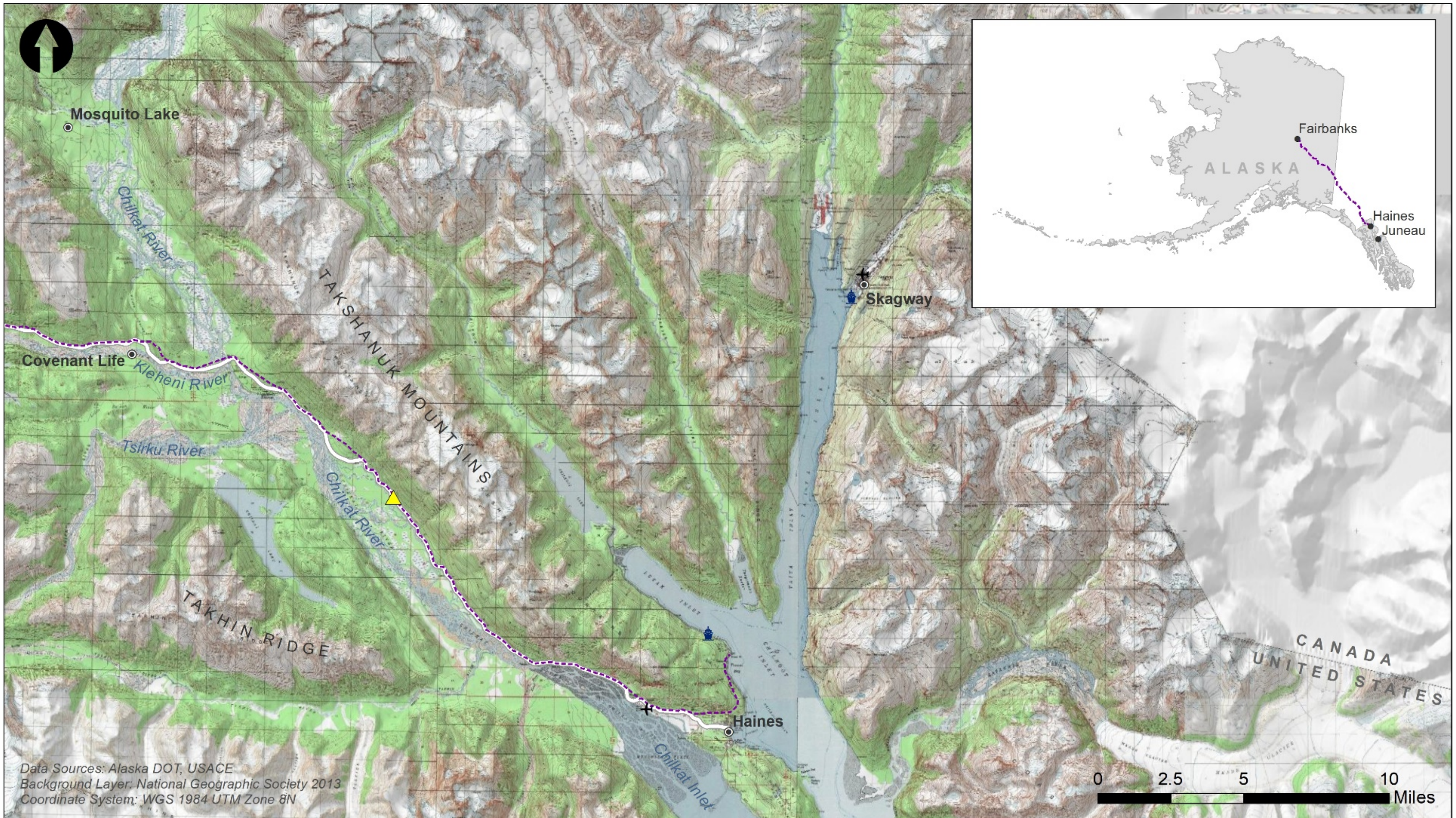
The USACE determined in 2002 that portions of the pipeline right-of-way were eligible for inclusion in the FUDS Program. A historical report that referenced multiple releases during pipeline operations was used in part to determine areas for investigation. The historical report identified the Haines-Fairbanks Pipeline Milepost 17.7 (PMP 17.7) site as one location where fuel had been released during operations (USACE 1972). The USACE investigated the PMP 17.7 site for contamination between 2006 and 2012 and found indications that fuel contamination was still present in concentrations exceeding regulatory levels. A FUDS project was approved to address the contamination in 2012.

This Environmental Assessment (EA) has been prepared under the National Environmental Policy Act (NEPA) to specifically evaluate the potential alternatives for remediating the contamination at PMP 17.7, which is located at Haines Highway milepost (MP) 15.5. Four alternatives have been evaluated, including the No Action Alternative (Alternative 1), Institutional Controls (Alternative 2), Source Excavation and Monitoring (Alternative 3), and Source Excavation, In-situ Treatment, and Monitoring (Alternative 4).

1.1 Historical Background

The HFP extends 626 miles from the town of Haines through the Canadian provinces of British Columbia and the Yukon Territory, through Tok, Alaska, and terminating in Fairbanks, Alaska (Figure 1). The pipeline route generally parallels the Haines Highway from Haines to Haines Junction, Yukon Territory. It then follows the Alaska Highway to Delta Junction, Alaska, continuing along the Richardson Highway to Fort Wainwright, Alaska. The 8-inch diameter pipeline was built to transport fuels from the port at Haines to military bases in interior Alaska (CEMML 2003).

The HFP, five pumping stations, and two bulk storage terminals were constructed from 1953-1955 by the U.S. military and began operation in 1956. Much of the pipeline was laid on the ground surface, although most of the 42 miles between the Haines Fuel Terminal and the Canadian border were buried. Four types of fuel were conveyed including diesel, automotive gas, jet fuel, and aviation gas. The vast majority of fuel transported through this pipeline was jet propulsion fuel No. 4 (JP-4) (CEMML 2003).



LEGEND

- Approximate pipeline route
- PMP 17.7
- Haines highway
- Town
- Town airports
- Ferry terminals

Alaska District
U.S. Army Corps of Engineers
Anchorage, AK

Project Location
Pipeline Milepost 17.7
Haines-Fairbanks Pipeline FUDS Alaska
Project #: F10AK1016-14

Figure 1	Date: December 2019

The above-ground portion of the pipeline was plagued with leaks from corrosion, ice damage, and vandalism caused by bullet holes. Among many reported leaks was a corrosion leak in the buried portion of the HFP at PMP 17.7 that was reported in December of 1968. The leak had resulted in the loss of 33,600 gallons of fuel. The pipe was excavated and leaked fuel filled the trench. Fuel was subsequently pumped into a steel vault and burned off numerous times.

Constant leaks and maintenance requirements resulting from pipeline corrosion were ongoing at numerous locations and in 1970, a study by the U.S. Army Material Command concluded that the HFP was no longer needed. Between 1971 and 1979 the HFP was phased out and decommissioned (CEMML 2003).

The PMP 17.7 site is listed on the Alaska Department of Environmental Conservation (ADEC) Division of Spill Prevention and Response Program website under the name “Haines-Fairbanks Pipeline MP 17.7” with Hazard Identification (ID) #4426 and File ID #900.38.001.

1.2 Previous Actions

Multiple environmental investigations and cleanup activities have been conducted at the PMP 17.7 release site. Each are summarized below.

1968 – Initial spill of 33,600 gallons of fuel. Source excavation of the site was subsequently conducted and leaked fuels were burned off.

2006 – (USACE 2008, 2009) Soil core samples were collected by drilling boreholes in April 2006. Fuel contamination was identified by olfactory and visual methods; however, samples were not submitted for analytical testing. Fuel contamination was identified at a depth of five feet below ground surface (bgs) on the east side of the highway and at two feet bgs on the west side of the highway (USACE 2009). Four soil samples, five sediment samples, and two surface water samples were collected in May 2006 (USACE 2007). Sampling was focused within the pipe trench, although samples were also collected within and adjacent to the burn box. A “background” sediment/surface water sample on the west side of the highway was also collected. With the exception of one surface water sample, the trench samples did not indicate fuel contamination. The burn box samples indicated fuel contamination in sediment and surface water.

2007 – (USACE 2008) Soil gas sorber analysis conducted on each side of the highway and along the trenching spoils mound showed elevated soil gas contaminant concentrations in the central and northern portions of the site.

2012 – (USACE 2013) Twenty-one borings and ten temporary wells were installed on either side of the highway. Site contaminants of concern included gasoline range organics (GRO), diesel range organics (DRO), benzene, and possibly lead, although lead results were suspect due to high turbidity in groundwater samples.

2014 – (USACE 2014) Twelve soil borings were drilled and 23 primary soil samples were collected in July 2014. Multiple compounds exceeded the migration to groundwater ADEC cleanup level in one or more samples including GRO, DRO, benzene-toluene-ethylbenzene-xylenes (BTEX), 1-methylnapthalene, and 2-methylnaphthalene. Eight permanent groundwater monitoring wells were installed and sampled. GRO, DRO, and benzene exceeded ADEC Table C Groundwater Cleanup Levels. Free-product was identified in one well. In August 2014, five sediment and two surface water samples from the Chilkat River Slough were collected. No site contaminants were detected in any of the sediment or surface water samples from the slough.

2015 – (USACE 2018a) Groundwater samples were collected from eight permanent monitoring wells in November 2015 by USACE personnel. Sample results were consistent with the results of sampling completed in 2014. Five monitoring wells were impacted with GRO, DRO, and/or benzene concentrations exceeding ADEC Table C Groundwater Cleanup Levels. Free product was not observed in any of the wells during this effort.

2016 – (USACE 2018a) Eight permanent wells were sampled by USACE personnel in April/May 2016 and results were consistent with previous groundwater sampling events. No free product was observed in any of the wells during this effort. Four co-located sediment and surface water samples were collected within the flowing water on the east side of the slough. Site contaminants were not detected in the surface water or sediment samples. A groundwater seep in a gravel bar adjacent to the slough bank was observed to contain a biogenic sheen and a surface water and sediment sample was collected from the seep location (16HFP17-SW3). No site contaminants were detected from the seep sediment sample, however, the seep surface water sample exceeded ADEC Water Quality Standards for total aromatic hydrocarbon (TAH) and total aqueous hydrocarbon (TAqH) concentrations. The surface water sample exceeding ADEC surface water criteria was collected from a small area of ponded water in a gravel bar along the bank, and not directly from the slough itself (USACE 2017).

2018 – (USACE 2018b) All eight permanent wells were sampled in April 2017. Results were generally consistent with prior spring sampling efforts. Temporal trend analyses did not show increasing trends in contaminant levels over a five year time period. GRO, DRO, and benzene concentrations appeared to uniformly decrease in 2017, as compared to results from the April 2016 groundwater sampling event. The only exception was the benzene concentration at 17-MW3, which increased slightly.

Five surface water samples were collected from the Chilkat River Slough as part of the effort. The surface water samples were analyzed for BTEX and polycyclic aromatic hydrocarbons (PAHs) in order to calculate TAH and TAqH values. None of the surface water samples exceeded the ADEC Surface Water Quality Standards criteria for TAH and TAqH and all BTEX and PAH results were non-detect.

2019 – (USACE 2019) Sampling of permanent wells completed in April 2019 showed continued detections of fuel-related contaminants in the project area. Exceedances of ADEC Table C Groundwater Cleanup Levels were reported for BTEX and naphthalene at five groundwater monitoring wells, GRO in four wells, and DRO in only one well. TAH and TAqH were detected above ADEC surface water quality standards in a seep sample collected from an exposed gravel bar next to the bank of the Chilkat River Slough.

1.3 Study Area Description

Haines is located on the western shore of the Lynn Canal, at the northern end of the Chilkat Peninsula between Chilkat and Chilkoot Inlets in Southeast Alaska, approximately 75 air miles northwest of Juneau (Figure 1). The PMP 17.7 site is located north of Haines along the Haines Highway at approximately MP 15.5 within the Alaska Department of Transportation and Public Facilities (ADOT&PF) Highway right-of-way. The relatively flat project site is approximately 2.45 acres, and encompasses herbaceous and forested wetland, riparian forest, and habitat disturbed by construction of the Haines Highway.

There are eight groundwater monitoring wells at the project site (17-MW1 through 17-MW8). Wells 17-MW1 through 17-MW3 are on the east side of the highway, and all other wells are on the west side. The pipeline runs to the east of the highway. The excavated area or trench that remains from the original cleanup effort follows the toe of the hill slope to the south and ends at a green utility box near MP 15.5. Trenching spoils remain mounded on the highway side of the pipeline trench.

1.4 Purpose and Need for Action

Contaminants detected above ADEC's Migration to Groundwater Cleanup Levels in soil include GRO, DRO, BTEX, and PAHs, including 1-methylnapthalene, and 2-methylnaphthalene. Contaminants detected above ADEC's Table C Groundwater Cleanup Levels include GRO, DRO, BTEX, and naphthalene. Under ADEC cleanup regulations (18 AAC 75.345), contaminated groundwater must meet groundwater cleanup levels if the current uses or the reasonably expected potential future use of groundwater is a drinking water source. Regulation 18 AAC 75.350 defines groundwater as a drinking water source unless a series of demonstrations can be made to exclude it. In this case, although groundwater in the area is not currently used for drinking water, use of groundwater as a drinking water source in the future has not been excluded.

According to regulation (18 AAC 75.345), groundwater that is closely connected hydrologically to nearby surface water may not cause a violation of the water quality standard in 18 AAC 70 for surface water. Exceedances of ADEC's Water Quality Standards were found in samples collected in 2016 and 2019 from a seep located on the bank of the Chilkat River Slough. Although contamination has been detected in a groundwater seep along the bank of the slough, the flowing Chilkat River Slough water is not currently impacted by the site contamination based on surface water samples collected in 2014, 2016, and 2018, all of which were below ADEC's Water Quality Standards.

The proposed action is needed to reduce soil and groundwater contaminant concentrations below levels that pose an imminent and substantial risk to human health, welfare, or the environment. The objectives of the proposed action are to remove as much of the soil contamination that exceeds ADEC's default Method Two Cleanup Levels as practicable in order to prevent recreational users from coming in contact with contaminated soil, and to reduce groundwater contamination levels in order protect potential receptors. These objectives would be accomplished by excavating soils from the most heavily contaminated area (source area) and through in-situ treatment of contaminated groundwater and soil. The proposed source removal action is designed to substantially reduce contamination in the short-term through source removal with longer-term in-situ treatment to remediate residual contamination from soil and groundwater. The source removal action is intended as an intermediate step toward the remedy, rather than a final remedial decision for the project. After completion of the soil removal, in-situ treatment, and groundwater and surface water monitoring, USACE would update the conceptual site model, and evaluate the need for additional remedial action.

1.5 Public Scoping Comments and Resources of Concern

Under NEPA, action agencies are required to evaluate and disclose potential impacts to the human environment that may result from a proposed action. When preparing an EA, the agency has discretion as to the level of public involvement (CEQ 2007). Agencies may wait until they have prepared a draft EA before involving the public, or they may choose to hold meetings with the public prior to preparing the EA as a means of helping them to identify the areas of greatest concern.

The USACE conducted outreach to stakeholders including tribes, state and Federal agencies, and local citizens prior to developing the alternatives or preparing the EA. During the week of 15 July, 2019, representatives of the USACE Alaska District (District) provided an opportunity to meet with representatives of agencies, tribes, and other project stakeholders to collect information about public concerns, describe the planning process including the potential remediation alternatives, and coordinate with other public agencies regarding current and future uses of the project area. The USACE met with representatives from the Alaska Department of Fish and Game (ADF&G), ADEC, Alaska Department of Natural Resources (ADNR) Division of Parks and Outdoor Recreation (DPOR), Alaska Department of Transportation and Public Facilities (ADOT&PF), National Marine Fisheries Service, the U.S. Fish and Wildlife Service (USFWS), the Takshanuk Watershed Council, the Lynn Canal Conservation, the Inside Passage Electric Cooperative (IPEC), and Alaska Power & Telephone (AP&T). The USACE also met with the Chilkat Indian Village Tribal Council in Klukwan. Substantive concerns identified during these meetings included:

- Potential impacts to subsistence resources
- Potential contaminant impacts on juvenile fish
- Potential for increased releases of contaminants during the excavation and treatment phase
- Difficulty in finding locations to process contaminated materials
- Potential impacts to fish habitat
- Timing of proposed action relative to actions proposed by other agencies

2 ALTERNATIVES

This section provides a review of the alternatives that were developed to address the contaminated area. The sections below provide a discussion of (1) constraints that limit the types and scope of alternatives possible, and (2) description of each alternative evaluated for impacts.

2.1 Alternatives Constraints

2.1.1 Construction Accessibility

Although the construction area is easily accessible via the Haines Highway, construction vehicles would still face constraints on the ease of accessing the site for construction and off-site disposal. The Haines Highway is relatively narrow, with few shoulders, turnouts, or locations for trucks to turn around. It is unlikely that the construction site would be large enough to allow large trucks to turn around, therefore egress would likely occur in the same direction as access.

2.1.2 Chilkat River Slough Proximity

Contaminated areas are adjacent to the Chilkat River Slough and the contaminant plume moves toward the slough during periods with low water flows in the river. Due to the contaminant’s proximity to an important surface water resource, some in-situ technologies for contaminant treatment are not recommended for use in this instance. Nutrients, bacterial colony augmentation, and surfactants are not proposed due to the potential for adverse water quality impacts to the slough and surrounding wetlands.

2.1.3 Contaminated Soil Accessibility

The extent of soil contamination expanded from the initial release site passing beneath the Haines Highway toward the Chilkat River Slough, and to a portion of the site that contains buried utilities. The contaminated soils beneath the highway and utilidor are not recommended for excavation as part of this interim removal action due to the additional impacts, risks, and costs of temporarily moving the highway and utilities to access the soil for removal. In-situ remedial techniques are the preferred method to remediate the soils in these inaccessible areas and are included in the evaluation of alternatives.

2.1.4 Roadway Improvements

ADOT&PF is planning to resurface and widen the highway at this location starting summer 2020. Widening the highway would cover approximately five feet on either side of the existing roadway with asphalt, making additional areas inaccessible for excavation to remove contaminated soils. Furthermore, ADOT&PF has concluded that highway improvements will not require the removal of the highway, and there will be no opportunity for greater access to contaminated soils during the highway improvements construction process. Therefore, for maximum effectiveness, the proposed remediation project should occur before the ADOT&PF construction project begins. The District is coordinating construction and access schedules with ADOT&PF.

2.1.5 Soil Treatment, Transportation and Disposal

A variety of soil treatment methods for petroleum contamination have been successful in Alaska including but not limited to thermal desorption (soil heating) and landfarming. After the soil is treated and is tested to ensure it is below the appropriate ADEC cleanup level, it can be used as fill in some situations according to ADEC regulations. In cases where soil treatment within Alaska is not practical, soil can be transported to other states for disposal in permitted landfills. In order to be suitable for landfarming, a site must provide an area large enough for excavated materials to be deposited, exposed to oxygen, and allowed to naturally attenuate without contaminating groundwater or surface water. Landfarming is the preferred method of soil treatment for this project. If no suitable site is available, or if contaminated soil remains at the end of the landfarm process, then contaminated soil would be exported by barge to out-of-state facilities that can accept contaminated materials.

2.2 Alternatives Evaluated

NEPA recommends that a project proponent consider an array of alternatives that would meet the project goals, and analyze the potential environmental impacts as well as the impacts that would result from taking no action. Several measures could be undertaken to achieve the interim remediation goals at PMP 17.7. The final array of alternatives considered included the No Action Alternative (Alternative 1), Institutional Controls (Alternative 2), Source Excavation and Monitoring (Alternative 3), and Source Excavation, In-situ Treatment, and Monitoring (Alternative 4).

2.2.1 Alternative 1 No Action Alternative

Under the No Action Alternative, all monitoring activity at the existing wells would cease and no action would be taken to remediate the site. Monitoring wells would be decommissioned, involving the removal of 2-inch PVC pipe from the eight well sites using a drill rig. This alternative would not address the presence of near-surface POL contamination in soil within the source area. Concentrations of the contaminants of potential concern (COPCs) would likely remain above ADEC cleanup levels in soil and groundwater for decades under the No Action Alternative.

2.2.2 Alternative 2 Institutional Controls and Monitored Natural Attenuation

Institutional controls (IC) are designed to help minimize the potential for human exposure to contamination. ICs offer a means to reduce or eliminate exposure of contaminants to humans without excavation or treatment. Components of the IC alternative could include (1) the installation of signage to provide warnings of contamination to those passing through the project area, (2) deed restrictions or other measures to ensure that owners and operators of the land do not allow land uses that would increase human exposure to contaminants, and (3) long-term groundwater well monitoring. In the event that groundwater well monitoring indicates an increase in contaminant levels or plume expansion in the future, the USACE may reopen consideration of using engineering solutions to address contaminants. This alternative would not immediately reduce the volume of POL contamination, and concentrations of the COPCs would likely remain above ADEC cleanup levels in soil and groundwater for decades into the future.

2.2.3 Alternative 3 Source Excavation and Monitoring

Alternative 3 involves the implementation of engineered remediation solutions. Up to 17,500 tons of contaminated soils would be excavated, transported by truck or barge to a suitable disposal site, and treated to break down POL contaminants and clean the soil. Groundwater remaining in the excavated areas may be pumped into lined containment areas, treated to filter out POL contaminants, and discharged into local wetlands after ADEC cleanup levels have been achieved. Excavated areas would be backfilled with clean and geotechnically stable soils. Once the backfill was complete, USACE would perform continued groundwater and surface water monitoring to evaluate post-removal contaminant concentration trends.

2.2.4 Alternative 4 Source Excavation, In-situ Treatment, and Monitoring (Preferred Alternative)

This alternative includes all the components described above for Alternative 3, and adds in-situ treatment methods to enhance the breakdown of the residual petroleum by microbial populations that are naturally present in the soil and groundwater. Manganese and iron are by-products of the respiration of petroleum-degrading microbes, so their presence in elevated concentrations in the groundwater wells within the plume at PMP 17.7 since 2014 indicate that microbes capable of degrading petroleum are present. The subsurface at PMP 17.7 is generally anaerobic, meaning that the oxygen levels are low. The microbes are currently degrading the petroleum contamination under the relatively slow process of anaerobic respiration. Under aerobic respiration (when oxygen is not the limiting factor), the petroleum contamination would be degraded at a more rapid rate by microbes.

Alternative 4 includes the addition of an oxygen-releasing compound (ORC) to the backfill material within the groundwater smear-zone and could also be introduced by injection to the smear zone in contaminated areas that are not excavated. The ORC would provide oxygen to facilitate the more rapid process of aerobic respiration by microbes to occur, promoting faster cleanup of the remaining contamination through natural attenuation. Finely-ground activated carbon may also be added to the subsurface in specific areas to enhance degradation of the contamination by microbes and to prevent migration of the groundwater plume toward the slough. The activated carbon would aid bacterial colonization by providing a substrate for the bacteria to bind to and would also serve to help sorb the contamination dissolved in groundwater where it could be more efficiently consumed by the bacteria living on the carbon particles. Multiple environmental remediation companies sell injectable materials for remediation of petroleum contamination. The specific brands of ORC and activated carbon selected for in-situ treatment for this project have not been determined and would be based on effectiveness, availability, implementability, and cost.

2.2.5 Source Treatment and Disposal Options

Under each of the engineered alternatives (Alternatives 3 and 4), materials excavated from the site would need to be transported to a disposal or landfarming site. The preferred method of treating excavated materials is through landfarming or biopiles, which have been used successfully in Alaska to treat POL-contaminated soil. This method includes removal, transportation, and distribution of soils or other removed materials onto suitable lands where they would be exposed to oxygen, increasing the rate of POL contaminant attenuation (breakdown). Landfarming typically requires contaminated materials to be spread in a thin layer to maximize oxygen exposure. Biopiles are large mounds piled high, to reduce the surface area needed for remediation in comparison to landfarming. Frequent aeration of the biopiles, such as by stirring, hastens the speed of biodegradation. Landfarming or biopile locations are selected in a manner that avoids the reintroduction of contaminants into the water table or nearby surface waters.

2.2.6 Alternatives Considered but Not Evaluated

During the planning process, USACE considered an alternative that would have included removing a portion of the Haines Highway to excavate the soils beneath the highway. This alternative was not brought forward for evaluation as this extensive excavation was not needed to achieve the interim remediation goals, and the project constraints and available budget would not have favored this alternative. If the proposed action does not achieve the project goals, the USACE would evaluate additional measures to remediate the POL contamination to the desired level.

Table 1. Summary of Alternatives

Alternatives	Alternative Components	Description
Alternative 1: No Action Alternative	1. Cease groundwater monitoring and decommission wells.	Existing wells would likely need to be decommissioned using a drill rig. No further action or water quality monitoring would occur at the site.
Alternative 2: Institutional Controls and Monitored Natural Attenuation	1. Engineering Controls (e.g., signage). 2. Administrative Controls (e.g., deed restrictions). 3. Groundwater and surface water monitoring.	Institutional controls would be implemented to minimize the potential for human health exposure risks. Alternative would likely include monitoring of groundwater monitoring wells and surface water as well as maintenance of the well network and engineering controls such as signage. The operational footprint would include existing well network and contaminant plume footprint. Limited heavy equipment operation required.
Alternative 3: Source Excavation and Monitoring	1. Contaminated soil excavation, transport, disposal/treatment. 2. Limited management and treatment of product and contaminated groundwater from source area excavations. 3. Backfill placement. 4. Replacement of monitoring wells within excavation source areas and installation of additional well(s) as needed between seep and western excavation area. 5. Groundwater and surface water monitoring.	Excavate up to 17,500 tons of contaminated soil on both sides of the highway. Manage and treat contaminated groundwater to excavate below water table as necessary. Backfill with clean geotechnically suitable soils. Monitor groundwater and surface water to determine effectiveness. Temporary soil stockpiles would be constructed within the proposed excavation areas to the extent practical. Construction of a stockpile pad/equipment laydown area would be needed outside of the excavation areas and would most likely be installed on the east side of the highway south of the proposed excavation.
Alternative 4: Source Excavation, In-situ Treatment, and Monitoring	Same as Alternative 3, with addition of in-situ treatment to remediate the remaining contaminated areas.	In addition to measures described for Alternative 3, install oxygen-releasing treatment materials into the excavation to promote enhanced aerobic biodegradation. The oxygen-releasing treatment materials could be mixed with activated carbon in the most contaminated areas to prevent contaminant migration and to promote biodegradation. Backfill with clean, geotechnically suitable materials.

2.2.7 Preferred Alternative Description

2.2.7.1 Alternative 4: Source Excavation, In-Situ Treatment, and Monitoring

This alternative includes excavating both east and west of the highway to remove the source area for POL contaminants, as well as soils within the smear zone where contaminants are migrating laterally with groundwater flow. Based on the estimated extent of soil contamination, POL-contaminated soil would be removed from an area covering approximately 22,800 square feet to a depth up to 10 feet bgs, although the extent and depth of soil removed may increase or decrease depending on conditions found during excavation. As much as 17,500 tons of contaminated soil could be removed from the source area, depending on soil concentrations encountered during the excavation effort. Groundwater wells within the excavation footprint would be decommissioned prior to excavation. The excavation and overall construction footprints are shown in Figure 2.

In the event that groundwater is pumped out of the excavated areas, it would be collected in lined containment areas to prevent seepage or leaks into the soils below. Collected water would be treated through a granular activated carbon (GAC) filtration station and discharged into a second lined containment area. Water in the second containment area would be tested, and once ADEC standards were demonstrated in treated water and ADEC concurs, waters would be discharged into wetlands adjacent to the excavation area.

Once excavations are completed, ORC treatment compound would be applied to excavated areas to promote enhanced aerobic biodegradation. Granular activated carbon (GAC, e.g. Plume Stop™) may also be added, particularly in the northern portion of the site near the slough, with the intent of treating the contaminant plume adjacent to the Chilkat River Slough.

The excavated areas would be backfilled with clean, geotechnically stable, locally sourced soils. ORCs and GAC would be incorporated into the backfill and/or adjacent areas to add oxygen to the groundwater and further mitigate plume migration, respectively. Groundwater wells would be reinstalled at this stage to allow for continued groundwater monitoring. The project team would determine if additional wells are needed at this time.

USACE would prepare a workplan and final report documenting the implementation of this alternative and submit them to ADEC for review and approval.

Treatment of Excavated Soils

USACE considered several potential landfarm locations and has identified a potential landfarm location in the vicinity of the project area. The proposed landfarm location is close to mile 26 of the Haines Highway, just west of the Wells Bridge over the Chilkat River (Figure 3). The initial landfarm location would include portions of two parcels (parcel #s 3-WAS -00-0500 and -0600) that have been cleared of forest vegetation under a previous action. If needed, an additional parcel (parcel # 3-WAS-00-0400) located to the west of the initially-used parcels may be incorporated into the design.

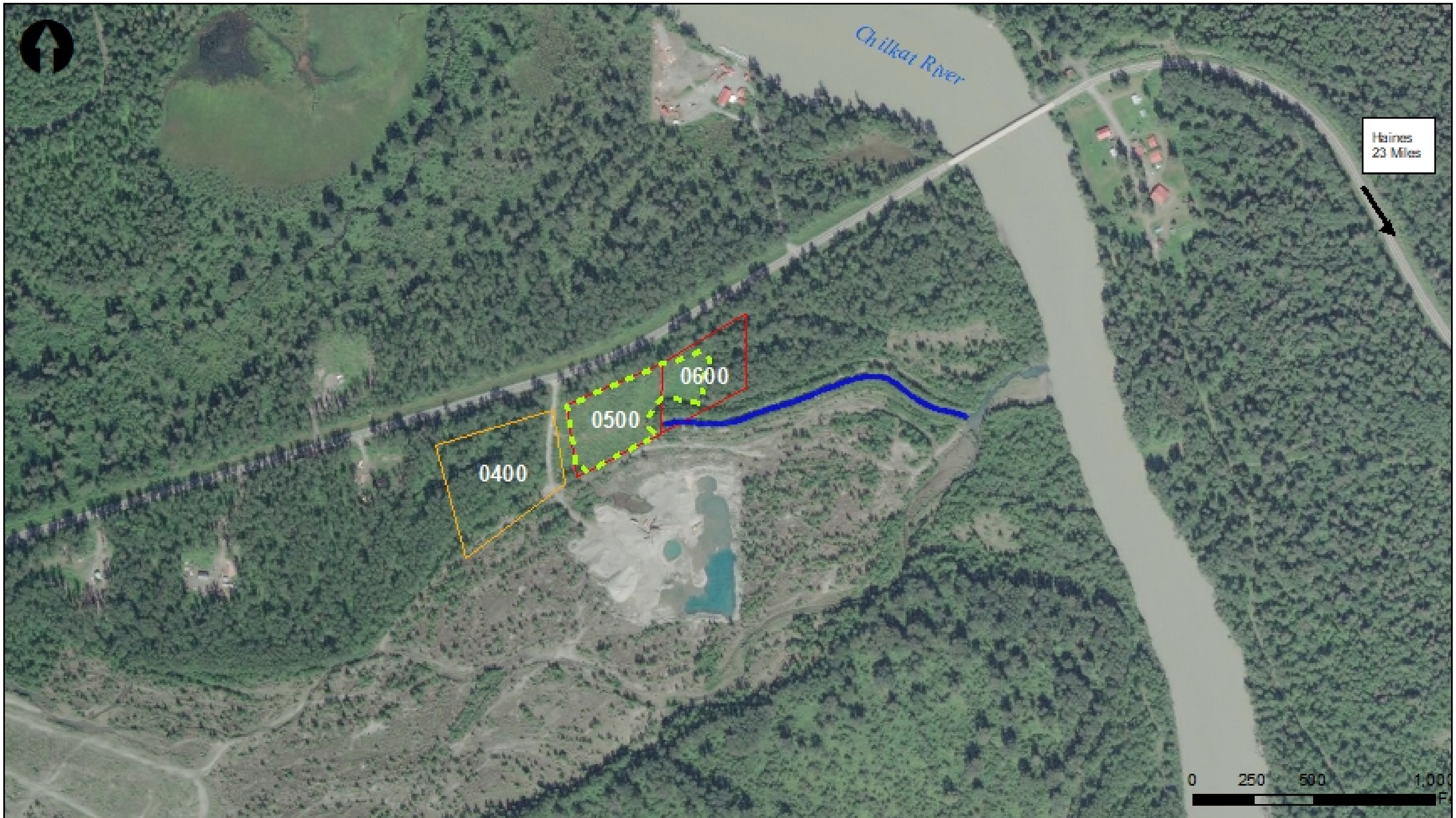
LEGEND

- PMP17.7 Project Impact Area
- Excavation Area
- Staging Area
- Temporary Construction Lane
- Approximate DOT ROW (150 feet)

Alaska District
U.S. Army Corps of Engineers
Anchorage, AK

Project Area
Pipeline Milepost 17.7
Haines-Fairbanks Pipeline FUDS Alaska
Project #: F10AK1016-14

Figure 2	Date: December 2019



LEGEND

Landfarming Area

Constructed Chum Spawning Channel

Landfarm Parcels

Initial

Additional (if needed)

Alaska District
U.S. Army Corps of Engineers
Anchorage, AK

Landfarm Location
Pipeline Milepost 17.7
Haines-Fairbanks Pipeline FUDS Alaska
Project #: F10AK1016-14

Figure 3 Date: January 2020

The land is relatively flat and there are no significant cultural resources known in these parcels. The site is largely shielded from view from the highway by a strip of forest vegetation, and does not have any active land uses. Adjacent land uses include a constructed chum salmon spawning channel, a gravel quarry, and a boat launch. ADF&G has indicated that although this channel is used for spawning by chum salmon, its productivity is relatively low compared to other constructed channels (Kanouse 2020). Depth to groundwater beneath these parcels is estimated to be 10-12 feet, based on observations by the current landowner.

The proposed landfarm would be surrounded by containment berms that would prevent runoff of contaminated water or sediments from entering the spawning channel. USACE's construction contractor would be required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) to ensure that decant water and soils disturbed during construction would not enter area waterways. USACE would sample soils at the landfarm parcels before depositing spoils, and again after removal of treated soils to determine if contamination was left behind. If the post-landfarm soil sampling were to indicate that contamination remains that exceeds the appropriate ADEC cleanup level, additional soil would be scraped from the landfarm area and the area would be retested until results indicate the site no longer exceeds cleanup levels. Contamination of native soils is considered unlikely since there is a relatively small amount of heavily contaminated soil at PMP 17.7, and most contamination levels are below ADEC's Maximum Allowable Concentrations (MACs). As a precaution, a Synthetic Precipitation Leaching Procedure (SPLP) test would be completed on the contaminated soils prior to placement on an unlined landfarm cell. In the event that soils fail the SPLP testing protocol, USACE may elect to construct small, lined landfarm cells to contain the heavily-contaminated soils during the treatment process. Additionally, the most heavily-contaminated soils may be shipped to a permitted landfill for disposal.

USACE would prepare a site-specific workplan for landfarm operation. A draft workplan would be submitted to ADEC for review and approval prior to any ground disturbance at the landfarm site. The workplan would incorporate relevant components of ADEC's Technical Memorandum, "Landfarming at Sites in Alaska" including completion of the landfarming checklist found as part of the memorandum (ADEC 2018).

Treated soil would be sampled to document natural attenuation. Treated soil that meets ADEC's Method Two Cleanup Levels may be re-utilized for fill or other uses, consistent with ADEC standards. These standards prevent treated soils from being placed in areas where they would be in contact with surface water or in sensitive habitats such as wetlands.

Disposal Alternative

If treatment of soil through landfarming or biopiles is not possible for some or all of the contaminated soil, that soil would be shipped by barge to the Lower 48 for disposal at a permitted landfill.

Because barging the excavated materials to sites in the Lower 48 would result in a larger environmental footprint and higher costs to the government than local disposal and treatment options, local disposal and treatment of contaminated soils through measures such as landfarming or use of biopiles is preferred. Up to 1,750 dump truck loads would be needed to transport contaminated soil to a suitable landfarming site within the Haines Borough. In the event that suitable landfarming or biopile sites are not identified, the USACE would contract for disposal out of state, which would result in the same number of trucks moving through Haines to the Port of Haines for loading onto barges.

2.2.7.2 Construction Details

Construction is expected to begin in the summer of 2020. Overall, the total estimated duration of construction is anticipated to be up to twelve weeks during spring, summer, and possibly fall of 2020.

Clearing and grubbing of vegetation along the edge of the Haines Highway and in the construction area would take approximately two weeks and would likely require the removal of several large-diameter trees near the source area and smear zone area. Approximately 1 acre of grubbing and tree or brush clearing is anticipated in preparation of the excavation effort, with an additional 1.5 acres assumed for equipment movement and staging requirements. USACE's construction contractor would be required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) and employ best management practices (BMPs) to ensure that water and soils disturbed during construction would not enter area waterways.

Excavation of contaminated soils and groundwater treatment is estimated to require approximately ten weeks and to require the use of several pieces of large machinery, listed below. Excavation backfill and application of treatment materials would also occur at this time. Treatment of over 1 million gallons of groundwater may be required during the excavation.

Excavated materials would be stockpiled within the proposed excavation areas to the extent practicable. Construction of a stockpile pad/equipment laydown area would be needed outside of the excavation areas and would most likely be installed on the west side of the highway south of the proposed excavation area. Temporary staging areas would be constructed adjacent to or nearby the project site, with the minimum footprint necessary. Staging areas would be removed after completion of the excavation effort. Site backfill and restoration would require up to two weeks.

A follow-on groundwater sampling event would take place in the fall of 2020. Groundwater monitoring is anticipated through 2023 to establish new groundwater trends for the site. These sampling events would be timed to occur twice per year each, and coordinated with the seasonal low and high water elevation events. Groundwater sample results would determine whether continued sampling and/or additional ORC or GAC injections are warranted.

Construction equipment and facilities likely to be required during construction include (along with the estimated number needed):

- Tracked hydraulic excavator (2)
- Loader with 5-cubic yard bucket (1)
- Side or end dump trucks (3-10)
- 1/2 ton trucks for contractor personnel (3)
- Connex container for tools and miscellaneous equipment (2)
- Skid-mounted granular activated carbon filtration station (1)
- Temporary lined soil staging cells, each approximately 2,500 square feet (2)
- Temporary lined water containment cells, each 5,000 square feet with capacity of 10,000 cubic feet (2)

Excavation would not encroach on the existing highway road prism. Clearing and grubbing would take place on the highway shoulder, but excavation and backfill would be completed only in areas sufficiently distant from the highway to ensure that the roadway embankment is not compromised.

One lane of the Haines Highway would be temporarily closed at various stages of the site work, such as truck loading, equipment transport, etc. Both lanes may also require brief, temporary closure to allow construction vehicle access and egress, with flaggers managing traffic movement during such closures.

Upon completion of construction, clean topsoil would be spread over the excavated areas. The site would be recontoured to match existing topography to the extent practicable. Previously vegetated areas that are disturbed due to the contaminated soil removal may require seeding with certified weed-free native seed mixture and fertilizer, based on applicable land management requirements.

2.2.7.3 Measures to Avoid or Minimize Impacts

Several measures have been identified throughout the impacts review sections that would avoid, minimize, or mitigate the impacts of the preferred alternative. These are summarized here by measures that apply generally and by resource category.

Air Quality	• Apply water from water trucks to excavation areas, access and haul roads, and staging areas as needed to control fugitive dust. • Trucks and heavy machinery would not idle unnecessarily during construction in order to limit emissions. • Construction workers would be provided with training and equipment needed to avoid impacts from volatilizing compounds.
Aesthetics and Visual Resources	• Minimize the area of disturbance, use minimum areas for staging, clearing, and grubbing. • Any trees removed over 4 inches diameter would be bucked to 8-foot lengths and stacked onsite or other suitable location for public use. All other cleared brush and smaller diameter trees shall be removed or chipped and spread. • Cleared and grubbed areas to be recontoured when construction is complete and may be seeded, as needed.
Biological Resources	• Avoid removing dead snag trees to the extent practicable, as they provide valuable avian nesting habitat. • Clearing and grubbing shall not occur between April 15 and July 15 unless work areas have been surveyed and found to be free of nesting birds. • No construction within 660 feet of active bald eagle nests.
Cultural Resources	• No cultural resources are known to be in the project area. However, coordination with the USACE archeologist during construction would ensure that any cultural resources unexpectedly encountered are adequately protected. • If cultural resources are inadvertently found, construction would immediately stop and not resume until approved by the USACE archeologist in coordination with the SHPO. All applicable laws and regulations would be followed.
Hazardous Waste	• Trucks and heavy machinery used for construction would take preventative measures to avoid introduction of additional contaminants into the area, primarily through the development of an Environmental Protection Plan. • Contaminated materials would be handled and transported in accordance with all EPA and ADEC requirements for such materials.
Land Use and Management Plans	• Land management stakeholders would be involved in the consultation and coordination phase of this study to ensure that no changes would result to land management plans.

Physical Resources	• Apply mulch or straw, or reseed exposed soil areas to reduce erosion and dust after completing work within a given area. Seed must be certified invasive-weed free. • Sequence construction to minimize soil exposure and erosion potential. • All non-contaminated topsoil excavated shall be segregated and stockpiled on site for use during site backfill and/or revegetation. • The contractor shall backfill the excavation areas only after it is verified by analytical results that all contaminated soil has been removed or as approved by USACE. • Clean and geotechnically stable backfill material shall be used and sourced locally, as available. The contractor shall backfill the excavation in two-foot lifts and use the excavating equipment to compact the fill.
Public Health and Safety	• A traffic control plan would ensure no delay for emergency response vehicles through the construction area. • Contaminant levels of water discharged during construction would be monitored to ensure that they do not exceed ADEC standards.
Recreation	• The traffic control plan would ensure minimized delay for visitors to the area. • There would be no staging or construction areas in known recreation or recreation access locations.
Transportation and Traffic	• A traffic control plan would be presented in the planning documents for review and acceptance by ADOT&PF personnel. At a minimum, flaggers would be used if any general travel lanes are temporarily closed. • All temporary access roads would be removed unless otherwise authorized by ADOT&PF to remain in place. • The existing access road to the site may be cleared or widened only to the minimum extent necessary for vehicle and equipment access to the site.
Water Resources	• Prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) and an erosion control plan. • Staging areas, storage sites (fuel, chemical, equipment, and materials), and potentially polluting activities would be identified and secured using methods identified in the SWPPP, in a manner that would preclude erosion into or contamination of the slough or wetland. • An Environmental Protection Plan would be developed. • Heavy equipment would be regularly inspected and cleaned. • All non-emergency maintenance of equipment would be performed off-site. • All waste (solid waste, hazardous materials, etc.) would be disposed off-site as regulated by the state. • All equipment, materials, supplies, and waste would be removed from project site when complete. • Erosion control measures would be applied to construction, staging, and access areas (e.g., silt fence or straw wattle installed where needed).

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Air Quality

3.1.1 Affected Environment

3.1.1.1 Air Quality

Air quality is regulated under the Federal Clean Air Act (42 CFR 7401-7671 et seq.). The U.S. Environmental Protection Agency (EPA) sets Federal clean air standards, and delegates monitoring and enforcement of these standards to state enforcement agencies. In Alaska, air quality standards are enforced by the ADEC Division of Air Quality.

ADEC designates areas that do not meet air quality standards as non-attainment areas, and applies restrictions on actions that can occur there. Areas that have previously not met air quality standards but which are currently meeting the standards are referred to as maintenance areas. The air basin that includes the project area meets all air quality standards, and is not designated as either a non-attainment area or a maintenance area.

ADEC monitors pollutants including PM10, which is fine particulate matter that can impact the human respiratory system at levels above 100, and PM2.5, which are even smaller particulates that can affect the lungs and heart. Records kept by ADEC for Air Quality Index (AQI) show that PM2.5 and PM10 periodically reach elevated levels at the Floyd Dryden Station, which is located in Juneau and is the nearest air quality monitoring station to the project area (ADEC 2019). Raw data between June 1 and July 8, 2019, indicate that levels of PM10 reached between 50-100 (moderate health effect) on six days, while PM2.5 reached between 50-100 on four days. All other days, both measurements were below 50 (good health effect). There were no measurements of PM10 or PM2.5 that reached unhealthy levels for the period evaluated (ADEC 2019).

3.1.2 Environmental Consequences

Impacts to air quality would be significant if the proposed action:

- Resulted in the reclassification of the air basin as non-attainment or a maintenance area,
- Resulted in particulate matter levels above Federal standards.

3.1.2.1 Alternative 1 No Action Alternative

Under the No Action Alternative, no further action would be taken to monitor the groundwater wells at PMP 17.7. Fewer groundwater well monitoring trips into the area would slightly reduce the potential for emissions from vehicles, but there would be no measurable benefit to air quality as a result. Conditions at the project site would remain as they currently are, resulting in no adverse effect on air quality.

3.1.2.2 Alternative 2 Institutional Controls and Monitored Natural Attenuation

Institutional controls (ICs) would include measures to install warning signs about contamination, administer land use controls, and continued groundwater monitoring. In comparison to current vehicle visits to the project site, the installation of signs would require one or two additional trips, resulting in an increase in vehicle emissions at the site. This increase would not be measurable and would have no effect on air quality. Groundwater monitoring would continue at current levels after that, resulting in no change to current air quality conditions.

3.1.2.3 Alternative 3 Source Excavation and Monitoring

Up to 1,750 dump truck trips to and from the project site and daily use of heavy machinery use would be required during the process of source excavation. Construction vehicles and machinery would emit particulate matter and constituent gases during the construction period, but there would be no permanent sources of emissions following completion of construction. The air basin in which the excavation and landfarming areas are found is in attainment for all criteria pollutants. Diesel particulate matter in the form of PM10 would be released during the 8-week construction period and during occasional landfarm maintenance actions, but such releases would disperse quickly and would remain below allowable thresholds.

Exposure of contaminated groundwater and soils to oxygen would allow organic contaminants to volatilize and be released into the atmosphere. Although the aerosolized compounds would disperse quickly and would not pose a threat to passersby, residents, or users of the area, construction workers would develop and follow a site-specific health and safety plan to prevent exposure to hazardous concentrations of site contaminants. Releases from volatile compounds would be addressed in the construction health and safety plan. Air quality impacts would be temporary and less than significant.

3.1.2.4 Alternative 4 Source Excavation, In-Situ Treatment, and Monitoring (Preferred Alternative)

Air quality impacts associated with Alternative 4 would be similar to those occurring under Alternative 3, but construction emissions would occur over a twelve-week period of time due to completion of the ORC and GAC application. This impact would be temporary and less than significant.

3.2 Aesthetics and Visual Resources

3.2.1 Affected Environment

The visual character of the project area is defined by native vegetation communities, the two-lane road of the Haines Highway, the rising slope of the Takshanuk Mountains to the east and the snow-capped peaks of the Takhin Ridge in the distance to the west. In the immediate project vicinity and to the east of Haines Highway, the Takshanuk Mountains rise steeply from sea level to over 5,000 feet in elevation. Deciduous trees such as black cottonwood and green alder line the Haines Highway on both sides, rising up the Takshanuk Mountains slope to the east and blocking the view of the Chilkat River Slough to the west. At the southernmost end of the project area, a green swath of wetland meadow extends south southwest nearly 1,000 feet until reaching the black cottonwoods lining the Chilkat River Slough. The area is a mosaic of emergent herbaceous plants, downed trees, and standing water. In the distance, the craggy and snow-capped peaks of the Takhin Ridge can be seen emerging above the treeline along the Chilkat River.

Over the course of a year, the aesthetics in the project area transition from lush green vegetation and fully leafed deciduous trees in the summer months, bare trees in the fall, to snow-covered wetlands in winter, to the spring melt with wildflower blooms. The natural beauty of the area was monumented in October 2009 when the Haines Highway was designated as a National Scenic Byway by the Federal Highway Administration (FHWA). Officially recognized as the Haines Highway – Valley of the Eagles, it is an extension of the Alaska Marine Highway System, which has in turn been recognized as one of the highest quality scenic pathways in the U.S., known as an All-American Road (FHWA 2019). Visitors to the area include local residents and the many visitors to the project area.

The Chilkat Bald Eagle Preserve is one of the most popular draws for wildlife viewing in the project region. The preserve is of national and world significance due to the annual congregation of thousands of bald eagles during the months between October and February. The Chilkat River provides a constant yearly water flow, providing ice-free spawning for late run salmon, which in turn provide a food source to bald eagles throughout the winter.

In the project area, the pipeline is below ground, and the contaminant spill has resulted in visual changes in the environment including a historical suppression and dieback of vegetation. In a 1972 report, it is noted that spills had suppressed woody vegetation growth at several sites along the HFP (USACE 1972). In the months following the PMP 17.7 leak, some alders died in the vicinity of the spill.

In April 2019, a rust-colored stain and puddles of standing water were observed along the base of the riverbank on a gravel bar of the Chilkat River Slough by members of USACE. The staining may be indicative of a reducing environment and anaerobic degradation of fuel from the spill. Some of the shallow pools of water contained a platy sheen indicative of bacterial decomposition of organics.

There are no overhead utilities along the highway in the excavation or landfarm areas. There are no historic structures or light sources in or near the project area. A green utility box of less than five feet in height is present to the east of the highway near PMP 17.7. Ongoing quarry operations south of the proposed landfarm area have resulted in visual impacts associated with bare earth and topographic alterations.

3.2.2 Environmental Consequences

An alternative would cause a significant visual/aesthetic impact if it would result in any of the following:

- Substantial effects on a scenic vista or byway;
- Substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within view of a state scenic highway;
- Substantial degradation of existing visual character or quality of a site and its surroundings; or
- Creation of a new source of substantial light or glare that would affect day or nighttime views in the area.

3.2.2.1 Alternative 1 No Action Alternative

Selection of the No Action Alternative would result in the ongoing presence of contaminants in the project area. To date, contaminants have affected the project site in two ways, by seeping into the bank of the Chilkat River Slough and causing a rust-colored stain on the bank during late winter/early spring, and historically through vegetation dieback. Vegetation has recovered since the original leak. Without addressing contaminants at the site, the visual indicators of the presence of contaminants along the bank of the slough during periods of low water would remain. However, the rust-colored staining is restricted to a small and localized area that is not visible from the Haines Highway, and is only visible during low water conditions in late winter and early spring. Furthermore, abundant healthy vegetation has regrown around the site and there are no visual cues of limited vegetation growth in the contaminated areas. No significant adverse effects would result to the visual character of the area and there would be no discernible effect on the overall aesthetic value of the Scenic Byway from the No Action Alternative.

3.2.2.2 Alternative 2 Institutional Controls and Monitored Natural Attenuation

Installation of contaminant warning signs in the project area would create a minor change in the aesthetics of the area. Signage would be designed to match appropriate visual resources guidance for a National Scenic Byway. There would be no significant effect from ICs in the project area.

3.2.2.3 Alternative 3 Source Excavation and Monitoring

This alternative would require a temporary increase in vehicle visits to the project area during project construction. It would also require the daily presence of heavy machinery such as excavators, loaders and trucks, as well as traffic flagging, signage, and numerous machinery operators, flaggers, and other personnel. There would also be a need for storage of heavy machinery overnight. This presence is anticipated to last for approximately eight weeks. After completion of excavation, the excavation site would be backfilled with clean materials sourced locally and allowed to return to natural conditions. Future monitoring of groundwater wells and surface water would occur up to twice per year, resulting in no change. If additional groundwater testing is required, heavy machinery may return to the area for a day or two.

This alternative would include construction of temporary soil stockpiles at the construction area as well as containment berms at the landfarm area. The presence of soil stockpiles would be a minor and temporary visual impact, and the containment berms at the landfarm area would be largely screened by the presence of trees found between the highway and the landfarm area. During operations, soils surface levels would be below the top of the containment berms, and would not be visible from the Haines Highway. There would be no significant effect to aesthetics from Alternative 3.

3.2.2.1 Alternative 4 Source Excavation, In-situ Treatment, and Monitoring (Preferred Alternative)

Effects resulting from this alternative would be similar to those for Alternative 3. The construction machinery, daily activity, and schedule would increase by up to four weeks to allow for introduction of in-situ treatment materials. All excavated and otherwise impacted areas would be backfilled and recontoured. The site would be allowed to naturally revegetate. There would be no significant long-term effect to aesthetics from Alternative 4.

3.3 Biological Resources

3.3.1 Affected Environment

Biological resources in the project area include terrestrial and wetland vegetation communities, fish and wildlife, habitat within the Chilkat River Slough, and the nearby Chilkat Bald Eagle Preserve (Figure 4).

3.3.1.1 Vegetation Communities

The 2.45-acre excavation and staging area includes 0.69 acre of black cottonwood forest, 0.46 acre of developed or disturbed habitat, and 1.3 acres of wetlands, described below in Section 3.3.1.3 (Table 2). The Alaska Center for Conservation Science's Land Cover and Wetlands mapper reports five distinct vegetation communities in or surrounding the project area (ACCS 2019a). These communities include the cottonwood forest that occurs in the project area as both open and closed canopy woodlands, as well as several other vegetation assemblages that surround the site, including Sitka spruce closed woodland, southern Alaska low-tall shrub, and southern Alaska mesic combined dwarf shrub and herbaceous communities.

LEGEND

- Snag
- Excavation Areas
- Approximate Pipeline Route
- Shrub/Herbaceous Wetland*
- Forested/Riparian Wetland*
- Approximate DOT ROW (150 feet)
- Alaska Chilkat Bald Eagle Preserve

*Based on a field assessment performed July 17, 2019. A formal wetland delineation has not been performed.

Alaska District
U.S. Army Corps of Engineers
Anchorage, AK

Habitat Types
Pipeline Milepost 17.7
Haines-Fairbanks Pipeline FUDS Alaska
Project #: F10AK1016-14

Figure 4 | Date: January 2020

Table 2. Vegetation types and acreages within the project area.

Habitat Type	Acres
Black Cottonwood Forest	0.69
Developed/Disturbed	0.46
Herbaceous Wetland	1.1
Forested Wetland	0.2

Source: ACCS 2019a

Invasive Plants

The Alaska Exotic Plants Information Clearinghouse (AKEPIC) is a database that provides geospatial information regarding non-native plant species in Alaska (ACCS 2019b). The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures and ranges from no threat (0) to major threat to native ecosystems (100).

Based on a geospatial search of the AKEPIC database, there are 11 invasive plants reported as possibly occurring in the project area (Table 3).

Table 3. Invasive plants in the project area.

Scientific Name	Common Name	Invasiveness
Leucanthemum vulgare	Oxeye daisy	61
Linaria vulgaris	Butter and eggs	69
Matricaria discoidea	Pineappleweed	32
Phleum pratense	Timothy	54
Plantago major	Common plantain	44
Poa annua	Annual bluegrass	46
Taraxacum officinale	Common dandelion	58
Trifolium hybridum	Alsike clover	57
Trifolium pratense	Red clover	53
Trifolium repens	White clover	59
Euphrasia nemorosa	Common eyebright	42

Source: ACCS 2019b

3.3.1.2 Wildlife

The Chilkat River and its associated riparian forests, wetlands, and open waters provide habitat to an abundant and diverse wildlife assemblage, including mammals, birds, amphibians, and fish. The sections below provide a review of the fish and wildlife that occur in the project area. For details regarding Federally-protected fish and wildlife, see Section 3.3.1.4. For fish and wildlife that are considered state species of concern, see Section 3.3.1.5.

Mammals that frequent the surrounding mountain ranges include large populations of moose (Alces alces), mountain goat (Oreamnus americanus), brown bear (Ursus arctos), and black bear (Ursus Euarctos americanus). Mink (Mustela vison), beaver (Castor canadensis), river otter (Lontra canadensis), and muskrat (Ondatra zibethicus) use wetland habitats along the Chilkat River. Marten (Martes americana), red squirrel (Tamiasciurus hudsonicus), flying squirrel (Glaucomys sabrinus) squirrels, lynx (Lynx canadensis), red fox (Vulpes vulpes), Sitka deer (Odocoileus hemionus sitchensis), and ermine (Mustela erminea) are found in the shrub and forests communities. Wolves (Canis lupus), coyotes (Canis latrans), and wolverines (Gulo gulo) occupy large ranges including the project area and a variety of habitat types.

Bats known to be in the region include the little brown bat (Myotis lucifugis), Keen's long-eared bat (Myotis keenii), long-legged myotis (Myotis volans), California bat (Myotis californicus) and the silver-haired bat (Lasionycteris noctivagans). Bats in Alaska achieve their highest species diversity in the coastal rain forests of Southeast Alaska, where they are resident year-round. It is possible these bats use habitats in the project area for foraging or roosting.

The Chilkat Valley is part of the Pacific Flyway, a major waterfowl migration route to and from the interior of Alaska and Canada. The estuaries and wetlands along these migration routes are important habitats for many species including swans, shorebirds, geese, and ducks. The Chilkat River basin offers resting and molting areas to many of these birds.

Invasive Wildlife

Invasive wildlife are species that do not occur naturally in the Alaska ecosystem, but have become established and now pose a competition threat to existing native species. Currently, there are no known invasive fish or wildlife in the project area. Species that could reach the region are shown in Table 4.

Table 4. Invasive wildlife species in the region.

Scientific Name	Common Name	Concern
Didemnum vexillum	Didemnum tunicate	Highly invasive marine colonial tunicate established in Whiting Harbor near Sitka, AK
Rattus norvegicus	Norway rat	Predation pressure on Alaska wildlife, carry parasites, pathogens and diseases, and occur throughout Alaska
Rana aurora	Red-legged frog	Alter wetland algae abundance, occur only on Chichagof Island, approximately 80 miles south of the project area

Source: ADF&G 2019a

3.3.1.3 Wetlands and Waters of the U.S.

The National Wetland Inventory (NWI) mapper shows the presence of palustrine, emergent, persistent and semipermanently flooded wetlands (PEM1F) in the project area (Table 5; NWI 2019). A reconnaissance-level evaluation of wetlands at the site found that these wetlands are more accurately classified as palustrine, emergent, persistent and permanently flooded wetlands (PEM1H), and palustrine, forest, broad-leaf deciduous, seasonally flooded wetland (PFO1C) in or immediately adjacent to the project area. Seasonally-flooded cottonwood forested wetlands and emergent herbaceous wetlands are found in the excavation area.

Table 5. NWI wetland types and acreages

Wetland Type	Acres
Herbaceous Wetland (PEM1H)	0.32
Seasonally Flooded Black Cottonwood Forest (PFO1C)	0.98

Source: Tetra Tech 2019

Plant species in these wetlands include swamp horsetail (Equisetum fluviatile), yellow pond lily (Nuphar luteum), beaked sedge (Carex rostrata), and marsh cinquefoil (Potentilla palustris). Black cottonwood were reported to comprise the dominant overstory around these wetlands. Forested wetlands were comprised of black cottonwood, alder, Nootka rose, and meadow horsetail.

3.3.1.4 Federally Protected Species

There are no fish or wildlife listed under the Endangered Species Act (ESA) as regulated by the USFWS that could occur in the project area (USFWS 2019). Although the short-tailed albatross (Phoebastria albatrus) is listed as occurring in the Haines Borough, it is primarily an offshore seabird and would not be expected to fly up the Chilkat River as far as the project area.

Essential Fish Habitat (EFH)

The Magnuson-Stevens Act requires protection of Essential Fish Habitat (EFH), which is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." EFH in Alaska is identified in the Fishery Management Plan for Salmon developed by the North Pacific Fishery Management Council and approved by the Secretary of Commerce (NPFMC 2012). EFH areas are identified by water body, as catalogued by the Alaska Department of Fish and Game (ADF&G) (2014). This catalog lists the Chilkat River system, which includes Chilkat River Slough, as EFH for Chinook, Chum, Coho, Pink, and Sockeye Salmon, as well as Cutthroat Trout, Dolly Varden, Eulachon, Pacific Lamprey, steelhead trout, and Whitefish (ADF&G 2014). The Alaska EFH Mapper maintained by the NMFS further specifies the life stages that EFH is available for when queried by location (NMFS 2018, Table 6).

Table 6. Salmon species and life stages with EFH in the Chilkat River System

Common Name	Scientific Name	Immature	Juvenile	Mature
Chinook Salmon	Oncorhynchus tshawytscha	x		
Chum Salmon	O. keta	x	x	x
Coho Salmon	O. kisutch		x	x
Pink Salmon	O. gorbuscha		x	x
Sockeye Salmon	O. nerka	x	x	x

Source: ADF&G 2014

EFH in the Chilkat River system, including Chilkat River Slough, is comprised of a variety of habitats, including spawning sites (suitable gravel and riffles), juvenile refugia (slower moving waters, deep ponds, areas that provide cover from predators), adult resting and refugia (deep pools, large woody debris and other cover areas). Food sources are provided by productive wetland and instream habitats and include insect larvae and adults, other small invertebrates, zooplankton, and smaller fish. Chilkat River Slough offers adult fish passage and resting and refugia at moderate to high flows, and juvenile refugia and downstream passage at lower flows.

3.3.1.5 State Species of Concern

ADF&G identifies, monitors and manages the state species of fish and wildlife concern. ADF&G has prepared an Alaska Wildlife Action Plan, which provides an assessment of conservation concerns by species and prioritizes conservation actions and research (ADF&G 2015). In addition, ADF&G compiles a list of fish stocks that are of concern (ADF&G 2019b).

Numerous species have been listed in the Wildlife Action Plan as species of greatest conservation need for the southeast Alaska bioregion (ADF&G 2015). These include all of the Pacific salmon species that occur in the Chilkat River, as well as Pacific Lamprey, Dolly Varden, rainbow trout, Coastal Cutthroat Trout, and steelhead (Tables 6 and 7). In addition, the ADF&G identified Chinook Salmon in the Chilkat River as a particular management concern to the Alaska Board of Fisheries in 2017, since the stock is unable to reach escapement objectives (ADF&G 2019b). A search of the ACCS Conservation Data Portal shows that four additional species of concern have been observed in the project area (ACCS 2019c, Table 7). However, recorded observations are not recent (Table 7). All state species of concern for the project area are shown in Table 7.

Table 7. State of Alaska species of concern for the project area

Common Name	Scientific Name	Date of Most Recent Observation
Fish		
All Pacific Salmon listed in Table 6	Oncorhynchus spp.	Current
Pacific Lamprey	Entosphenus tridentate	Current
Dolly Varden	Salvelinus malma	Current
Rainbow trout and steelhead	O. mykiss	Current
Coastal Cutthroat Trout	O. clarki clarki	Current
Wildlife		
Alexander Archipelago wolf	Canis lupus ligoni	Unknown
Olive-sided flycatcher	Contopus cooperi	1991
American water shrew	Sorex palustris	1981
Rusty blackbird	Euphagus carolinus	1985

Source: ADF&G 2019b

3.3.1.6 Alaska Chilkat Bald Eagle Preserve

The Preserve was established in 1982 (Alaska Statutes § 41.21.610 – 630). The nearly 49,000-acre Preserve is managed under the guidelines of the Preserve Management Plan (ADNR 2002b). The statute established the Preserve as part of the state park system with the primary purpose of protecting and perpetuating the Chilkat bald eagles and their essential habitats. The Preserve is also statutorily intended to (1) protect salmon and their habitats, (2) provide continued opportunities for research, study and enjoyment of bald eagles and other wildlife, (3) protect water quality and quantity, (4) provide for other public uses consistent with the primary purpose, and (5) provide for the continued traditional and natural resource-based lifestyle of the people living in the general areas.

Bald eagles inhabit the forests along the Chilkat River valley where 200-400 adults may be year-round visitors (ADOT&PF 2019). During the months of October to December, visiting bald eagles congregate along the Chilkat River in numbers that have reached as many as 4,000, and include individuals that have traveled from as far as Washington State (ADF&G 2019c). During this time of the year, when most other rivers and lakes have iced over, the low winter flows of the Chilkat River are augmented by relatively warm groundwater seeps that rise from the alluvial fan of the Tsirku and Chilkat Rivers confluence (Bugliosi 1988). These warm seeps open leads between iced sections of the rivers and provides access to salmon in the free flowing waters well into the winter months. Late-season run salmon draw thousands of bald eagles to the stretch of the Chilkat River between Haines Highway MP 18-21, designated as a State Critical Habitat Area and known as the Council Grounds (ADF&G 2019c). The latest salmon spawning timing in southeast Alaska occurs in the Chilkat River from September through January (NPFMC 2012). Eagles remain at the Council Grounds through February to feed on remaining salmon carcasses. The nearest bald eagle nest is approximately 0.5 mile from the project area.

3.3.2 Environmental Consequences

Biological resources may be directly affected by direct disturbances associated with excavation and transportation of contaminated materials, loss of habitat, and direct exposure to toxic levels of contaminated materials. They may also be indirectly affected if project actions result in loss of prey species or other conditions that affect their ability to forage or reproduce.

An issue for evaluation in this EA is whether the proposed action would increase the potential for POL contaminants in the soils and groundwater of the study area to accumulate in the tissues of plants, fish, wildlife, or humans that may be in the area. This process, referred to as bioaccumulation, is the process through which certain types of contaminants that are ingested by plants, fish, or wildlife are stored in their tissues and passed along to organisms higher on the food chain, resulting in concentrations of these substances in the higher-order predators and consumers. These types of impacts are particularly important given that the project area is adjacent to the eagle preserve. The project area is also within a region that may be used for subsistence hunting and gathering by local tribes.

Impacts associated with biological resources could occur if an alternative resulted in any of the following:

- Loss or degradation of plant or animal communities;
- Destruction or alteration of habitat;
- Interruption of normal breeding behavior; or
- Introduction or spread of an invasive species.

3.3.2.1 Alternative 1 No Action Alternative

If there are no remediation measures implemented at the site, POL contamination present in soil and groundwater would persist for the foreseeable future. The leak occurred over 50 years ago and vegetation in the area has recovered. Trees with stunted growth patterns are remnants from the original spill in 1968, and are localized. No new adverse effects to vegetation are anticipated.

POL contaminants that are found in the soil may adversely affect soil flora and fauna by reducing the available oxygen and access to nutrients in the soils. Soil flora and fauna, including fungi, algae, lichen, or invertebrates, have likely adapted to low concentrations of the petroleum contaminants found in the affected area, but suppression of populations of these species is likely in areas with high concentrations of contaminants. These impacts would not be likely to have a significant adverse effect on the surrounding ecosystem, since the area of contamination is relatively small and localized.

If contaminants move into the water column and the sediment of the Chilkat River Slough in significant concentrations, it is possible that macroinvertebrates, juvenile fish, insect larvae, and other biota in the waters and sediments could be adversely affected. Contaminants that may be present in the project area groundwater and soils include benzene and xylene, which can produce a narcotic (sleepy) effect in organisms with which they come into contact. This effect could lead to impaired ability to forage, avoid predators, or navigate out of hazardous currents. However, the area of groundwater seep contamination is small and localized, and if seep water reaches the slough it would quickly become diluted to non-detectable concentrations that are harmless. Although xylenes have been classified as non-toxic to moderately toxic to fish, the concentration of total xylenes measured in the groundwater seep (0.12 mg/L) is about an order of magnitude lower than an acutely toxic concentration of p-xylene (the most toxic xylene isomer) in rainbow trout (2.6 mg/L) (Duan 2017). The amount of contaminated seep water would be very small relative to normal flows in Chilkat River Slough, so dispersal and dilution would be rapid. Therefore, these types of effects are unlikely to affect aquatic species and any impacts would be less than significant.

Although it is possible that salmon or other fish and wildlife species are consuming prey items that have been exposed to contaminants in the slough, it is unlikely that the contamination is resulting in impacts associated with bioaccumulation through the aquatic food chain. This determination is made based on the following three reasons: (1) The contaminants of concern in the groundwater seep do not bioaccumulate, meaning that they are not substances that are stored in the tissues of living beings. As indicated in EPA guidance, benzene and xylenes are not bioaccumulative, therefore uptake of site contaminants into aquatic organisms that might be used as food, such as fish, is not a factor of concern (US EPA 2018). Bald eagles that rely on salmon consumption in the area would not be exposed to site contamination, nor are they likely to experience any noticeable decrease in availability or quality of food items, for the reasons explained above, (2) The contaminated portion of the bank of the slough is very small compared to the overall availability of foraging area in the Chilkat River and Chilkat River Slough, and (3) Contaminants have not been detected in slough surface water above human health or ecological screening levels.

3.3.2.2 Alternative 2 Institutional Controls and Monitored Natural Attenuation

This alternative would result in similar impacts as the No Action Alternative. Installation of signs would require minor and temporary activity at the project site, likely lasting only two to three days. No vegetation would be removed to install signage. This alternative would result in a small amount of fill in wetlands where signposts would be placed, but this effect would be minor.

3.3.2.3 Alternative 3 Source Excavation and Monitoring

The presence of heavy machinery and personnel could disturb terrestrial wildlife species, causing birds and mammals to disperse. Construction would occur during avian nesting periods and may affect birds protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). Any necessary clearing/grubbing of brush or trees would occur outside the spring breeding season, thereby avoiding direct impacts to MBTA-protected species to the extent practicable. In the event that clearing is necessary within the spring breeding season, a qualified professional biologist would survey the area for nesting birds prior to clearing. The closest mapped eagle nest is approximately 0.5 mile away, and would not be affected by noise or other types of disturbance during construction.

Common wildlife species that may forage at the site, including moose and bear, would likely avoid the site during the construction period. As this effect would be temporary and would not affect any sensitive habitat types such as wintering grounds or calving areas, and there are adequate alternative forage opportunities in the immediate vicinity, this effect would be less than significant.

The project footprint does not extend into the Chilkat River Slough. However, the initial disturbance of soils in the excavation area may cause a temporary spike in movement of contaminants through the groundwater towards Chilkat River Slough, and soil disturbance in the excavation area could increase the risk of erosion and deposition of sediment into Chilkat River Slough. Increased turbidity in Chilkat River Slough would reduce habitat quality for juvenile fish by reducing visibility and possibly impairing respiration. Increased sedimentation could affect anadromous fish spawning by depositing fines in redds and possibly reducing the amount of dissolved oxygen that is available to developing eggs. These impacts would be addressed by implementation of a SWPPP, which would specify measures to control runoff, contain sediments within the construction area, and reduce the potential for erosion. The project site would also be recontoured after the excavation and backfilling was completed, and erosion control measures such as layers of straw or jute netting would be installed to keep eroded soils from depositing into Chilkat River Slough.

Excavation would result in temporary fill of emergent and forested wetland vegetation. The project area has not been delineated for jurisdictional wetlands, but the presence of standing water in vegetated portions of the project site strongly suggests that wetlands are present. Where backfill is placed in excavations that have extended into wetlands, that fill would constitute a discharge under Section 404 of the Clean Water Act (CWA). The USACE does not issue itself CWA permits for its activities, but incorporates by reference (in accordance with 40 CFR 1502.21) the analyses under NEPA and CWA

Section 404(b)(1) performed for the issuance of Nationwide Permit No. 38 Cleanup of Hazardous and Toxic Waste. The State of Alaska certified the full list of Nationwide Permits (NWPs) issued by the USACE in 2017, so no separate Section 401 Certificate of Reasonable Assurance is required for such removal actions.

The removal of chemical contaminants from the project site is a remedial action that benefits the overall environment. The USACE anticipates no long-term significant loss to local wetland habitat or function as a result of the proposed project under this alternative. Natural revegetation is anticipated to occur rapidly in new soils and over time there would be no discernible change in vegetation or wildlife use of the area.

Operation of the landfarm may result in noise and disturbance that would cause wildlife to avoid the area. The two parcels that would initially be used at the landfarm site have been previously cleared of trees, and there are no significant biological resources within them. Parcel 0400, which may be used in the event that additional landfarm capacity is needed, has not been cleared of trees and may host nesting birds during the spring and summer months. If this parcel is needed for landfarming and could not be cleared during the non-nesting season, it would be surveyed for the presence of nesting birds by a qualified biologist prior to clearing. If active nests were identified, an appropriate buffer would be installed around the nest to reduce potential impacts to mating birds or chicks.

Given that erosion would be controlled by measures included in a SWPPP covering the excavation and landfarming areas, and because a minimum 50-foot buffer would be maintained between the landfarm area and the constructed chum salmon spawning channel, the potential for sedimentation or turbidity in this water body would be minimal, and this impact would be less than significant.

There would be no significant impacts to biological resources as a result of Alternative 3.

3.3.2.4 Alternative 4 Source Excavation, In-situ Treatment, and Monitoring (Preferred Alternative)

Effects to fish and wildlife resources resulting from this alternative are comparable to Alternative 3. Construction impact avoidance measures would ensure that no sensitive fish or wildlife species would be substantially disturbed. Direct impacts to wetlands would be the same as under Alternative 3.

The treatment materials planned to be applied include ORC and GAC. These materials are non-toxic and are intended to promote the growth of aerobic bacteria populations in the contaminated area and mitigate migration of contaminated groundwater toward the Chilkat River Slough. Surfactants, nutrients, and bacterial augmentation would not be used for treatment because of the potential for water quality impacts in wetland areas and waterways. The addition of treatment materials to the backfill soils during construction and/or additional use periodically in the future through injection would temporarily elevate oxygen concentrations in the subsurface but would not result in significant adverse effects to biological resources.

3.4 Cultural Resources

3.4.1 Affected Environment

There are no known cultural resources within the project's Area of Potential Effect, and none that have been found to be eligible for listing under the National Register of Historic Places (NRHP). The nearest eligible property is the Chilkat River-Haines Highway Bridge, located at MP 23.8. Although construction equipment would pass over this bridge, it is designed for such use, and it would not be adversely affected by the proposed action. A letter stating the finding of "No historic properties affected" (36 CFR

800.4(d)(1)) was prepared by the USACE and concurred with by the SHPO as part of the consultation and coordination for this EA (Appendix A).

3.4.2 Environmental Consequences

As there are no known cultural resources in the project area, no impacts to cultural resources are anticipated as a result of any of the evaluated alternatives. During construction, if any previously unknown cultural resources were encountered, construction would immediately cease and the appropriate agencies would be notified. USACE would consult with the SHPO, the Chilkoot Indian Association and Chilkat Indian Village, and other agencies as needed to determine how to address the newly-discovered cultural resources. Specific measures that the USACE would implement if previously unknown historic or prehistoric properties were encountered during excavation are listed in Section 2.2.7.3. Impacts associated with subsistence uses and socioeconomics are discussed in Section 3.5 below.

3.5 Economy and Subsistence, Socioeconomics and Environmental Justice

3.5.1 Affected Environment

Due to the regional importance of subsistence activities, this characterization of socioeconomic conditions in the study area considers both the wage economy and subsistence economy in the Haines Borough. Under Alaska and Federal law, subsistence is defined as customary and traditional, non-commercial uses of wild resources for a variety of purposes. The uses include harvest and processing of wild resources for food, clothing, fuel, transportation, construction, arts, crafts, sharing and customary trade. Subsistence supports a major part of Alaska's economy and culture, where traditional cultures and subsistence economies operate alongside the modern wage economy. Thus, while the statewide volume of subsistence harvest may be small relative to commercial harvest for valuable resources such as salmon, the need to preserve resource quality and availability is highly important to the viability of traditional cultures and subsistence economies.

Key data sources in this analysis include the U.S. Census American Community Survey (ACS), the Community Database Online (CDO) published by Alaska Department of Commerce, Community, and Economic Development, the Community Subsistence Information System (CSIS) published by the ADF&G, and socioeconomic products from the Alaska Department of Labor and Workforce Development Research and Analysis division.

This section is organized into three primary subsections. The socioeconomic profile focuses on demographics and the wage economy (employment and income). The subsistence discussion characterizes subsistence activity and harvest in the study area. The section concludes with an assessment of the presence of minority and/or low-income populations in the study area to support evaluation of compliance with environmental justice regulations when evaluating the alternatives.

For this analysis, the geographic region of interest was limited to the Haines Borough, with emphasis on the communities nearest the project site, including Klukwan, Covenant Life, Mosquito Lake, and Haines, referred to in subsequent sections as being in the project vicinity (Figure 5). In the following subsections, data is presented at the community level for the various socioeconomic indicators. Additionally, an aggregated project vicinity data point is provided based upon a weighted average across the communities comprising the project vicinity. Given that Haines is the largest community in the vicinity, it has the largest effect on these weighted results.

3.5.1.1 Socioeconomic Profile

Setting

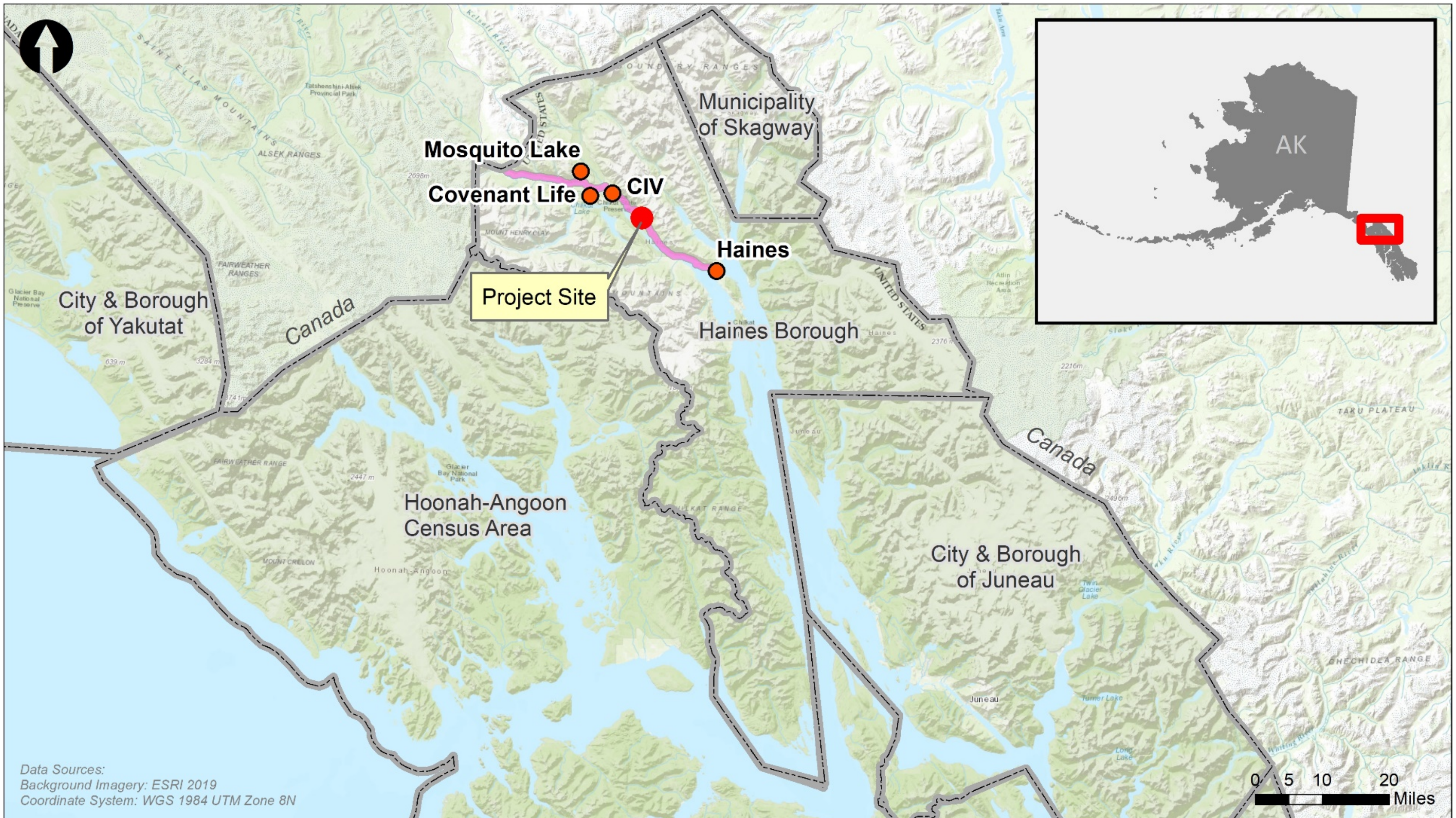
The socioeconomic study area is the Haines Borough and Native lands within the same geographic extent. The study area emphasizes the geographic areas along the Haines Highway and nearest to the project site, which is 15 miles north of Haines along the Haines Highway. The borough is a consolidated municipal government that represents several unincorporated communities. While there are no incorporated cities in the borough, there are unincorporated communities at Haines, Covenant Life, Lutak, Mud Bay, Mosquito Lake, and Excursion Inlet (a major regional fish cannery). Haines is the largest community in the borough, with about 70% of its total population. The communities of Covenant Life and Mosquito Lake are located further north along the highway, 12 and 13 miles from the project site, respectively. While they are within the borough, Lutak, Mud Bay, and Excursion Inlet are not located along the Haines Highway and are given less emphasis in this analysis.

There are two recognized tribal groups in the area. The Chilkoot Indian Association is a Federally-recognized tribe located within the community of Haines, whose socioeconomic characteristics are included as part of the community of Haines and the larger borough for Census purposes because the tribe is incorporated into the borough's jurisdiction. The second tribal group, the Chilkat Indian Village (CIV), is a traditional Tlingit village and a Federally-recognized tribe whose Native lands are not incorporated into the larger borough. CIV lands are surrounded by, but not part of, the Haines Borough, and as such its socioeconomic characteristics are tabulated separately from the borough in the Census. CIV is located six miles north of the project site along the Haines Highway.

These communities have a rural setting, with the only road access via the Haines Highway. Residents in the area enjoy ready access to public lands for subsistence, hunting, fishing, and recreation (AKDOT 2016).

Population and Housing

The Alaska Population Estimates and the Population Projections datasets are maintained and published by the State of Alaska Department of Labor and Workforce Development Research & Analysis. Published data through 2018 (AKDLWD 2019) was reviewed to compile population estimates for Haines Borough and CIV since 2010. Population projections for the region are published at the borough level, which is expected to experience a 20% decline in total population over the next twenty years. While job growth in remote regions of the state is often slow, this projected decline is also informed by larger regional and statewide trends associated with the Alaska Recession, which has resulted in regional job losses and net outmigration, especially among working age residents of larger communities in Southeastern Alaska, such as Juneau (Southeast Conference 2018). These trends are also reflected in population age. The median age for the population in the vicinity of the project is generally high when compared to the statewide median age of 33.9. The median ages in the communities of Haines, CIV, Mosquito Lake, and Covenant Life are 45, 57.5, 58, and 70.4, respectively (ACS 2019). Table 8 presents population history for the 2010 to 2018 period.



LEGEND

- Communities
- Haines Highway
- Borough and Census Area boundaries

Alaska District
U.S. Army Corps of Engineers
Anchorage, AK

Socioeconomic Study Area
Pipeline Milepost 17.7
Haines-Fairbanks Pipeline FUDS Alaska
Project #: F10AK1016-14

Figure 5	Date: January 2020

Table 8. Population History, 2010-2018

Geography	Population								
	2010	2011	2012	2013	2014	2015	2016	2017	2018
Haines Borough	2,508	2,612	2,612	2,531	2,551	2,492	2,464	2,458	2,480
Haines	1,713	1,799	1,822	1,808	1,811	1,766	1,738	1,735	1,755
Mosquito Lake	309	314	293	269	266	255	257	266	280
Mud Bay	212	208	211	198	184	192	195	204	206
Covenant Life	86	84	83	64	72	71	58	69	53
Lutak	49	50	56	67	79	65	71	62	60
Excursion Inlet	12	16	12	8	9	9	14	12	13
Dispersed	127	141	135	117	130	134	131	110	113
CIV	99	100	96	96	88	96	98	96	98
Borough and CIV	2,607	2,712	2,708	2,627	2,639	2,588	2,562	2,554	2,578
Project Vicinity*	2,207	2,297	2,294	2,237	2,237	2,188	2,151	2,166	2,186
Source: AKDLWD 2019. *Includes Haines, Mosquito Lake, Covenant Life, and CIV.									

Table 9 characterizes housing in the study area in terms of total housing units, owner-occupied rate and vacancy rate. Households and families are characterized in Table 10 in terms of total households, proportion of family households, and average household and family size. As shown in the tables, the community of Haines exhibits vacancy and owner-occupied rates approaching statewide levels, which is expected given Haines' larger relative size. The more remote communities near the project site tend toward higher vacancy rates. When considering households and families, the data shows that the communities in the vicinity have lower average household and family sizes that observed at the state level. This is indicative of a generally older population with fewer families, which is consistent with the higher than average median age in the region previously noted.

Table 9. Housing Units

Geography	Total Housing Units	Vacancy Rate (%)	Owner-occupied Rate (%)
State of Alaska	313,937	19.6	63.7
Haines Borough	1,619	32.9	70.7
Haines	1,024	21	68.1
Mosquito Lake	165	29.7	100
Mud Bay	138	58.7	82.5
Covenant Life	47	51.1	56.5
Lutak	39	30.8	100
Excursion Inlet*	11	100	No data
CIV	65	50.8	75.0
Project Vicinity**	1,301	24.7	72.1
Source: AKDLWD 2019. *Excursion Inlet's main use is a cannery. The seasonal nature of the population distorts housing occupancy information. **Rates are weighted by total housing units and include Haines, Mosquito Lake, Covenant Life, and CIV.			

Table 10. Households and Families

Geography	Total Households	Family Households (%)	Average Household Size	Average Family Size
State of Alaska	252,536	66.6	2.81	3.39
Haines Borough	1,087	55.2	2.27	2.84
Haines	809	54.3	2.26	2.88
Mosquito Lake	116	34.5	2.06	2.98
Mud Bay	57	82.5	2.12	2.36
Covenant Life	23	56.5	1.57	2.00
Lutak	27	100	5.44	4.00
Excursion Inlet*	0	-	-	-
CIV	32	59.4	1.94	2.47
Project Vicinity**	980	52.2	2.21	2.86

Source: AKDLWD 2019. *Excursion Inlet's main use is a cannery. The seasonal nature of the population distorts housing occupancy information. **Rates and averages are weighted by total households and includes Haines, Mosquito Lake, Covenant Life, and CIV.

Race

The American Community Survey 2017 dataset (ACS 2019) provides the most up-to-date race and ethnicity information for the study area. Table 11 presents a summary of race by community and at the borough and community levels. The data in the table reflects the Census definition for "race alone or in combination with one or more races," which provides an inclusive summary of race by reflecting that some people identify with more than one race. Note that the U.S. Census Bureau defines Hispanic or Latino populations as an ethnicity. Because just 2.8% of the borough identifies as having Hispanic or Latino ethnicity, this data is not presented in the table.

Table 11. Summary of Race

Geography	Population Race (%)*					
	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some other race
State of Alaska	72.8	4.9	19.6	8.1	1.9	1.9
Haines Borough	86.4	1.0	12.6	4.9	0.4	1.5
Haines	84.6	1.4	15.1	4.2	-	1.0
Mosquito Lake	100	0	9.2	0	0	0
Mud Bay	100	0	0	8.3	0	0
Covenant Life	100	0	36.1	0	0	0
Lutak	100	0	0	0	0	0
Excursion Inlet	56.5	0	8.7	23.9	23.9	0
CIV	17.7	0	88.7	0	0	0
Project Vicinity**	83.9	1.1	18.2	3.4	0	0.8

Source: ACS 2019. *Reflects populations identifying as one or more races; rows may sum to over 100%.
**Average weighted by population that includes Haines, Mosquito Lake, Covenant Life, and CIV.

As summarized in the table, the borough has a higher proportion of white residents and lower proportion of Alaska Native residents as compared to statewide data. However, when examining those populations near the project site, the proportion of Alaska Native residents approaches one-fifth of the population, in the same range as seen at the state level.

Employment and Income

Discussion of employment and income relies upon data from the American Community Survey (ACS 2019). The cash economy in the Haines borough has multiple key drivers, such as tourism, seafood processing, mining, forest products, healthcare, and government services. For example, Haines is a port of call for Alaskan cruises, and the Haines Highway and adjacent natural resources draw tourists to the region throughout the year, supporting jobs across the retail, recreation, accommodation and other related industries. This section characterizes regional employment and income in terms of employment status, occupation (broad categories for type of work), industry, and class of worker (sector).

Table 12 presents unemployment and income information for the civilian labor force (civilians who are either employed or unemployed but desire to work). Given small sample sizes and data availability, this information is most consistently available only for the communities of Haines and CIV. As shown in the table, median household and family income for residents near the project site are marginally lower than at the state level, though a lower unemployment rate contributes to per capita income which marginally exceeds the state level. However, the data by community shows that the low unemployment and higher relative income levels in Haines contrast with a high unemployment rate and lower relative income levels in CIV, as compared to the borough and state.

Table 12. Employment Status and Income by Community

Geography	Civilian Labor Force	Unemployment Rate (%)	Median Household Income ($)	Median Family Income ($)	Per Capita Income ($)
State of Alaska	383,593	7.70	76,114	88,949	35,065
Haines Borough	1,477	2.7	70,640	75,000	35,907
Haines	1,154	3.5	76,506	76,920	38,056
Mosquito Lake	53	0	36,765	not reported	27,723
Mud Bay	64	0	120,568	121,705	49,809
Covenant Life	10	0	not reported	not reported	28,169
Lutak	66	0	not reported	not reported	7,848
Excursion Inlet	46	0	not reported	not reported	69,735
CIV	32	12.5	42,500	54,375	23,827
Project Vicinity*	1,249	3.6	73,928	76,312	37,174
Source: ACS 2019. *Average weighted by labor force that includes Haines, Mosquito Lake, Covenant Life, and CIV.					

Table 13 presents a summary of employment by occupation, and Table 14 presents a summary of employment by industry. Finally, Table 15 presents the employed population by class of worker. At the borough level, the proportion of employment by occupation is consistent with statewide trends, with small variations at the margin. However, this similarity is largely driven by the effect of Haines, a larger community with a more diverse cash economy. Within other individual communities, occupations differ from the average. In CIV, for example, there is higher prevalence of Service occupations and a much lower prevalence of Sales and office occupations. This is similarly described when considering class of worker in CIV, which shows a much larger proportion of self-employed workers, moderately larger proportion of government employees, and much lower proportion of private wage/salary works, when compared to the borough or the state. Finally, the employment by industry data reflects the remote and rural nature of the communities outside of Haines, with fewer total jobs spread across a smaller set of industries, and lack of activity in infrastructure-heavy industries such as construction, manufacturing, and wholesale trade, as well as lack of activity in professional industries such as information, finance, etc. Industries instead tend to focus on service of residents (public administration, education), as well as service of tourists (arts, recreation, retail).

Table 13. Occupation by Community

Geography	Employment by Occupation (%)				
	Management, business, science, and arts occupations	Service occupations	Sales and office occupations	Natural resources, construction, and maintenance occupations	Production, transportation, and material moving occupations
State of Alaska	36.7	17.3	22.7	12.3	10.9
Haines Borough	36.6	18	21.7	11.2	12.5
Haines	36.5	15.9	26.8	8.6	12.2
Mosquito Lake	37.7	22.6	17	0	22.6
Mud Bay	89.1	0	0	0	10.9
Covenant Life	0	100	0	0	0
Lutak	40.9	0	0	59.1	0
Excursion Inlet	32.6	32.6	10.9	10.9	13
CIV	39.3	32.1	7.1	10.7	10.7
Project Vicinity*	36.3	17.3	25.7	8.2	12.5
Source: ACS 2019. *Average weighted by labor force that includes Haines, Mosquito Lake, Covenant Life, and CIV					

Table 14. Industry by Community

Geography	Employment by Industry (%)												
	Agriculture, forestry, fishing,	Construction	Manufacturing	Wholesale trade	Retail trade	Transportation and warehousing,	Information	Finance, insurance, real estate, rental	Professional, scientific,	Educational services, health	Arts, entertainment,	Other services, except public	Public administration
State of Alaska	5.2	7.4	3.6	1.9	11	8.1	2.1	3.7	8.4	23.7	9.1	4.2	11.6
Haines Borough	9.2	7	3	1.2	13.5	4.8	1.5	3.4	9	24	16.2	0.7	6.4
Haines	11	9.1	0.2	0.3	16.3	5.8	0.9	2.5	10.1	24.4	11.1	0.1	8.3
Mosquito Lake	0	0	0	0	22.6	0	22.6	0	0	15.1	22.6	17	0
Mud Bay	0	0	10.9	21.9	0	0	0	0	18.8	37.5	10.9	0	0
Covenant Life	0	0	0	0	0	0	0	0	0	100	0	0	0
Lutak	0	0	0	0	0	0	0	0	0	0	100	0	0
Excursion Inlet	21.7	0	34.8	0	0	8.7	0	0	13	10.9	10.9	0	0
CIV	0	0	0	0	0	7.1	0	0	14.3	32.1	10.7	21.4	14.3
Project Vicinity*	3.5	2.9	0.1	0.1	12.7	4.3	7.8	0.8	8.2	24	14.8	13.1	7.6
Source: ACS 2019. *Average weighted by labor force that includes Haines, Mosquito Lake, Covenant Life, and CIV													

Table 15. Class of Worker by Community

Geography	Employment by Class of Worker (%)			
	Private wage and salary workers	**Government workers**	**Self-employed**	**Unpaid family workers**
State of Alaska	68.3	25.2	6.3	0.2
Haines Borough	65.7	21.1	12.4	0.8
Haines	63.3	24.3	12.4	0
Mosquito Lake	62.3	15.1	22.6	0
Mud Bay	32.8	37.5	10.9	18.8
Covenant Life	100	0	0	0
Lutak	100	0	0	0
Excursion Inlet	100	0	0	0
CIV	32.1	35.7	32.1	0
Project Vicinity*	52.2	25.2	22.6	0

Source: ACS 2019. *Average weighted by labor force that includes Haines, Mosquito Lake, Covenant Life, and CIV

3.5.1.2 Subsistence

In the Native communities of southeast Alaska, subsistence economy participants continue a tradition of harvest and use of wild resources that predates the introduction of cash income. In the modern era, beginning in the late 1700s, the economies of Native communities have undergone a progressive transformation, incorporating cash income into the subsistence-based system. Southeast Alaska communities settled primarily by non-Native immigrants have also depended on a mix of subsistence use of wild resources and cash income. Cash income in most southeast Alaska rural communities is limited and intermittent, a function of a relatively stagnant population and related slow growth in jobs. Cash income often supports the purchase of fuel and equipment that are used to engage in subsistence activities. Subsistence harvests have been found to fill essential food needs in most rural communities in the region. These harvests are also customarily shared among community residents and between members of different communities. Some subsistence products or related byproducts are traded and bartered within the region. Subsistence harvests are not geared toward market sale or accumulated profit, though there is a cash market for the sale of handmade Native art, which often utilize byproducts of subsistence harvest. A mixed subsistence-market economy in which subsistence harvests and cash income is complementary characterizes the economies of most of the region's rural communities (USACE 2002).

While residents throughout the borough may participate in subsistence harvest, the two communities with published profiles in the ADF&G Community Subsistence Information System (ADF&G 2019d) are Haines and Klukwan (CIV). For each community profile, the database identified a representative year, which corresponds to a year in which a comprehensive survey was performed for the community. These comprehensive surveys are performed infrequently, often less than once per decade. However, they usually provide the best characterization of all subsistence activity within a community. For Haines and CIV, the representative years are 2012 and 1996, respectively. As shown in the table, CIV has a larger dependence upon fish, with 85% of total harvest, whereas in the community of Haines, fish is 62% of total harvest. Using 2018 population data, the per capita harvest in the Haines community is approximately 148 pounds per person (Table 16). In contrast, the per capita harvest in CIV would be approximately 691 pounds per person, illustrating the importance of subsistence in CIV, as well as indicating that reliance upon subsistence can vary substantially from community to community.

Table 16. Representative Subsistence Harvest Summary

Type	Representative Annual Harvest			
	Haines (2012)		CIV (1996)	
	Pounds	%	Pounds	%
Salmon	89,526	34%	29,715	44%
Non-Salmon Fish	72,535	28%	28,095	41%
Large Land Mammals	53,827	21%	3,050	4.5%
Marine Invertebrates	22,837	8.8%	1,557	2.3%
Plants and Berries	19,136	7.4%	4,918	7.3%
Migratory Birds	1,287	0.5%	65	0.1%
Other Birds	452	0.2%	42	0.1%
Small Land Mammals	356	0.1%	6	0.01%
Marine Mammals	0	0%	293	0.4%
Bird Eggs	0	0%	0	0%
Total	259,956	100%	67,741	100%
Source: AKDFG 2019				

3.5.1.3 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, signed by the President on February 11, 1994, directs Federal agencies to take appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects on the health or environment of minority and low-income populations.

To evaluate compliance with Executive Order 12898, definitions of low-income and minority populations are borrowed from the U.S. Department of Transportation Updated Environmental Justice Order 5610.2(a) (USDOT 2012). For this analysis, minority populations are those of specific race/ethnicity, including Black, Hispanic, Asian American, American Indian, and Alaskan Native. Low-income populations are readily identifiable groups of low-income residents living in close proximity or dispersed low-income residents that would be similarly affected by the project.

Minority Populations

As previously presented in section 3.5.1.1 and in Table 11, the largest minority population in the vicinity of the project is Alaskan Native. Communities with a concentration of Alaska Natives which substantially exceeds the borough and state levels include Covenant Life and CIV, CIV being nearly 90% Alaskan Native. However, because Covenant Life residents are primarily white, it was not identified as a minority population. Because CIV residents are primarily Alaskan Native, CIV was identified as a minority population for evaluating compliance with environment justice regulations.

Populations in Poverty

There are two primary Federal poverty measures. The Department of Health and Human Services (DHHS 2019) publishes poverty guidelines, which are used for administrative purposes to determine eligibility for Federal need-based assistance programs, and are a simplified version of the U.S. Census Bureau's poverty thresholds. However, the DHHS guidelines include an adjustment for Alaska which better reflects Alaska's generally high cost of living compared to the rest of the country, though still does not consider the difference in cost goods in Alaska's larger cities as compared to rural and remote communities. In recent years, income limits in the poverty guidelines for Alaska have been about 25% higher than national poverty thresholds. Table 17 presents these income limits for 2019 poverty guidelines.

Table 17. DHHS Poverty Guidelines for Alaska

Persons in Family/Household	Poverty Guideline ($)
1	$15,600
2	$21,130
3	$26,660
4	$32,190
5	$37,720
6	$43,250
7	$48,780
8	$54,310
Source: DHHS 2019. For families/households with more than 8 persons, add $5,530 for each additional person.	

While the DHHS thresholds are useful for understanding the effects of a higher cost of living in Alaska, there is no dataset available which describes the occurrence of poverty in the study area according to these guidelines. The best available data on the occurrence of poverty comes from the American Community Survey (ACS 2019), which uses the Census Bureau's poverty thresholds and is not adjusted for Alaska.

Given the use of the poverty thresholds, the ACS-estimated poverty rates may be lower than the rates that would be calculated if the DHHS rates were utilized. Additionally, the component which neither the DHHS nor the ACS poverty measure addresses is the effect of subsistence. Because consumption of subsistence harvest can offset the need for cash income that would have been used to purchase substitute goods, subsistence participation makes Federal poverty measures less indicative of actual resource needs. While detailed estimation of the dollar value of subsistence harvest in the study area is beyond the scope of this analysis, the following example for CIV illustrates its significance. Assuming an average value of $3-10 per pound for all subsistence harvest (e.g. cost of a substitute meat at a grocery store), and using CIV's annual harvest (Table 16), the per capita cash value of subsistence harvest consumed in CIV would be between $3,500 and $7,000 per year.

As such, the poverty levels reported below should be understood as a metric for understanding poverty broadly and for the purpose of measuring compliance with environmental justice requirements, rather than an attempt to identify actual resource needs within the community. Table 18 presents several measures of poverty from the ACS dataset. Based on the ACS data, the Haines borough has moderately less poverty than the state as a whole, and the community of Haines has very low poverty. The poverty levels in CIV are higher than Haines, but still below the overall borough or state levels, and the aggregated estimate for the project area is similarly low. It is the community of Lutak, which is a small development north of Haines near Chilkoot Lake, which drives up average value for the region. Based on this data, no low-income communities or populations were identified for the purposes of evaluating environmental justice compliance.

Table 18. Summary of Populations below Poverty Threshold

Geography	Population Meeting Poverty Threshold	
	All people (%)	All families (%)
State of Alaska	10.2	6.9
Haines Borough	8.4	6
Haines	3.2	2.1
Mosquito Lake	10.9	0
Mud Bay	0	0
Covenant Life	0	0
Lutak	73.5	100
Excursion Inlet	0	Not reported
CIV	6.5	5.3
Project Vicinity*	4.3	2
Source: ACS 2019. *Average weighted by total population or by total families, includes Haines, Mosquito Lake, Covenant Life, and CIV.		

3.5.2 Environmental Consequences

An alternative would cause a significant socioeconomic impact if it would result in any of the following:

- Substantial effects on the human population, community cohesion, or community facilities and services;
- Substantial effects on the economic viability of the region, including effects on the availability of jobs and viability of local businesses; or
- Substantial effects on the quality and availability of subsistence resources.

3.5.2.1 Alternative 1 No Action Alternative

If there are no remediation measures implemented at the site, the present contamination would remain. Given the localized nature of the contamination and minimal value of the site for tourism, subsistence, or recreation, any socioeconomic impacts would be negligible.

The location of the site minimizes the potential for direct impacts on the human population and communities. The site is located on either side of a stretch of the Haines Highway that has few turnouts for access, and there are minimal resources at this site that would attract humans for subsistence foraging, hunting, or other uses. Therefore, it is unlikely that residents or visitors would encounter the contaminated site and the site does not provide groundwater resources for existing communities.

The particular types of contaminants that are present at the site have been analyzed for toxicity associated with direct exposure, and for potential bioaccumulation (EPA 2018; Verbrugge 2019). The contamination is unlikely to substantially affect quality or availability of subsistence resources.

Since site contaminants have not been detected in the Chilkat River Slough, and there is abundant forage area available to salmon and other subsistence species along the Chilkat River, it is highly unlikely that local fish or piscivore populations would be affected by the contamination, either directly (by visiting the site), or indirectly (via food chain effects).

As noted in the assessment of biological resources and recreation resources (Sections 3.3 and 3.11), the contamination is unlikely to affect fish and wildlife in general and is unlikely to affect recreational quality. Therefore, effects on the viability or vitality of regional economic drivers which rely on natural resources, such as commercial fisheries and tourism, is expected to be negligible.

3.5.2.2 Alternative 2 Institutional Controls

The effects of this alternative on socioeconomics would be substantially the same as described for the No Action Alternative. Implementation is not expected to require traffic controls or highway closure and therefore would not impede local or visitor access to the region. There would be no substantial adverse socioeconomic effects.

3.5.2.3 Alternative 3 Source Excavation and Monitoring

By substantially remediating the extent of contamination in the project area, this alternative would reduce uncertainty related to the potential for adverse socioeconomic effects from the contamination. By removing much of the contamination, subsistence users and commercial interest would be assured that long term risk had been reduced.

Implementation of this alternative is expected to require temporary closure of one of the lanes of the Haines Highway at various stages of the project, currently estimated at eight weeks. Such a closure may result in negligible to minor adverse socioeconomic effects due to congestion and increased travel times. However, these effects would be temporary, and given the average level of daily traffic moving past the project site, delays would not be expected to exceed several minutes for a given trip.

It would be expected that some portion of implementation costs would accrue to businesses within the region, either as wages paid to local employees, or indirectly via increased revenue to industries such as travel, food service, and accommodations. Most of this effect would be temporary and short term (during project implementation).

This alternative would result in no substantial adverse socioeconomic effects requiring mitigation. The alternative would likely result in minor net beneficial socioeconomic effects.

3.5.2.4 Alternative 4 Source Excavation, In-situ Treatment, and Monitoring (Preferred Alternative)

Impacts associated with socioeconomic resources would be the same under this alternative as under Alternative 3, although traffic delays would likely last up to 4 weeks longer than under Alternative 3. It would not result in significant adverse impacts to socioeconomic resources.

3.6 Hazardous Waste

No RCRA designated hazardous waste is present, however Alaska Statutes and regulations define petroleum as a hazardous substance.

3.6.1 Affected Environment

3.6.1.1 Soil

Petroleum-related contaminants have been detected in surface and subsurface samples at concentrations above ADEC human health cleanup levels at the project site (Figure 6). The thickness of contaminated soil above cleanup levels exceeds 10 feet in the source area east of the Highway and is estimated to be approximately five feet on the west side of the highway. For a summary of all previous groundwater, soil, and surface water sampling events in the project area see Section 1.2, Previous Actions. Figure 6 shows the locations of soil exceedances of ADEC standards.\

LEGEND

Groundwater Samples
- No Contamination
- Low-level Exceedance
- Concentrated Contamination

Soil Samples
- No Contamination
- Low-level Exceedance
- Concentrated Contamination

- Proposed Excavation Areas
- Observed Contaminated Groundwater Seep - April 2019
- Approximate Pipeline Route
- Approximate DOT ROW (150 feet)

Notes: Groundwater samples taken in 2018. Soil samples taken in 2012 and 2014. Contaminated seep area observed in April 2019.

Alaska District
U.S. Army Corps of Engineers
Anchorage, AK

Groundwater and Soil Sampling Results
Pipeline Milepost 17.7
Haines-Fairbanks Pipeline FUDS Alaska
Project #: F10AK1016-14

Figure 6 | Date: January 2020

3.6.1.1 Groundwater

The site is within the Chilkat River floodplain and is subject to groundwater fluctuations that rise and fall seasonally and with precipitation events (USACE 2018). The groundwater flow direction at the site is also influenced by the stage of the Chilkat River Slough. During periods of high river stage, the water surface elevation in Chilkat River Slough is higher than in nearby wells, the groundwater flow direction is away from the slough, and the slough appears to recharge shallow groundwater (Figure 7). Periods of high river stage generally occur from late spring through fall. High river stage events also occur during the winter due to rainfall events in the watershed, but these events generally do not last more than a few days. During periods of low river stage in the late fall to early spring, the water level elevations in the wells are higher than the slough, the groundwater flow direction is toward the river and the slough appears to be locally recharged by groundwater (Figure 8). Petroleum-contaminated groundwater has been identified in a seep that daylights on a gravel bar above the slough during low river stage. Seasonal groundwater levels may fluctuate by as much as four feet, with greater fluctuation occurring in wells nearer to the Chilkat River Slough.

Figure 7. Hydrogeologic Concept Model - High Water

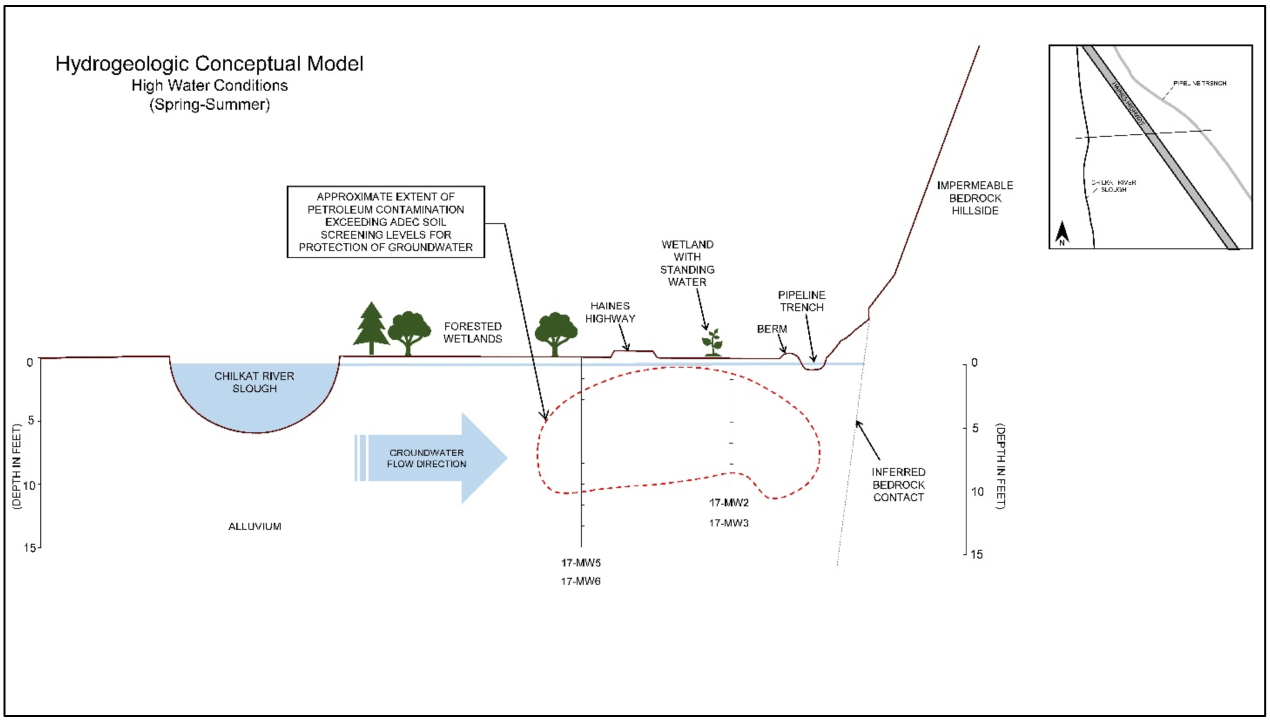
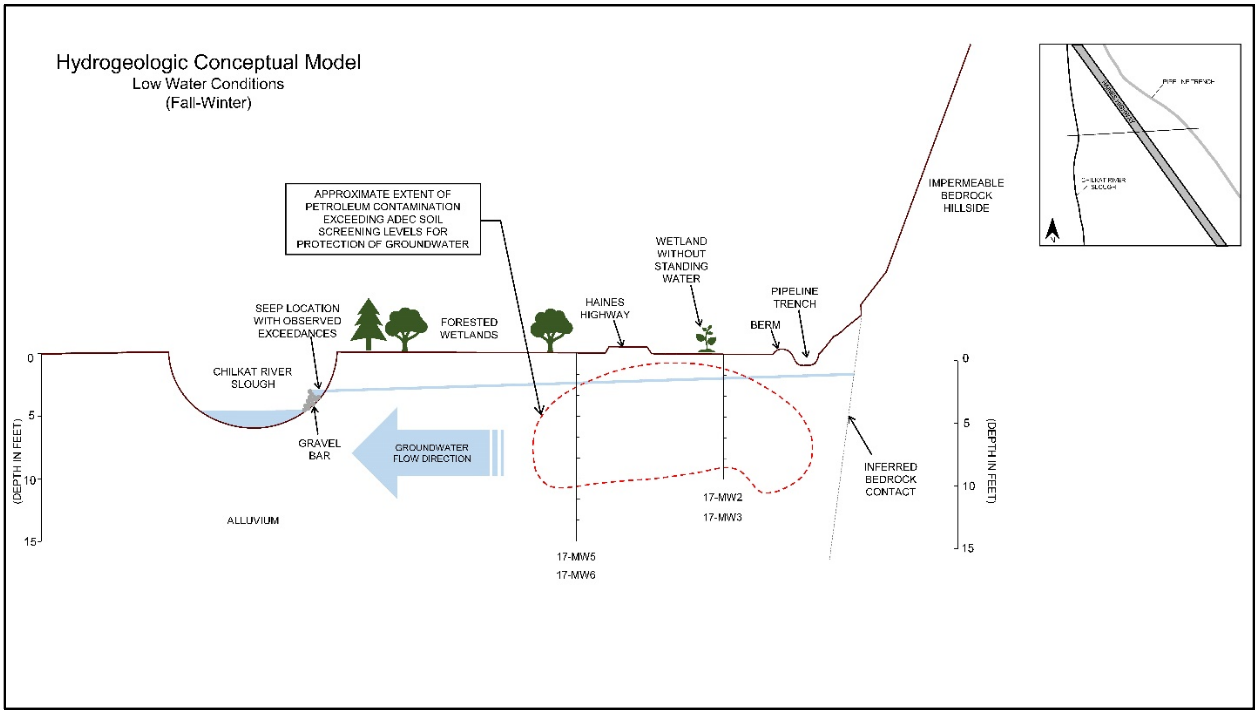


Figure 8. Hydrogeologic Concept Model - Low Water



Precipitation and runoff infiltrate into the petroleum-contaminated soils in the source area and surrounding area. Petroleum hydrocarbons and related constituents remaining in the soils from the spill leach from soil into the groundwater where they are then transported in the direction of groundwater flow. At this site, there is evidence of a petroleum smear zone, in which residual soil and groundwater contamination is concentrated within the zone of groundwater water-level fluctuations. Active remediation strategies would focus on the residual petroleum contamination remaining in the source area as well as in the smear zone. Eight two-inch diameter wells allow for groundwater sampling access.

Contaminants consistently found to exceed ADEC groundwater cleanup levels include GRO, DRO, BTEX, and naphthalene. GRO concentrations exceed the cleanup level in four groundwater wells (USACE 2018). DRO concentrations exceed the ADEC Groundwater Cleanup Level in two of the wells, although levels have fluctuated above and below screening criteria (USACE 2018). BTEX compounds have exceeded ADEC groundwater cleanup levels in five wells (USACE 2018). In 2019, exceedances were reported for BTEX and naphthalene at five groundwater monitoring wells, GRO in four wells, and DRO in only one well. Free-product was not observed in any of the wells during recent sampling events.

The following list provides an additional summary of findings from the March 2018 sampling event:

- Four wells exceeded the ADEC groundwater cleanup level for benzene (17-MW3, 17-MW5, 17-MW6, and 17-MW8). A fifth well (17-MW2) had a “non-detect” benzene detection, although the detection limit was above the benzene screening criteria.
- Ethylbenzene was detected in four monitoring wells (17-MW2, 17-MW3, 17-MW5, and 17-W6) at concentrations exceeding the ADEC groundwater cleanup level.
- Total xylenes were detected in three monitoring wells (17-MW2, 17-MW3, and 17-MW5) at concentrations exceeding the ADEC groundwater cleanup level.

- GRO and naphthalene were detected in 17-MW2, 17-MW3, 17-MW5, and 17-MW6 at concentrations exceeding the ADEC groundwater cleanup level.
- Both DRO and 1-Methylnaphthane were detected in 17-MW2 at concentrations exceeding the ADEC Groundwater Cleanup Levels.
- No other compounds were detected above ADEC groundwater cleanup level and no free-product was noted in any of the wells.

3.6.1.2 Sediment and Surface Water

Sediment and surface water samples have been collected in the Chilkat River Slough, to the west of the project site, to evaluate potential contaminant migration from the site. The slough surface water was sampled in 2014, 2016, and 2018 and the sediment was sampled in 2014 and 2016. Petroleum contaminants were not detected in the slough surface water or sediment in excess of applicable screening levels in any of the previous sampling efforts (USACE 2018).

A surface water sample taken from a small seep in a gravel bar adjacent to the slough exceeded ADEC criteria for TAH and TAqH concentrations when sampled in 2016 (USACE 2017). This surface water sample was collected from a small area of ponded water in an exposed gravel bar near the slough bank, and not directly from the flowing water in the slough. Rust-colored staining was observed in April 2019 adjacent to the base of the riverbank on a gravel bar along an approximate 70-foot long area of the bank on the east side of the slough in the same area as the 2016 groundwater seep sample that exceeded for TAH and TAqH. Staining of this type may be indicative of petroleum hydrocarbon anaerobic biodegradation. Sample results from the April 2019 sampling event indicated concentrations of TAH, and TAqH exceeded ADEC surface water quality standards in a groundwater seep sample collected in the same vicinity on the gravel bar as the 2016 groundwater seep.

3.6.2 Environmental Consequences

Generally, careless construction activities and practices can result in spills or leaks of hazardous materials to the ground, resulting in soil, air, or groundwater contamination, which may create public health hazards. The four basic exposure pathways through which humans, fish, or wildlife can be exposed to contaminated materials include inhalation, ingestion, contact, and injection. Exposure can come as a result of an accidental release during transportation, storage, or handling of hazardous materials. Also, the disturbance of subsurface soil during construction activities can lead to exposure of workers or the public to hazardous materials from excavation, stockpiling, handling, or transportation of contaminated soils and groundwater.

Potential adverse effects regarding hazardous materials and hazardous wastes associated with implementing the proposed action include; (1) accidental release to the environment of hazardous materials by construction and maintenance equipment and management practices, (2) incidental exposure of project workers and the public to existing hazardous materials in the soil and groundwater inadvertently encountered during construction and operation of the proposed action, and (3) environmental exposure as a result of contaminants moving through the groundwater into surface waters. The potential for and levels of these types of hazardous materials impacts are discussed below.

3.6.2.1 Alternative 1 No Action Alternative

Under this alternative, there would be no impacts associated with accidental release of hazardous materials during excavation or transportation, and no incidental exposure of workers to existing hazardous materials in the groundwater and soils.

The ongoing presence of petroleum-related contaminants above ADEC cleanup levels in soil and groundwater represents a potential risk to human health and the environment within the localized area of the project site, and environmental cleanup is required by ADEC regulations. Observed levels of contamination will likely persist above cleanup levels for a period of decades under the no action alternative, which is an adverse effect compared to more active methods of remediation.

3.6.2.2 Alternative 2 Institutional Controls and Monitored Natural Attenuation

This alternative would result in the same impacts as under the No Action Alternative. By providing signage that would reduce the possibility of human exposure to contaminants, it would constitute a minor improvement over taking no action.

3.6.2.3 Alternative 3 Source Excavation and Monitoring

Under this alternative, between 7,500 and 17,500 tons of contaminated material soil would be removed from the source area and the smear zone. Under this alternative, up to one million gallons of groundwater may be treated through a GAC filtration system. Adverse impacts may include temporarily-increased, short-term mobilizations of contaminants moving through the groundwater to the edge of the Chilkat River Slough, due to disturbance of groundwater and soils. There is also an increased possibility of release of contaminated material into the surrounding wetlands during excavation and handling or inadvertent release of such materials during transportation. This effect would be less than significant due to measures to contain soils and runoff that the construction contractor would be required to implement, including the provisions of a Stormwater Pollution Prevention Plan (SWPPP) and standard Best Management Practices for containing contaminated runoff. These measures would be described in detail in the USACE project workplan, which would be prepared by the selected construction contractor.

BMPs would include the use of sealed dump truck beds while transporting contaminated materials to ensure that no leakage occurs, and placement of straw bales or other materials around construction areas to ensure that spillage during excavation does not leave the site.

This alternative could potentially affect the quality of surface water or groundwater at the landfarm location, if contaminated water drained from the contaminated soil into surrounding surface waters or migrated into groundwater. These potential effects would be mitigated by locating landfarm soils or biopiles at least 50 feet from a surface water body and through soil leachate testing. Based on leachate test results, the use of a non-permeable liner to prevent migration of leachate into the subsurface may be required. Berms would be constructed around the perimeter of the landfarm area to prevent migration of contaminants. Landfarming methodology would follow applicable ADEC regulations and guidance, as described in Sections 2.2.5 and 2.2.7. Given the safeguards that would be implemented, potential impacts to the environment from landfarming would be less than significant.

If a suitable location for a landfarm or biopile in or near Haines is not found, soil could be transported outside of Alaska and disposed of in a permitted landfill. This landfill would likely be found in Oregon or Washington. Although a release of contaminants to the environment could occur through accidental spillage of the containerized soil during transportation, carriers would be required to comply with transportation standards and safety measures of ADOT&PF and the DOT's of any state through which the materials would pass. These standards would ensure that the likelihood of a release from a transportation accident is low. A release from the contaminated soil to the environment at the permitted landfill site would be unlikely due to regulations and procedures in place at the facility. The potential impact to the environment from transporting the contaminated soil outside Alaska for disposal would therefore be less than significant.

Long-term beneficial impacts would likely occur under this alternative due to reduction in contaminant mass and chemical concentrations in soil and groundwater at the site, and the installation of backfill with greater permeability than the native soils, which would allow more exposure to oxygen.

3.6.2.4 Alternative 4 Source Excavation, In-situ Treatment, and Monitoring (Preferred Alternative)

This alternative includes the same components as Alternative 3 with the addition of (1) in-situ treatment materials. The environmental consequences are similar to Alternative 3.

In-situ treatment materials would be used to promote enhanced aerobic biodegradation. Treatment materials could be mixed with activated carbon in the most contaminated areas and particularly in the northern portion of the excavation west of the highway to reduce contaminant migration in groundwater. Surfactants, nutrients, bacterial augmentation, and more aggressive methods of in-situ treatment (e.g., in-situ chemical oxidation) would not be used for treatment because of the potential for water quality impacts in wetland areas. The environmental benefits of this approach are the greatest of the considered remedial alternatives. Long-term benefits would come from mass reduction and chemical concentration reduction in soil and groundwater through source removal, continued more rapid degradation of the contaminant plume through enhanced aerobic biodegradation, and use of activated carbon to slow the migration of petroleum-related contamination in groundwater. This alternative would result in a substantial reduction in contamination and best meet the goals of the project, which is a beneficial impact.

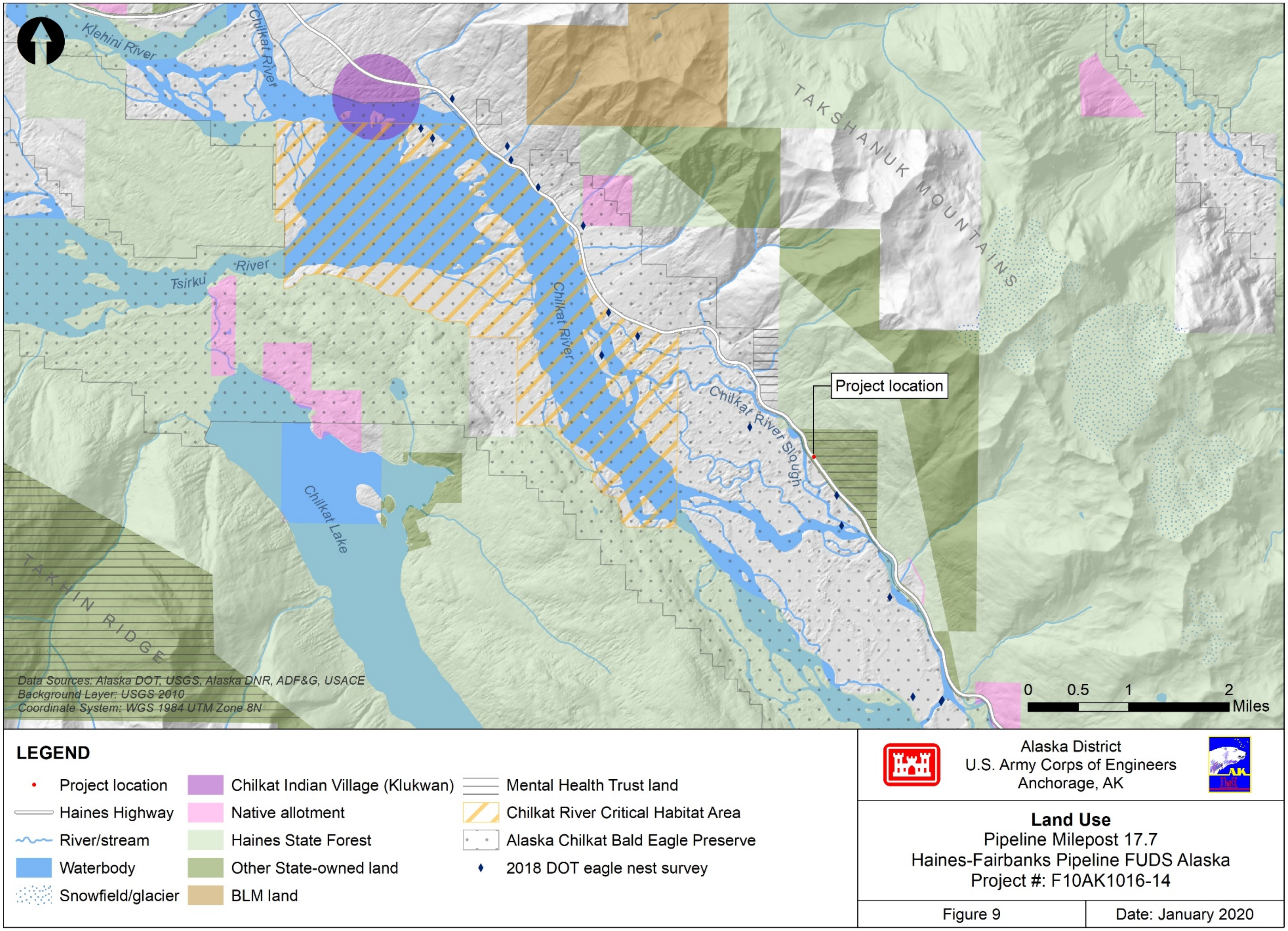
3.7 Land Use and Management Plans

3.7.1 Affected Environment

The Haines Borough 2025 Comprehensive Plan (HBCP) identifies land use designations for the project area. Land totaling 1,505,621 acres in the Haines Borough is divided among Federal (60%), state (32.3%), private (1.3%), and Borough (0.3%) ownership (HBCP 2017, Figure 9). The HBCP categorizes the project area land use as Multiple – Recreation Emphasis, signifying that the area has a number of approved low intensity land uses, but is primarily used for recreation and tourism.

The project area is owned by the State of Alaska and a transportation right of way (ROW) has been given to ADOT&PF, which covers the entire project area footprint. The ROW for the Haines Highway extends a total of 300 feet from edge to edge, or 150 feet in each direction from the centerline of the highway (ADOT&PF 2019). There are no lands in private ownership in the project area.

Immediately east of the project area, land composed of steeply-sloped bedrock mountainside is owned by the Alaska Mental Health Trust Authority (MHTA) and managed by the Trust Land Office. MHTA lands east of the site include Settlement Parcels CRM-0412 and CRM-0417. The MHTA parcels are categorized for use under their land and mineral status (MHTA 2019). The Trust Land Office is contracted exclusively by the MHTA to manage its approximately one million acres of land and other non-cash assets to generate revenue by land leases and sales, real estate, timber sales, mineral and energy exploration and development, and material sales. MHTA lands are bordered by the Haines State Forest (ADNR 2002s).


Klehini River
Chilkat River
TAKSHANUK MOUNTAINS
Tsirku River
Chilkat River
Project location
Chilkat River Slough
Chilkat Lake
TAKHIN RIDGE
Data Sources: Alaska DOT, USGS, Alaska DNR, ADF&G, USACE
Background Layer: USGS 2010
Coordinate System: WGS 1984 UTM Zone 8N
0 0.5 1 2 Miles
LEGEND
Project location
Haines Highway
River/stream
Waterbody
Snowfield/glacier
Chilkat Indian Village (Klukwan)
Native allotment
Haines State Forest
Other State-owned land
BLM land
Mental Health Trust land
Chilkat River Critical Habitat Area
Alaska Chilkat Bald Eagle Preserve
2018 DOT eagle nest survey
Alaska District
U.S. Army Corps of Engineers
Anchorage, AK
Land Use
Pipeline Milepost 17.7
Haines-Fairbanks Pipeline FUDS Alaska
Project #: F10AK1016-14
Figure 9
Date: January 2020

Immediately west of the highway, the Chilkat River and environs are designated part of the Chilkat Bald Eagle Preserve Management Unit 4, owned by ADNR and managed by the ADPOR. Use, protection, and management guidance are provided by the Chilkat Bald Eagle Preserve Management Plan (ADNR 2002b). The Preserve Management Plan designates the area encompassing the project site as Management Unit 4, Lower Haines Highway Subunit. Management Unit 4 is generally managed for primary uses, which include dispersed personal recreation, traditional uses, and commercial non-motorized recreation uses. The Lower Haines Highway Subunit is further managed to protect fish and wildlife habitat, water quality and quantity, and other natural features (ADNR 2002b).

The statute establishing the Preserve recognizes existing transportation and utility corridors and excludes these from the Preserve (AS 41.21.612(a)). With the exception of guided tours and noncompetitive use permits, concession and commercial activities are not permitted inside the Preserve (ADNR 2002b). Traditional uses are guaranteed to be protected within the Preserve as long as they are compatible with protection of bald eagle populations. Hunting, fishing, and trapping can be regulated as needed by the ADF&G and any traditional uses must comply with regulations for these activities set by the Boards of Fishery and Game.

3.7.2 Environmental Consequences

Impacts to land use would occur if an alternative resulted in:

- Inconsistencies with any existing land management plans;
- Disruption of ADOT&PF ROW land uses;
- Changes in the value or use of MHTA lands; or
- Reductions in the quality or quantity of Bald Eagle Preserve lands.

3.7.2.1 Alternative 1 No Action Alternative

Project area lands would continue to be managed under their respective plans under the No Action Alternative. No changes to land use or zoning would result except through required legal channels. The quality and quantity of MHTA and Preserve lands would not diminish as a result of taking no action at the project site, and construction in the ADOT&PF ROW would be temporary and would only occur with ADOT&PF's permission.

3.7.2.2 Alternative 2 Institutional Controls and Monitored Natural Attenuation

Installation of signage at the site would not result in changes to land use or zoning. The project area would remain under current ownership and there would be no changes to land use or zoning. If administrative controls are used to limit the types of usage for the project area (e.g., deed restrictions), it would not result in changes to land ownership, but it may restrict the ways that the land can be managed. However, the project area is a small and unused portion of land lying along a National Scenic Byway. It is unlikely that a restriction in uses would substantially reduce the value of the land or the overall manner that it may be utilized. There would be no significant adverse effects to land use and management as a result of ICs.

3.7.2.3 Alternative 3 Source Excavation and Monitoring

Source excavation is intended to remediate contaminants at the project site, which would result in an overall better environmental condition. The land in the project area is a small parcel not currently under any particular use; it is not logged or protected, and does not provide recreational or other human use value, aside from the aesthetic beauty incorporated as part of the National Scenic Byway. The construction and operations process would not limit long-term access by land managers, subsistence users, or users of adjacent areas such as quarries or boat launches. The completion of the project would not alter the way the land is used, zoned, or managed from its current condition. There would be no significant effect to land use and management as a result of Alternative 3.

3.7.2.4 Alternative 4 Source Excavation, In-situ Treatment, and Monitoring (Preferred Alternative)

Impacts resulting from Alternative 4 would be the same as those described for Alternative 3, above.

3.8 Noise

3.8.1 Affected Environment

The primary noise source in the project area is highway traffic. The amount of noise generated by highway traffic depends on the number and types of vehicles as well as the speed of traffic. If the overall traffic numbers include a high percentage of heavy trucks, noise volumes would be higher than in areas where most vehicles are passenger vehicles or light trucks.

ADOT&PF traffic counts from 2017 measured a daily average of 393 vehicles traveling the stretch of the Haines Highway that includes the project area (ADOT&PF 2019). Because traffic on the Haines Highway is light and sparse relative to highways in more heavily populated areas, highway noise in the vicinity of PMP 17.7 is relatively low and relatively infrequent.

Noise-sensitive receptors are identified using ADOT&PF standards (ADOT&PF 2011). Noise-sensitive receptors are classified into one of four categories, as follows:

Category A: This category includes land uses where quiet and serenity are of extraordinary significance, and where the preservation of those qualities is essential for those land uses to continue to serve their intended purposes.

Category B: This category includes single-family and multi-family residences.

Category C: This category includes land use facilities such as recreation areas. Only exterior impact criteria apply to this category.

Category D: This category is the same as Category C, but includes facilities that may have interior uses. Exterior and interior impact criteria apply to this category.

Category B and C receptors are found in the project vicinity. Residences are found within one mile of the site, and recreation sites including the Bald Eagle Preserve are located within 50 feet of the project area. The Preserve's Management Plan (DNR DMLW 2002) does not identify the Preserve as lands where quiet and serenity are of extraordinary importance. There are no Category A or D receptors in the project area.

3.8.2 Environmental Consequences

3.8.2.1 Alternative 1 No Action Alternative

Under the No Action Alternative, there would be no construction actions and no noise would be generated. There would be no noise impacts under this alternative.

3.8.2.2 Alternative 2 Institutional Controls and Monitored Natural Attenuation

Minor noise impacts associated with installation of signs would occur over a three day period. Noises would be generated by trucks and light equipment needed to install the signs, but would be temporary and likely not audible beyond 500 feet from the source. Impacts under this alternative would be negligible.

3.8.2.3 Alternative 3 Source Excavation and Monitoring

Under this alternative, noise would be generated by construction equipment and by alterations in traffic movements. Noise up to 85 dBa would be generated at the project site during construction, but noise levels would attenuate to a low level by the time they reached the nearest sensitive receptor. Although the Chilkat Bald Eagle Preserve is located in close proximity to the project area, the nearest known bald eagle nest is located approximately 0.5 mile away from the construction area, therefore noise impacts would be less than significant. Temporary increases in traffic noise from dump trucks transiting between the construction area and the landfarming site would occur, but would be temporary, intermittent, and only occur during normal working hours. Noise from construction equipment and construction-related traffic would be less than significant.

Residences are located between 1,000 and 1,500 feet from the landfarming site. At the onset of the landfarming operations, these residences may experience noise above background levels during tree clearing (if necessary), soil screening/processing, and construction of landfarm cells and containment berms. During weekly operations, heavy machinery would be used for one to two days per week to till the landfarm cells. All noise impacts would be limited to approved construction hours and would last up to three years during spring to fall. Noise impacts would be less than significant.

3.8.2.4 Alternative 4 Source Excavation, In-situ Treatment, and Monitoring (Preferred Alternative)

Noise impacts under Alternative 4 would be similar to those occurring under Alternative 3. The period of excavation would likely last up to four weeks longer than Alternative 3 due to installation of in-situ treatment technologies. Impacts would be less than significant.

3.9 Physical Resources

3.9.1 Affected Environment

3.9.1.1 Geology and Soils

The project area lies within the lower portion of the Chilkat River Valley. In the vicinity of the project area, the Chilkat River valley is approximately 1.9 miles wide. The flat valley floor is nestled between the Takshanuk Mountains (to the northeast) and Takhin Ridge (to the southwest). Peaks within the Takshanuk Mountain range reach above 6,600 feet North American Vertical Datum of 1988 (NAVD88). The summit of Takhin Ridge is slightly lower, at just over 5,750 feet NAVD88. In the vicinity of the project area, elevations within the valley floor range from approximately 45 to 100 feet NAVD88 (USGS 2019a).

At PMP 17.7, the HFP lies at the easternmost extent of the Chilkat River floodplain, at the edge of the valley floor. The pipeline trench is on the eastern side of the Haines highway, and parallels the toe of the hillslope. Within the preliminary work limits, topography is generally flat to the west of the highway, and sloping upward to the east of the highway. According to ADOT&PF 2011 digital elevation data, elevation ranges from 66 to 110 feet within the preliminary work limits for PMP 17.7. The mean elevation within the preliminary work limits is 70 feet (ADOT&PF 2011). Surveyed ground elevations for the eight monitoring wells at the site range from 64.5 to 67.5 feet NAVD88 (USACE 2014). Adjacent to the preliminary work limits, the slope steepens dramatically along the flank of the Takshanuk Mountains.

In the vicinity of PMP 17.7, the National Resources Conservation Service (NRCS) Web Soil Survey has mapped soils east of the Haines highway as rock outcrop (lithic cryorthents complex), with 70 to 120% slopes (NRCS 2013, NRCS 2018). Soils within the area to the west of the Haines Highway are mapped as Ashmun-Hollow-Funter complex, with 0 to 5% slopes. This complex is derived from alluvium, and is rated as very poorly drained. The composition of the upper 16 inches of this soil complex is estimated to be 81% sand, 17% silt, and 2% clay (NRCS 2013, NRCS 2018).

3.9.1.2 Seismic Activity

There are two normal faults within one mile of PMP 17.7. Both run parallel to the axis of the valley (northwest to southeast). One normal fault is located approximately 640 feet northeast of the preliminary work limits, at the transition between the Triassic mafic volcanic rocks and the Cretaceous-period formation immediately upslope of gabbro and diorite of southeast Alaska. A second, concealed normal fault, lies within the unconsolidated surficial deposits, approximately 0.5 miles southwest of the preliminary work limits (USGS 2015). The Chilkat River valley faults are associated with the Denali fault (AKDNR 2018). Based on its orientation and documented activity further north along its extent, experts infer that this fault system has been active since the Quaternary period (< 1.6 million years ago). Lateral displacements have been documented in Tertiary and late Paleozoic rocks, but no Holocene (< 11,650 years before present) displacements have been recorded. The split rate for these faults is unknown (ADNR 2018).

3.9.2 Environmental Consequences

Impacts associated with soils, topography, or geology could occur if an alternative resulted in any of the following:

- Increased risk from seismic activity;
- Substantial erosion or sedimentation;
- Fugitive dust generated during construction;
- Depletion of groundwater supplies; or
- Interference with groundwater recharge.

3.9.2.1 Alternative 1 No Action Alternative

Under the No Action Alternative, physical resources in the study area would not change substantially. Seismic risk would remain unchanged. Terrestrial soils would continue to naturally decompose. As under current conditions, erosion and deposition of soils would occur due to hillslope processes, eolian processes, and dynamic channel movement within the Chilkat River floodplain. Decommissioning of the existing wells would have no impact on groundwater elevations, groundwater supplies, or groundwater recharge. Use of a drill rig to complete the decommissioning process would result in minor soil disturbance at the site of each monitoring well, and would temporarily increase soil compaction within the project area. This impact would be less than significant. Any contaminated sediments within the project area would remain in place.

3.9.2.2 Alternative 2 Institutional Controls and Monitored Natural Attenuation

Under Alternative 2 monitoring wells would need to be replaced periodically and impacts would be similar to those occurring under Alternative 1. Use of a drill rig to complete the monitoring well installation process would result in minor soil disturbance at the site of each monitoring well. Maintenance of the well network would have minimal impact on soils, and no impact on topography, or geology. There would be no impact to groundwater supplies or groundwater recharge. Any contaminated sediments within the project area would remain in place.

3.9.2.3 Alternative 3 Source Excavation and Monitoring

Under Alternative 3, contaminated soils would be excavated from the project area. Although current USACE estimates indicate that approximately 7,500 tons of substrate would be removed as part of this interim action, this analysis assumes that up to 17,500 tons of material could be excavated. All excavated areas would be backfilled with clean, geotechnically suitable soils. Soil excavation would require the use of heavy equipment, including an excavator, a loader, and trucks. In addition, temporary lanes would be constructed alongside the Haines Highway for site access.

Earthwork would result in a temporary increase in soil erosion and compaction within the project area. Soil disturbance would result from excavation of contaminated soils. Additional soils impacts would result from clearing and grubbing construction and staging areas and the temporary lanes. Each of these elements would occur on dry land and could result in temporary increases in erosion at exposed sites. Mitigation measures and implementation of a SWPPP would ensure that erosion impacts associated with these actions would be less than significant. During construction and excavation, fugitive dust could be generated, but would be controlled by covering stockpiled soils as necessary. This impact would be less than significant.

Excavation of contaminated soils within the source area and the smear zone would not impact topography or geology in the project area. Excavation would not impact groundwater levels, groundwater quantity, or groundwater recharge within the project area.

Minor topographic changes at the landfarm area would result from construction of containment berms and deposition of excavated soils. The landfarm area would be recontoured to conditions similar to baseline conditions upon completion of the landfarming actions. The containment berms would be unvegetated, so minor erosion of topsoils may occur as a result of precipitation runoff. Measures to control polluted runoff from construction and operation of the berms would be included in the SWPPP, and impacts to soils and topography would be less than significant.

3.9.2.4 Alternative 4 Source Excavation, In-situ Treatment, and Monitoring (Preferred Alternative)

Impacts to soils, topography, and geology under Alternative 4 would be to the same as those occurring under Alternative 3.

3.10 Public Health and Safety

3.10.1 Affected Environment

According to Haines Borough Ordinance 7.08, Community Safety Service Areas must be provided with (1) community-based police services and education, (2) ambulance services, and (3) related dispatch communication services. Public health and safety in the project area is provided by the Haines Borough Police and Fire Departments, who initiate emergency response and coordinate with all other emergency responders described below (Haines Borough Ordinance 2019). Each of the public health and safety agencies serving the project area are shown in Table 19.

The Police Department provides a Patrol and Communications Division to the region. The Police Department investigates crimes and responds to emergencies in partnership with the Alaska State Troopers, ADPOR, and the U.S. Customs and Border Protection. The Communications Division operates a dispatch center that communicates emergency needs to the Police Department, Haines Volunteer Fire Department, Klehini Valley Fire Department, Alaska State Troopers and State Parks. It is staffed 24 hours a day, 365 days a year by a team of professionally trained telecommunicators.

The Fire Department provides fire engine and ambulance response to emergencies in the Haines Borough. The project area lies within Fire Service Area No. 3, including all land within 2,000 feet of the Haines Highway from MP 15 and northward (Haines Borough Ordinance 2019).

Alaska State Troopers provide services to the Haines Borough as part of the "A Detachment" that comprises 36,000 square miles of land in southeast Alaska (ADPS 2019). As of 2016, an estimated 10,149 people in this region rely on Alaska State Troopers as their primary provider of public safety. Commissioned troopers and administrative support personnel are assigned to posts located in Ketchikan, Juneau, and Craig. Troopers staff the only 24-hour dispatch center in the region. The detachment has 5 of the 9 assigned Village Public Safety Officer (VSPO) positions in the region, with positions located in Thorne Bay, Angoon, Kassan, Saxman, and Hydaburg. The VSPO Program was designed to train and employ individuals residing in remote villages as first responders. VSPOs are typically the first to respond to public safety emergencies such as search and rescue, fire protection, emergency medical assistance, crime prevention and basic law enforcement (ADPS 2019).

Table 19. Public health and safety agencies

Agency	Contact Information
Haines Borough Police Department	315 Haines Highway, PO Box 1209, Haines, AK 99827 Emergency Dial 911 Non-Emergency (907) 766-6430
Haines Volunteer Fire Department	Public Safety Building 213 Haines Highway, P.O. Box 1209, Haines, AK 99827 (907) 766-6430
Klehini Valley Fire Department	199 Dalton Street, Haines, AK 99827 (907) 767-5550
Alaska State Troopers	7366 North Tongass Highway, Ketchikan, AK 99901 (907) 225-5118
State of Alaska Department of Health and Social Services	350 Main Street, Room 508, P.O. Box 110610, Juneau, Alaska 99801 (907) 465-3090
State of Alaska Department of Public Safety	5700 East Tudor Road, Anchorage, AK 99507 (907) 269-5511
U.S. Coast Guard	17th District Command Center, Sector Juneau 709 W 9th Street, 223B, Juneau, AK 99801 (907) 463-2000 Marine-Band Radio VHF-FM Channel 16

Alaska State Troopers are statutorily required to lead search and rescue (SAR) efforts within the state of Alaska, in coordination with local agencies and volunteer groups (ADPS 2019). SAR operations have access to aircraft, vessels, ground search teams, and canines. If needed, the U.S. Coast Guard may be involved in SAR efforts.

The Alaska Department of Health and Social Services maintains a statewide Public Health Alert Network (PHAN) that provides emergency alerts on their website and by email or text notification (ADHSS 2019).

The Alaska Department of Public Safety provides statewide coordination of first responders, ensuring public safety and enforcement of fish and wildlife laws (ADPS 2019).

3.10.2 Environmental Consequences

Impacts to public safety and health would occur if an alternative resulted in reductions in emergency response timing to surrounding communities, resulted in a substantial increase in the need for public health and safety agencies or resources, or if water quality exceedances resulted in significant adverse effects to public health.

3.10.2.1 Alternative 1 No Action Alternative

Observed levels of contamination would likely remain for a period of decades under Alternative 1. The selection of Alternative 1 would result in no change to current risks posed to public health and safety.

3.10.2.2 Alternative 2 Institutional Controls and Monitored Natural Attenuation

Impacts under Alternative 2 would be similar to those occurring under Alternative 1. Installing signs and restricting future land use would result in an improvement to public health and safety. Sign installation would follow USACE highway safety guidelines and no roadways would be closed. The signage itself would improve safety through awareness of contaminants. However, contaminants would remain at the site and would continue to be accessible to people who disregarded the signs.

3.10.2.3 Alternative 3 Source Excavation and Monitoring

The intention of the remediation process is to prevent future potential public health and safety issues that could result from contaminated soils, groundwater, and surface water. Overall, the completion of the project would result in a benefit to public health and safety. Contamination of soil and groundwater would be reduced, as would the potential for contaminants to reach surface water. During construction, the use of heavy machinery and presence of construction personnel around a two lane state highway would present a temporary increase in risks to public health and safety. The USACE would develop a detailed work plan including a “traffic control plan” prior to groundbreaking and would include provisions necessary to ensure the safety of drivers and construction personnel. USACE’s work plan and traffic control plan would be made available to ADOT&PF for review to ensure that all necessary highway safety precautions are included.

3.10.2.4 Alternative 4 Source Excavation, In-situ Treatment, and Monitoring (Preferred Alternative)

The impacts for Alternative 4 would be the same as described for Alternative 3. The detailed construction plan would include provisions for additional site visits to perform future treatments, as needed.

3.11 Recreation

3.11.1 Affected Environment

Recreation in the project area includes activities centered primarily on the Chilkat River. Activities along the river include wildlife viewing and photography, boating, and fishing. Haines is the jumping off point for many recreational companies that provide Chilkat River tours, flightseeing tours, cultural tours, bicycling tours and other outdoor adventures through the project area. Throughout the year special events bring visitors to the Haines area, including snow machine races, state fairs, music and cultural festivals, fishing derbies, and holiday celebrations. During these periods, visitation to the Chilkat Bald Eagle

Preserve and the Chilkat River increases. Haines Highway is used as an access point to the river and is also a corridor for bicycling.

Fishing on the Chilkat River is a popular draw for local communities and visitors to the region. It is easily accessible from the Haines Highway at several turnouts. Anglers pursue Chinook, Coho, Chum, Pink, and Sockeye Salmon, as well as Dolly Varden (Visit Haines 2019). Though there are several parking turnouts along the highway used for access to the Chilkat River, there are none within the project area. The nearest turnout is to the east of the highway located 0.35 mile north of the project area (ADOT&PF 2019).

The Chilkat Bald Eagle Preserve is managed by the ADPOR with assistance from the 13-member Alaska Chilkat Bald Eagle Preserve Advisory Council. The Preserve draws hundreds of visitors each year from local, national, and international communities, particularly during the winter months when more than 4,000 individual bald eagles may assemble along the Chilkat River as they take advantage of late season salmon runs (Visit Haines 2019). The Alaska Bald Eagle Festival is held each November to celebrate and experience this unique wildlife event (ABEF 2019). Although the best viewing is from Highway MPs 18 to 24, viewing is also available from the highway adjacent to the project area (Visit Haines 2019).

Bicycling is an increasingly popular sport in Alaska. In 2011, a 40.1 mile stretch of the Haines Highway from Whitehorse to Haines was designated as U.S. Bicycle Route (USBR) 208 (ABPA 2011). Each June, as many as 1,300 cyclists take part in the Kluane-Chilkat International Bike Relay, riding 148.1 miles from Haines Junction to Haines (KCIBR 2019).

3.11.2 Environmental Consequences

Impacts associated with recreation could occur if an alternative resulted in any of the following:

- Reduction in quality or availability of recreational activities;
- Reduction or loss of features that draw visitors to the area for recreational purposes, such as disturbance to bald eagles, reductions in fish populations, or permanent loss of river access

3.11.2.1 Alternative 1 No Action Alternative

Recreational activities, access, and features that draw visitors to the area would not change under Alternative 1. Observed levels of contamination would likely remain for a period of decades under Alternative 1.

Site contaminants have not been detected in the Chilkat River Slough, so it is unlikely that local fish or their predators are affected by the site contamination. It is not expected that the remaining localized POL contamination would have a negative effect on the region's ability to support recreational activities and continue to draw thousands of visitors for recreation.

3.11.2.2 Alternative 2 Institutional Controls and Monitored Natural Attenuation

The installation of signage would require up to three days and minimal vehicle trips, resulting in no appreciable impact to recreation access or quality. The presence of signage in the project area would not reduce the access or quality of recreation in the vicinity.

3.11.2.3 Alternative 3 Source Excavation and Monitoring

There are no public use recreation features in or adjacent to the project area. Therefore, no direct impacts to recreation would result from excavation for the remediation project. Indirect effects would result from the construction process, since it would require an intermittent single-lane closure on the Haines Highway for up to eight weeks during the height of the summer travel season. Residents and visitors traveling along the Haines Highway to reach recreational sites would experience delays resulting from these traffic flow changes. However, even during the busiest parts of the year for vehicle travel on Haines Highway, the number of vehicles passing through is low and can be accommodated by providing one open lane of travel at all times. This delay would be temporary during construction and would not result in a significant adverse impact to recreation opportunities in the area.

Recreational uses of the area around the landfarm location include boat launching from the edge of the slough located south of the landfarm parcels. Access to the boat launch area is via a dirt road that passes between parcels 0400 and 0500 (Figure 2). The access road would remain open to users of the boat launch even in the event that all three parcels are needed for the landfarming actions. Impacts from operation of the landfarm would be less than significant.

Operation of the completed project would not require further modifications to highway traffic patterns.

3.11.2.4 Alternative 4 Source Excavation, In-situ Treatment, and Monitoring (Preferred Alternative)

Impacts to recreation from this alternative would be the same as described for Alternative 3. However, the duration of possible traffic delays would be up to 12 weeks, four weeks longer than under Alternative 3. This effect would be less than significant.

3.12 Transportation and Traffic

Transportation into Haines, Alaska is provided via roadway, airplane, and ferry. Road access is provided by the Haines Highway (State Highway 7), air traffic arrives in Haines via the Haines Airport, ferry passenger and vehicular traffic arrives in Portage Cove at Port Chilkoot, and a passenger-only ferry services the Haines ferry terminal. Additional access to the region is provided by airports in Skagway and Juneau. There are no railroads or buses serving the town of Haines. Typical methods of reaching Haines include flying directly into the Haines Airport or flying into nearby airports and taking a ferry to Port Chilkoot or the Haines Ferry Terminal.

3.12.1 Affected Environment

The Haines Highway is the only roadway providing access to the town of Haines. The highway originates on the shore of the Chilkoot Inlet in the town of Haines, runs northwest along the Chilkat River and ends at Haines Junction in Yukon Territory, Canada, connecting to the Alaska Highway.

The Haines Highway is a low-volume rural highway classified as a principal arterial (ADOT&PF 2016). It has two 12 foot travel lanes and two foot shoulders for a total top width of 28 feet and a speed limit of 55 mph. Annual daily traffic (ADT) counts for 2017 report that there are 393 vehicles passing between MP 13 and 21 on a daily basis when calculated as an average across the entire year (ADOT&PF 2019). These counts were based on data collected between July 15 and 24, 2017 and extrapolated across the year; most traffic moves through the project area during the summer months (Koski 2019).

In October 2009, the Haines Highway was designated as a National Scenic Byway by the Federal Highway Administration (FHWA). Officially recognized as the Haines Highway – Valley of the Eagles, it is an extension of the Alaska Marine Highway System, which has in turn been recognized as one of the highest quality scenic pathways in the U.S., known as an All-American Road (FHWA 2019).

Public vehicle transportation can be obtained via the Haines Shuttle, providing service within Haines, or the Hinterland Express, providing one-way or roundtrip service from Haines to Whitehorse via Haines Junction from April to September (Visit Haines 2019). Car rentals are also available.

3.12.1.1 Air Travel

Three airports serve the region, including the Haines Airport, Skagway Airport, and Juneau International Airport. The Haines Airport is located along the Haines Highway three miles northwest of Haines and 12.4 miles southwest of the project area. Two 4,000-foot long asphalt runways are available, both 100 feet wide and reported in good condition (Air Nav 2019). Year-round scheduled flights are available. A recent improvement project was completed at the Haines Airport for drainage, taxiway, and apron rehabilitation.

3.12.2 Environmental Consequences

Traffic and transportation impacts would occur if an alternative resulted in an interruption in access through the project area that resulted in permanent significant economic or subsistence losses, or resulted in delays to emergency response.

3.12.2.1 Alternative 1 No Action Alternative

Under the No Action Alternative, there would be no construction activities undertaken to remove contaminated soils. The continued presence of contaminants would not affect traffic or transportation.

3.12.2.2 Alternative 2 Institutional Controls and Monitored Natural Attenuation

Installing signage would require less than a day and can be accomplished using one truck. There would be no impact to traffic as a result. ADOT&PF would retain their right-of-way boundaries for the Haines Highway and the implementation of administrative controls would not change that. There would be no significant adverse effects resulting from the ICs.

3.12.2.3 Alternative 3 Source Excavation and Monitoring

During the source excavation, there would be a number of trucks and heavy machinery present in the project area. Due to the small size of the project area and limited access to the site from the 2-lane highway, this machinery would require more space than is available on the shoulder of the highway or in other staging areas. For this reason, it is anticipated that the construction process would take up to eight weeks and would require the temporary closure of one lane of highway. This closure would be in effect throughout the scheduled primary construction period. Occasionally there may be a need to briefly close both lanes while trucks ingress or egress the site.

Traffic along the Haines Highway is relatively sparse, even during popular summer months when the construction would occur. In order to reduce impacts, a detailed traffic control plan would clearly state the proposed construction calendar, the daily hours of one-lane closure, and access for emergency vehicles. This plan would be advertised in the Haines community prior to the start of construction. Construction personnel would remain in contact with emergency vehicles to facilitate passage and would result in no delay to emergency responders. The use of flaggers at the project site would ensure coordinated use of the single available lane and reduce risk of danger for construction personnel and highway travelers. Because the lane closures are temporary and would be mitigated with a traffic control plan, the impacts would be less than significant.

Truck trips along the Haines Highway would increase as excavated materials were transported off site. Use of the highway by large trucks is not restricted and their presence is not expected to significantly delay traffic flow or interrupt typical traffic patterns once they have left the excavation area. Trucks entering the landfarming area would need to make a left turn across the eastbound lane of the Haines Highway, but the turn location is on a straight stretch of road where visibility is good, so this is not expected to result in a traffic hazard. Some oncoming or trailing vehicles would need to slow to allow trucks to exit the highway, but this effect would be temporary, intermittent, and restricted to normal working hours.

Once excavation was completed, the continued well monitoring and other intermittent site visits would not require lane closures or use of heavy machinery. There would be no significant adverse impacts to traffic as a result of operation of the completed project.

3.12.2.4 Alternative 4 Source Excavation, In-situ Treatment, and Monitoring (Preferred Alternative)

Impacts resulting from this alternative would be the same as described for Alternative 3, but the period of construction would be extended by up to four weeks.

3.13 Utilities

3.13.1 Affected Environment

Few utilities are located near or within the site boundaries at PMP 17.7, as it is situated approximately 14 miles northwest of the nearest town. No residential structures requiring utility access are found within the immediate vicinity of the site. The former pipeline serves as an underground conduit for power and communication lines near the site. One utility box is located along the western side of the pipeline near the western excavation area.

Telephone service is provided to the surrounding area by AP&T. There are no known customers served from these lines near the project area. Power is provided by IPEC. There is no water, sanitary sewer, or natural gas infrastructure within the project area. An IPEC lineman confirmed the absence of any other underground utility conduits aside from the former pipeline. Residential structures are located at least 0.5 mile from the project area and are typically served by private wells and septic tanks.

Stormwater near the site is managed by ADOT&PF. There are no culverts or storm drains located within the project area. Future highway improvements conducted by ADOT&PF may change the stormwater drainage facilities near the project area and are considered in the Cumulative Effects section of this report.

Disposal facilities near Haines are owned and operated by Community Waste Solutions. The disposal of contaminated waste is prohibited at the landfill.

3.13.2 Environmental Consequences

The only utilities present within the project area are located within the former pipeline. The pipeline would not be disturbed under any of the alternatives and therefore, no impacts would result to any utility as a result of the No Action Alternative or any of the action alternatives.

3.14 Water Resources

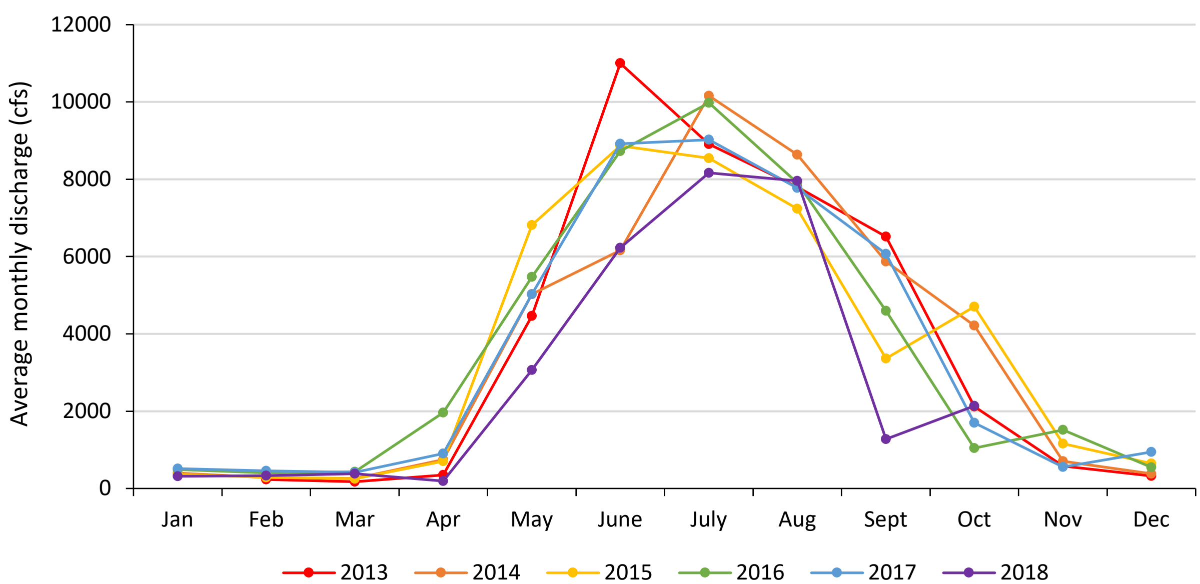
3.14.1 Affected Environment

3.14.1.1 Surface Water

The project site is located within the Chilkat River valley in southeastern Alaska. In the lower portion of the valley, where the project site is located, the primary channel of the Chilkat River flows through the western side of the valley. The project site is located at the very eastern edge of the valley, but is adjacent to the Chilkat River Slough, a side channel to the mainstem. Downstream of the project site, the Chilkat River Slough discharges into the mainstem of the Chilkat River, which then drains into the Chilkat Inlet, an arm of the Lynn Canal. The final three miles of the Chilkat River are tidally-influenced.

The U.S. Geological Survey (USGS) operates a discharge gage on the Chilkat River upstream of the confluence of the Chilkat River and the Tsirku River (USGS 15056500). The gage freezes over often during the winter months, preventing the collection of discharge data. From 2013 to 2018, average monthly discharge (including only ice-free days) ranged from a low of 316 cubic feet per second (cfs) in March to a maximum of 9,094 cfs in July (Figure 10).

Figure 10. Average monthly discharge in 2013-2018 at the USGS gage on the Chilkat River, upstream of the confluence of the Tsirku River and Chilkat River (USGS 2019b).



Water quality in Alaska is regulated and monitored by the ADEC Division of Water. The State of Alaska is required by the CWA to maintain a list of impaired water bodies. This list must be approved by the EPA. Segments of a given waterbody are listed as impaired (water quality limited) if a specific number of measurements exceed state water quality criteria. All available water quality data for regulated parameters are assessed.

State-wide water quality assessments are completed by ADEC every two years, as mandated by the CWA (ADEC 2019). The assessments use available water quality data to evaluate the water quality within a given segment of a stream or river, or within a lake or reservoir. Within each segment, measured parameters are assigned to a specific category that indicates if the water segment meets water quality standards for that parameter. The categories used by ADEC are listed and defined in Table 20. Per CWA Section 303(d), ADEC compiles a 303(d) list of all waterbodies for which one or more parameters was categorized as Category 5, indicating that state water quality criteria were exceeded and a total maximum daily load (TMDL) needs to be developed (ADEC 2018a).

During the 2014/2016 statewide assessment, the Chilkat River was classified as a Category 3 waterbody, indicating that ADEC had insufficient water quality data for the Chilkat River, and could not determine whether this waterbody was impaired or in attainment (ADEC 2018a). ADEC does not have any water quality monitoring sites on the Chilkat River or its major tributaries, the Tsirku River and the Klehini River (ADEC 2018b).

The history of contamination at the PMP 17.7 site and subsequent investigative and removal actions are discussed in detail in Section 1. A brief synopsis of findings related to surface water in the Chilkat River Slough is provided here. During geotechnical investigations of the PMP 17.7 site conducted in August 2014, investigators sampled surface water from the Chilkat River Slough. Concentrations of contaminants in the slough samples were non-detect for the contaminants of concern (USACE 2014, USACE 2018).

Table 20. Water quality assessment categories used by ADEC.

Category	ADEC definition:
5	Impaired waterbodies where [water quality standards] for one or more criteria are not attained requiring TMDL or recovery plan development. Category 5 waterbodies are those identified on the CWA Section 303(d) list of impaired waters.
4	Waterbodies determined to be impaired, but do not need the development of TMDLs.
4A	Impaired waterbodies for which an EPA-approved TMDL has been established
4B	Impaired waterbodies where [water quality standards] can be attained through other pollution control measures
4C	Failure to meet [water quality standards] criteria for the impaired water is not caused by a pollutant; instead, waterbodies with impairments that are not directly caused by a source of pollution nuisance aquatic plants, degraded habitat, or a dam that affects flow are example causes of impairments for waterbodies in this category
3	Waterbodies where data or information is insufficient to determine if the [water quality standards] for any criteria are attained
2	Waterbodies where [water quality standards] for some criteria are attained, but there is insufficient data and information to determine if the [water quality standards] for the remaining criteria are attained
1	Waterbodies where all [water quality standards] criteria are attained
Source: ADEC 2018a.	

Surface water samples were collected again from the Chilkat River Slough from five locations just west of the area with known groundwater contamination at PMP 17.7 in April 2016. Concentrations of contaminants in the surface water samples from the slough did not exceed the applicable screening criteria (USACE 2017). A sample was also collected in 2016 from a shallow pool of standing water on an exposed gravel bar near the riverbank. Concentrations of TAH and TAqH exceeded ADEC water quality standards in the water sample from the shallow pool. In April 2017, the slough was again sampled in five locations immediately west of the site and all results were non-detect for the contaminants of concern (USACE 2018). To date, samples collected from the flowing water of the slough indicate that the slough is not currently impacted by the site contamination.

3.14.1.2 Groundwater

In conjunction with geotechnical investigations of the site, investigators have monitored groundwater levels in temporary and permanent monitoring wells. The eight permanent monitoring wells were installed in 2014 (USACE 2014, USACE 2018). Groundwater elevations measured in these monitoring wells during each of the monitoring visits are summarized in Table 21, below. Pressure transducers were installed in monitoring wells 1, 3, 4, 5, and 7 in February 2015 to monitor seasonal variations in groundwater elevation and to determine groundwater flow direction in the immediate area. The transducer in monitoring well 5 is out of operation, but the other four pressure transducers provide continuous water level data. Data collected from February 2015 – May 2018 indicated that groundwater levels peak in July and August, decrease throughout the fall and winter, and then begin to rise in April and May (USACE 2018). The magnitude of seasonal fluctuation is approximately 3 to 4 ft. Greater variability is observed in wells nearest the Chilkat River Slough, indicating that the slough influences groundwater elevations at the site. The amount of discharge in the Chilkat River Slough also influences the direction of groundwater flow at the site. In the summer, when river stage in the slough is high, groundwater flows east to southeast, away from the slough. When river stage is low (in the fall, winter, and early spring), groundwater flows west to southwest, toward the slough. The exception is during large rainfall or thaw events, when groundwater flows away from the slough, as in summer months (USACE 2018).

Table 21. Measured groundwater elevations in the 8 monitoring wells at PMP 17.7

Monitoring Well	Surveyed ground elevation1 (ft. NAVD88)	Groundwater Elevations2 (ft. NAVD88)				
		July 2014	November 2015	April/ May 2016	April 2017	March 2018
17-MW1	64.895	62.81	61.79	61.69	61.90	Not Measured (ice)
17-MW2	64.955	63.07	61.50	61.77	62.06	60.47
17-MW3	65.964	62.91	61.56	61.82	62.17	60.78
17-MW4	64.522	64.14	61.44	61.67	62.09	60.34
17-MW5	65.684	63.22	61.30	61.68	62.03	60.32
17-MW6	66.297	63.29	61.27	61.67	62.19	60.59
17-MW7	67.507	63.31	61.01	61.49	62.20	60.51
17-MW8	66.170	63.34	61.20	61.57	62.22	60.52
1 USACE 2014, 2 USACE 2018						

Since 2006, the extent and severity of fuel contamination at the PMP 17.7 site has been investigated and monitored through soil, groundwater, and surface water sampling. Results of groundwater quality monitoring at the site are discussed in Section 3.6, along with results of soil sampling and chemical analyses.

3.14.2 Environmental Consequences

An alternative could significantly impact water resources if it would result in any of the following:

- Alterations to hydrology and the floodplain;
- Long-term impacts to water quality parameters; or
- Accidental spills from construction equipment.

3.14.2.1 Alternative 1 No Action Alternative

Under Alternative 1, the No Action Alternative, dynamic channel migration within the Chilkat River floodplain would continue to influence hydrology in the vicinity of the project site. Decommissioning of the monitoring wells would not impact surface water hydrology, groundwater hydrology, or floodplain storage. A drill rig would be used to decommission the wells, resulting in minor soil disturbance at the site of each monitoring well. In addition, use of the drill rig would require that petroleum products and hazardous materials such as fuels, oils, and lubricants be present onsite. During the decommissioning process, the implementation of mitigation measures and a SWPPP would ensure that impacts to water quality were less than significant. See section 3.6 for a discussion of the potential for natural degradation of groundwater contaminants.

3.14.2.2 Alternative 2 Institutional Controls and Monitored Natural Attenuation

Under Alternative 2, impacts would be similar to those occurring under Alternative 1, but the potential for impacts would be lower, as the monitoring wells would not be decommissioned. Maintenance of the well network would not impact water resources in the project area. There would be no impact to surface water hydrology, groundwater hydrology, water quality, or floodplain storage. See section 3.6 for a discussion of the potential for natural degradation of groundwater contaminants.

3.14.2.3 Alternative 3 Source Excavation and Monitoring

Under Alternative 3, excavation of contaminated soils in the source area and smear zone would not impact surface water hydrology or floodplain storage in the project area. Groundwater hydrology could be temporarily impacted in the event that it is necessary to pump groundwater out of the excavation to meet the project objectives. Extracted groundwater would be discharged into a lined settlement pond, treated with GAC, and discharged within the project area, contingent on ADEC approval. Once excavation was complete and excavated areas were backfilled with clean, geotechnically-suitable soils, groundwater levels would return to normal levels. The impact on groundwater hydrology due to pumping would therefore be temporary and less than significant.

During excavation, stormwater runoff from temporarily disturbed construction and staging areas could contribute sediment laden runoff to water bodies and increase turbidity. Construction areas would be isolated from water bodies to the degree possible by sediment-containment fences. With the implementation of these measures, a SWPPP, and other BMPs identified in Section 2, stormwater-related impacts on water resources would be less than significant.

During construction, petroleum products and hazardous materials such as fuels, oils, and lubricants would be present onsite, primarily in vehicles and construction equipment. Use of these materials increases the risk of accidental discharge into riparian areas or directly into the Chilkat River Slough or the constructed chum salmon spawning channel. Impacts would be reduced to less than significant by implementation of a SWPPP as well as use of standard construction BMPs designed to best contain hazardous materials and reduce the chances of spills or leaks. These measures are described in Section 2. Construction actions under this alternative would have less than significant impacts on water resources in and around the excavation and landfarm areas.

The actions of removing and treating the soils and groundwater in the source area and smear zone would result in greatly reduced concentrations of contaminants in the project area, and would diminish the possibility of contaminated groundwater moving into the Chilkat River Slough. This would be a beneficial impact. The USACE would continue to monitor contaminant levels in groundwater and in the seep on the bank of the Chilkat River Slough to evaluate the effectiveness of this action.

Depth to groundwater at the landfarm area is estimated to be between 10 feet and 12 feet. Leachate from the soils deposited at the landfarm parcels is not anticipated to reach near to the groundwater levels. Also, contaminant concentrations would be greatly attenuated by natural processes and through exposure to oxygen during excavation, transport, and spreading, so any impacts would be less than significant.

3.14.2.4 Alternative 4 Source Excavation, In-situ Treatment, and Monitoring (Preferred Alternative)

Under Alternative 4, excavation would proceed as planned for Alternative 3. Impacts to groundwater hydrology would be temporary and less than significant. As under Alternative 3, the implementation of mitigation measures and a SWPPP would ensure that construction-related impacts to water resources were less than significant.

Under Alternative 4, in-situ treatment materials would be incorporated adjacent to smear zone contamination that can't be removed, such as under the highway. In addition, an oxygen-releasing compound and/or activated carbon would be incorporated into the backfill material prior to placing the material into the excavations. For a discussion of the impact of these treatment methods on groundwater quality, please refer to section 3.6.

3.15 Cumulative Impacts

Cumulative impacts are evaluated by reviewing the effects of past, present, and reasonably foreseeable future actions within a given area. This section provides a review of past, present, and future actions together with the proposed action, to provide an assessment of the cumulative impact of all actions.

Previous actions that have altered the natural or human environment in the project area include the construction of the Haines Highway in the 1940s, the installation of the HFP in the 1950s, and the subsequent decommissioning of the HFP in the 1970s. Since the original construction, the Haines Highway has undergone periodic maintenance events, and a redesign effort along several sections of the highway in order to meet current state highway standards (ADOT&PF 2019).

Reasonably foreseeable future actions include continuation of the effort to reach the highway standard. In 2016, plans for completing improvements to the highway were initiated. The Haines Highway Improvements Project for the section between MP 3.9 and 25 is an ongoing project that includes realignment, widening, and straightening of portions of the highway to meet the 55 mph state highway standard (ADOT&PF 2019). Construction was initiated in 2019, and will continue through 2020 or beyond.

The proposed contaminant remediation alternative would not result in significant adverse effects to any of the resource areas evaluated in this EA. Instead, the removal of contaminants from the environment would provide an incremental improvement to soil, sediment, groundwater and surface water quality, a reduction in POL contamination in the environment, and would aid in protection of biological resources and public health.

4 CONSULTATION AND COORDINATION

American Indian Religious Freedom Act of 1978, 42 U.S.C. § 1996

Requires Federal agencies to ensure that religious rights of Native Americans are accommodated during project planning, construction, and operation. Representatives from the Chilkat Indian Village and Chilkoot Indian Association have been notified of the planning of this project through the public outreach phase.

Archaeological Resources Protection Act of 1979, 16 U.S.C. §§ 470aa-470mm

Secures the protection of archaeological resources and sites which are on public lands and Native American lands. The USACE will coordinate with SHPO and Tribal interests throughout the planning and public outreach phase to ensure protection of archeological resources.

Bald and Golden Eagle Protection Act of 1940, 16 U.S.C. § 668 et seq.

Prohibits the take, possession, or disturbance of any bald or golden eagle. Coordination with the USFWS throughout the planning process will ensure protection of bald and golden eagles during construction. This EA provides a review of the avoidance and minimization measures that will be taken under the selected alternative to ensure consistency with this law.

Clean Air Act, as amended, 42 U.S.C. § 7401–7671q

Requires Federal agencies to control and abate air pollution. The project will not violate air quality standards and is in compliance with the Clean Air Act.

Clean Water Act, as amended, 33 U.S.C. 1251–1387 § 401

Requires Federal agencies to comply with state water quality standards. This EA details the process by which a FUDS will be remediated in order to curtail ongoing water quality contamination. It also provides measures to ensure that the remediation process will not introduce additional contaminants into surface water.

Clean Water Act, as amended, 33 U.S.C. 1251–1387, § 402

Section 402 compliance is needed for projects that may discharge stormwater to surface waters. The USACE would develop a SWPPP and implement Best Management Practices for Section 402 compliance. If needed, USACE would obtain an NPDES stormwater permit for the excavation and landfarming processes.

Clean Water Act, as amended, 33 U.S.C. 1251–1387 § 404

Section 404 requires Federal agencies to protect waters of the United States. It regulates the discharge of dredged or fill material into waters (and excavation) unless it can be demonstrated there are no reasonable alternatives. Nationwide Permit 38 authorizes specific activities required to effect the containment, stabilization, or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority. Instead of issuing itself a Section 404 permit, the USACE incorporates by reference the Nationwide Permit No. 38 Cleanup of Hazardous and Toxic Waste (40 CFR 1502.21). As the State of Alaska has certified all Nationwide Permits, there is no need to obtain a CWA Section 401 Certificate of Reasonable Assurance for projects that fall under Nationwide Permit No. 38. Additionally, the Pre-construction Notification (PCN) required under General Condition 31 to this NWP does not apply to this project, as the USACE is adopting the analysis behind the NWP and not the permit itself.

Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA, 40 C.F.R. §§ 1500–1508

Document provides regulations applicable to and binding on all Federal agencies for implementing the procedural provisions of NEPA. This EA has been prepared under the guidelines provided in the CEQ regulations document.

Endangered Species Act as amended (16 U.S.C. §§ 1531–1544)

Requires Federal agencies to protect listed species and consult with USFWS or NMFS regarding the proposed action. The USACE has determined that no listed species would be affected by the proposed action and no Biological Opinions or Incidental Take Statements are required.

Fish and Wildlife Coordination Act (16 U.S.C. §661 et seq.)

Requires Federal agencies to consult with the USFWS on any activity that could affect fish or wildlife. Coordination with the USFWS will occur throughout the planning phase and preparation of the EA.

Magnuson-Stevens Fishery Conservation and Management Act - Fishery Conservation Amendments of 1996, (16 U.S.C. §§ 1801–1883) – Essential Fish Habitat (EFH)

Governs marine fisheries management, protects and enhances fisheries populations, including anadromous fish migrating through the project area. This EA evaluates potential effects to EFH and finds that there would be no adverse impact.

Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)

Prohibits the take, possession or disturbance of any migratory bird, nests, or eggs without a Federal permit. Coordination with the USFWS throughout the planning process will ensure protection of MBTA species during construction.

National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. §§ 4321–4347)

Requires Federal agencies to consider the environmental effects of their actions and to seek to minimize negative impacts. This EA has been prepared to identify environmental impacts and make a determination of the need for preparation of an Environmental Impact Statement (EIS).

National Historic Preservation Act (16 U.S.C. §§ 470 and 36 CFR 800): Protection of Historic Properties

Requires Federal agencies to identify and protect cultural and historic resources. The USACE is coordinating with Tribal representatives and the Alaska SHPO. The USACE would continue this coordination to meet requirements of Section 106 of the NHPA during the construction phase.

Noise Control Act of 1972, 42 U.S.C. §4901 et seq.

Established a national policy to promote an environment free from noise that jeopardize health and welfare. This EA evaluates the potential for the selected alternative to increase noise during construction or operation and finds that no significant impact to noise would occur.

Rivers and Harbors Act of 1899 (33 U.S.C. § 403)

The creation of any obstruction to the navigation of any waters of the U.S. is prohibited without congressional approval. The proposed action would not affect navigable waters.

Environmental Quality Formerly Used Defense Sites (FUDS) Program Policy Engineering Regulation (ER) 200-3-1, 10 May 2004

This regulation provides specific policy and guidance for management and execution of the Formerly Used Defense Sites (FUDS) program. This EA has been prepared in accordance with FUDS regulatory guidelines to document the process of contaminant remediation at a non-NPL FUDS.

Executive Order 11988, Floodplain Management, 24 May 1977

Executive Order (EO) 11988 (May 24, 1977) requires a Federal agency, when taking an action, to avoid short and long term adverse effects associated with the occupancy and the modification of a floodplain. The proposed action would not induce development of a floodplain, and is in compliance with this EO.

Executive Order 11514, Protection and Enhancement of Environmental Quality

Assigns responsibility to Federal agencies to protect and enhance the quality of the Nation's environment. Preparation of the EA will ensure that environmental conditions are protected.

Executive Order 11990, Protection of Wetlands

Requires Federal agencies to protect wetland habitats. The USACE is designing this project to affect wetlands to the least degree possible. The site would be regraded upon completion of the project and it is likely that a wetland plant community would regenerate within one year.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Requires Federal agencies to consider and minimize potential impacts on low income or minority communities. This EA includes evaluation of impacts to Environmental Justice communities in the project area.

Executive Order 13007, Indian Sacred Sites

Directs Federal agencies to provide access and ceremonial use of sacred sites on Federal lands and avoid affecting their physical integrity. No Federally-owned lands are known in the project area. Should such lands be identified in the future, the USACE and the relevant Federal agency would consult with appropriate Tribes to determine if any sacred sites are located on those lands.

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks

Requires Federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. Preparation of the EA includes the evaluation of environmental health and safety risks, and measures necessary to protect children from those risks.

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments

Directs Federal agencies to recognize Native American sovereignty in government-to-government relationships and to consult with Tribes in adopting regulatory policies that have Tribal implications. The USACE is consulting with Tribal representatives to identify and address concerns in the study area. The USACE will also consult with Tribes in decisions regarding proposed measures and alternatives.

Executive Order 13751, Safeguarding the Nation from the Impacts of Invasive Species

Requires Federal agencies to take reasonable measures to prevent the spread and introduction of invasive species as a result of their management or construction actions. This EA contains mitigation measures to prevent spread of invasive species.

Executive Order 13287, "Preserve America"

Enhances practices that protect the cultural heritage of the U.S. The USACE will identify any historic properties it manages in the study area and determine if any proposed actions would affect those properties.

Alaska Chilkat Bald Eagle Preserve

The Alaska Chilkat Bald Eagle Preserve (Preserve) was established in 1982 (Alaska Statutes § 41.21.610 – 630). The statute established the Preserve as part of the state park system with the primary purpose of protecting and perpetuating the Chilkat bald eagles and their essential habitats. The Preserve is also statutorily intended to (1) protect and sustain the natural salmon spawning and rearing areas of the Chilkat River and Chilkoot River systems within the preserve in perpetuity; (2) provide continued opportunities for research, study and enjoyment of bald eagles and other wildlife; (3) ensure to the maximum extent practicable water quality and necessary water quantity under applicable laws; (4) provide for other public uses consistent with the primary purpose for which the Alaska Chilkat Bald Eagle Preserve is established; and (5) provide an opportunity for the continued traditional and natural resource based lifestyle of the people living in the general areas described in AS 41.21.611(b), consistent with the other purposes of this subsection and (a) of this section.

5 COMMUNITY PARTICIPATION

USACE Alaska District has released this EA for a 30-day public comment period starting on February 5, 2020. The public is encouraged to provide comments on any of the alternatives presented in this EA for the Haines Fairbanks Pipeline Milepost 17.7 FUDS. The public comment period ends on March 6, 2020.

Comments can be submitted to USACE by any of the following methods:

- Mail a written comment to the following address:
  ATTN: CEPOA-PM-ESP-FUDS (Astley), PO Box 6898, JBER, AK 99506
- Email a comment to the following address:
  POA-FUDS@usace.army.mil
- Attend the public meeting:

PUBLIC MEETING

February 13

7:00 – 8:30 PM

Chilkat Center for the Arts

Haines, Alaska

Evaluation of public comments is a significant factor in the final alternative selection. A final decision for each of the alternatives evaluated in this EA will be made only after public comments are considered. USACE will provide a written response to all significant comments. A summary of the responses will accompany the Final EA and will be made available in the Administrative Record located at the Information Repository.

Contact Information

For additional information, please contact:

Beth Astley

USACE Project Manager

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Information Repository Location

Additional detailed information that is not presented in this Environmental Assessment (documents that detail previous investigations, remedial actions, and results) is available for your review in the project Administrative Record, located at the Information Repository for the Haines-Fairbanks PMP 17.7 Project at the Haines Library, 111 3rd Ave, in Haines, Alaska.

Electronic Copy

An electronic copy of this Environmental Assessment is available during the public comment period at https://www.poa.usace.army.mil/Library/Reports-and-Studies.

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Appendix A: SHPO Coordination Letter

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, ALASKA DISTRICT
P.O. BOX 6898
JBER, AK 99506-0898

Ms. Judith Bittner
State Historic Preservation Officer
Office of History and Archaeology
550 West 7th Avenue, Suite 1310
Anchorage, AK 99501-3565

SEP 1 1 2019

Dear Ms. Bittner,

The U.S. Army Corps of Engineers (USACE), under the Formally Used Defense Sites (FUDS) Program is planning on conducting contaminated water and soil removal, in-situ treatment, and installation of groundwater monitoring wells at the Haines-Fairbanks Pipeline Mile Post section 17.7 (Section 23, T29S, R57E, USGS Quad Skagway B-3, Copper River Meridian, Figure 1). In compliance with Section 106 of the National Historic Preservation Act of 1966 [36 CFR § 800.2(a)(4)], the purpose of this letter is to notify you of a Federal undertaking and to seek your concurrence on an assessment of effect that the proposed undertaking will result in **no historic properties affected** per 36 CFR § 800.4(d)(1).

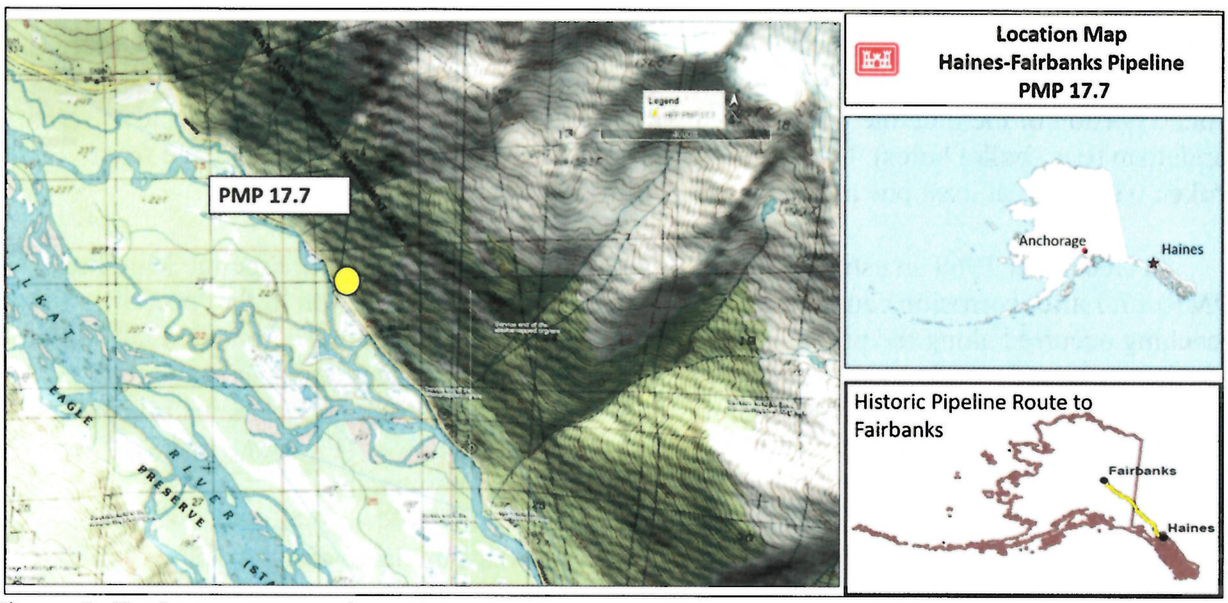

Figure 1. Project area overview.

Context

Haines was originally settled by the Chilkat Tlingit, who controlled trading routes between the coast and interior (DCRA 2019). A school and mission was constructed in Haines 1881. During the Klondike gold rush in the 1890s Haines operated as a mining supply center, suppling miners to travel the Dalton Trail. The first military post was established in 1904, dubbed Fort William H. Seward and was renamed Chilkoot Barracks in 1922 (Mighetto and Homstad 1997).

The Haines-Chilkat Road (Road No. 3) was constructed in 1906 consisting of a 12-foot wide gravel road (Yarborough 2014).

During World War II, there was an increasing need for fuel at military facilities in Alaska's interior regions. The 1,600-mile long Canadian American Gas Oil Pipeline (CANOL) was completed in 1944 to fulfill this need by moving Canadian crude oil to a refinery near Whitehorse then refined fuel to Fairbanks, Skagway, and Watson Lake. Because the pipe was inefficient, leaky, and expensive to maintain, the CANOL was shut down in 1945. However, fuel delivered to Skagway continued to be delivered on a limited basis to Fairbanks through the CANOL until 1958. The continued build-up of Alaskan military facilities during the Cold War necessitated a reliable fuel supply to interior military bases once again. The Haines-Fairbanks Pipeline (HFP) was built to fill this need; it operated from 1955 to 1973. The 626-mile-long pipe was eight inches in diameter and transported fuel from Haines to Fort Greely and the Eielson and Ladd Air Force Bases near Fairbanks. The pipe carried four types of fuel: diesel, automotive gas, jet fuel, and aviation gas. The original design included five pump stations, but in 1961, six "booster stations" were added in order to increase fuel output. The pipeline system delivered as much as 27,500 barrels of fuel a day (Hollinger 2003).

The pipeline was built by first clearing a 50-foot-wide corridor. All brush and organic material was pushed to the edges of the right-of-way (CEMML 2003:13). Much of the pipeline was laid on the ground surface, although approximately 96 miles near Delta Junction and most of the 42 miles between the Haines Fuel Terminal and the Canadian border were buried. Other, smaller intervals of the pipeline were also buried over time (CEMML 2003:15). The above-ground portion of the pipeline was plagued with leaks from corrosion, ice damage, and vandalism (e.g., bullet holes). Underground portions of the pipeline suffered damage from broken welds and at least one accidental breach from borehole drilling.

In December 1968 an estimated 33,600 gallons of fuel was spilled at Pipeline Mile Post (PMP) 17.7 after corrosion caused a leak in the line. Extensive excavation in the form of trenching occurred along the pipeline in an attempt to locate the high pressure leak. Fuel spilled into the excavated trenches and was subsequently pumped back into a tank and burned off numerous times in a steel vault or burn box. Today this section of the HFP remains in a water-filled trench approximately 15 feet northwest of the Haines Highway (Figures 2 and 3). The pipeline is currently being used as an utilidor by local utility companies.

In 1970, the Haines to Tok section of the pipeline was shut down and the Tok to Fairbanks section was closed in 1973. The pipeline section between Eielson Air Force Base and Fort Wainwright was used until 1992 and the tanks farms at Haines and Tok continued to be used for fuel storage. Tok tank farm was used for strategic fuel reserve storage until 1979 and Haines was used for the same purpose until 1988. After the Canada to Haines section of line was closed, fuel was delivered by truck to Tok from Anchorage.

Project Description

The proposed project is to address fuel-contaminated soils and water at the Haines-Fairbanks Pipeline Milepost 17.7 (PMP 17.7) Formerly Used Defense Site, located near Haines

Highway Milepost 15.5, north of the city of Haines (Figure 4). The site is located within the Alaska Department of Transportation and Public Facilities (ADOT&PF) Highway right-of-way. Although partial remediation of the fuel contaminants occurred shortly after the time of release, remaining contamination has been identified in the soils and groundwater through sampling performed by the U.S. Army Corps of Engineers, Alaska District. Until 2018, the contamination was understood to be confined to the soils and groundwater in the immediate project area, and was being actively monitored by the USACE. However, a 2019 groundwater monitoring survey identified what appeared to be contaminated groundwater emerging from a seep located near Chilkat River Slough, a tributary to the Chilkat River. The purpose of this action is to address sources of contamination to remove the completed pathways to the environment. The source removal action is intended as an intermediate step toward the remedy, rather than a final remedial decision for the project. The preferred alternative for this action is to excavate and treat up to 15,000 tons of fuel-contaminated soil, treat approximately 1 million gallons of groundwater and any contaminated soils using in-situ treatment methods to remediate any residual contamination. The excavated area would be backfilled and monitored to ensure project goals are met. The project is expected to occur in early spring of 2020 lasting an estimated 12 weeks ending in summer of 2020. Major aspects of the project requiring consultation under Section 106 of the National Historic Preservation Act (NHPA) include vegetation clearing and grubbing, construction of staging and stockpiling areas, soil excavation, groundwater monitoring, and on-site and in-situ treatment or removal of contaminated soils and water.

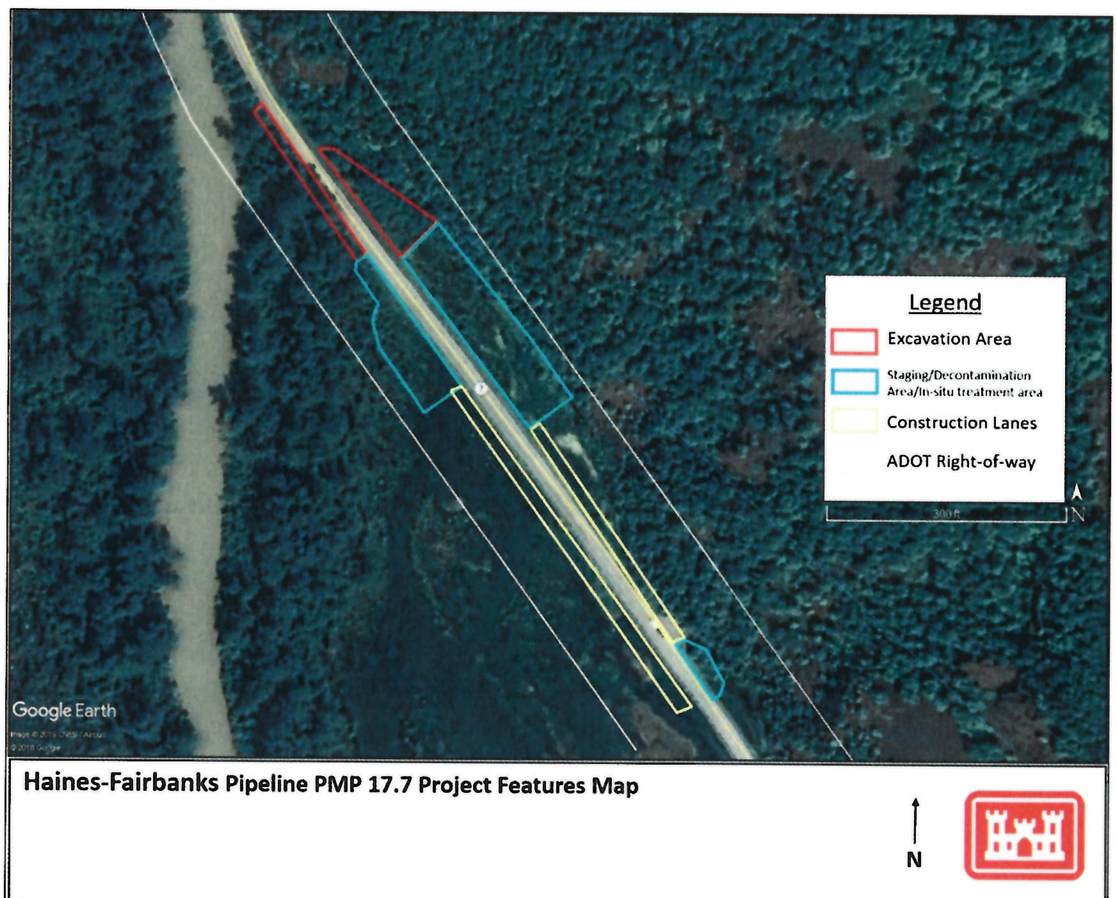

Figure 2. Features of proposed PMP 17.7 soil removal, with excavation areas in red and staging in blue.

Vegetation Clearing and Grubbing

Clearing and grubbing of vegetation along the edge of the Haines Highway shoulder and in the proposed project area will take approximately two weeks and would require removal of several large diameter trees. The approximate area for grubbing and brushing consists of approximately 0.75 acres with one additional acre to be cleared for equipment movement and staging areas.

Staging and Stockpile Areas

Excavated materials would be stockpiled within the proposed excavation area to the extent practical. Construction of a stockpile pad/equipment laydown area will be needed outside the excavation areas and most likely will be installed on the west side of the highway south of the proposed excavation area. Temporary staging areas would be constructed adjacent to or nearby the project site with the minimum footprint necessary. Staging areas would be removed after the completion of the excavation effort. Site backfill and restoration will occur following close of project activities.

Soil Excavation

Soil excavation is proposed to occur on both the east and west sides of the highway (see Figure 2). An estimated 13,500 square feet of POL-contaminated soil will be removed from the east side of the highway to a depth of approximately 10 feet, totaling approximately 7,500 tons of contaminated soil. West of the highway an estimated 9,300 square feet of contaminated soil will be excavated to a depth of five feet, totaling approximately 5,000 tons of contaminated soil. Excavation would not encroach on the existing highway road prism. Clearing and grubbing would take place on the highway shoulder, but, excavation, piping, and backfill would be completed only in areas sufficiently distant from the highway to ensure that the roadway embankment is not compromised.

Soil and In-Situ Treatment

Excavated soils are expected to be treated onsite or at another location within the greater Haines area via land farming. On site treatment of contaminated soils using a land farm would require an area suitable for excavated materials to be deposited and allowed to naturally attenuate without contaminating groundwater or surface water. A treatment location has yet to be selected, however an ideal location would be within trucking distance of the site. If an in-situ treatment is found not to be feasible the excavated material will be sent to a treatment facility out of state. If a treatment area is identified outside of the current APE, the USACE, Alaska District will consult on any new locations. Piping to support oxygen injection into the soil will be installed during excavation of contaminated soils. Following close of excavation, oxygen could be pushed into the soil in an effort to decrease bioremediation time of impacted soils.

Groundwater Monitoring

Groundwater monitoring wells currently exist within the excavation footprint and will be decommissioned prior to excavation of contaminated soil. Following close of excavation groundwater monitoring wells would be installed at the excavation area to allow for later groundwater testing.

Groundwater Treatment

The site is within the Chilkat River floodplain and as such is subject to groundwater fluctuations that rise and fall corresponding to precipitation events. Groundwater will be pumped out of the excavated areas and will be collected in lined containment areas to prevent seepage or leaks into the soil below. Collected water would be treated through a granular activated carbon (GAC) filtration station and discharged into a second lined contaminant area. Water in the second area would be tested and discharged into wetlands adjacent to the excavation area. Additionally,

Equipment

Equipment needed to complete the project includes heavy tracked construction equipment, Connex containers for storage, and construction of four (two each) lined staging cells to allow for storage of soil and dewatering and for storage and treatment of groundwater. A list of equipment and facilities likely to be needed during construction is in Table 1.

Table 1. Facilities and equipment to be required for the project.

Equipment Type	#
Tracked hydraulic excavator	2
Loader with 5-cubic yard bucket	1
Side or end dump trucks	3-10
½ ton trucks for contractor personnel	3
Connex container for tools and miscellaneous equipment	2
Granular activated carbon (GAC) filtration station	1
Lined soil staging cells, approximately 2,500 square feet	2
Lined water containment cells, 5,000 square feet with 10,000 cubic foot capacity	2

Site Demobilization

Upon completion of construction, clean topsoil will be spread over the excavated areas. The site will be recontoured to match existing topography to the extent practicable. Previously vegetated areas that are disturbed due to the contaminated soil removal may require seeding with certified weed-free native seed mixture and fertilizer, based on applicable land management requirements.

Figure 3. Overview of PMP 17.7 on east side of highway, pipeline was located along the right edge of the wetland, view NW (M. Grover 2007).

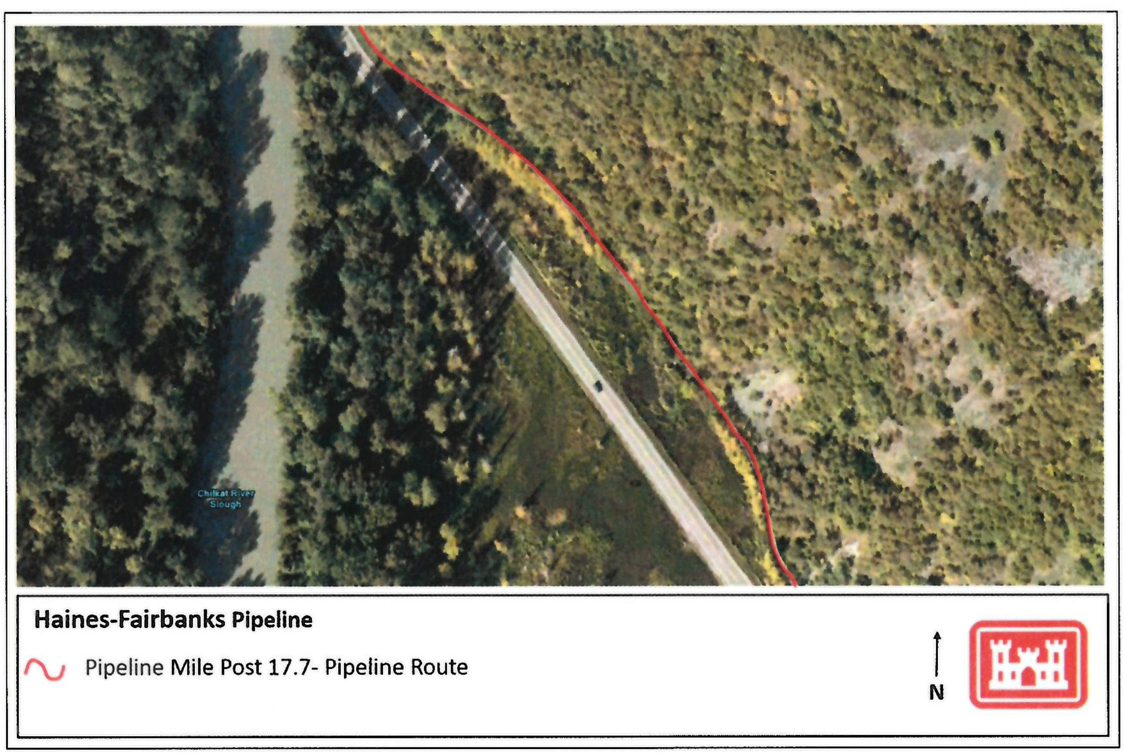

Figure 4. Approximate location of historic Haines-Fairbanks Pipeline route in red at Haines-Fairbanks PMP 17.7.

Area of Potential Effect

The Area of Potential Effect (APE) for this project includes sections of land located east and west of the Haines-Highway adjacent to Haines Highway Milepost 15.5 (Figure 5). This area consists of approximately 10.6 acres of land. The Haines Highway itself will also be used as a transportation route to access the site and as such is considered to be part of the APE, however use of the Haines-Highway outside of the proposed APE will be limited to the transportation only (Figure 6). Given that construction equipment traveling outside of the APE will be limited to the Haines Highway and other established roads, examination of cultural resources south and north of the project area along the highway is limited to those resources considered crossing the highway. Only two sites met this definition, these are SKG-00247 the Chilkat River-Haines Highway Bridge located approximately 8 miles north of the project area and SKG-00054 Yindastuki, a historic fishing village located approximately 11 miles southeast of the proposed project area.

Figure 5. Defined Area of Potential Effect for the HFP PMP 17.7 removal action in yellow.

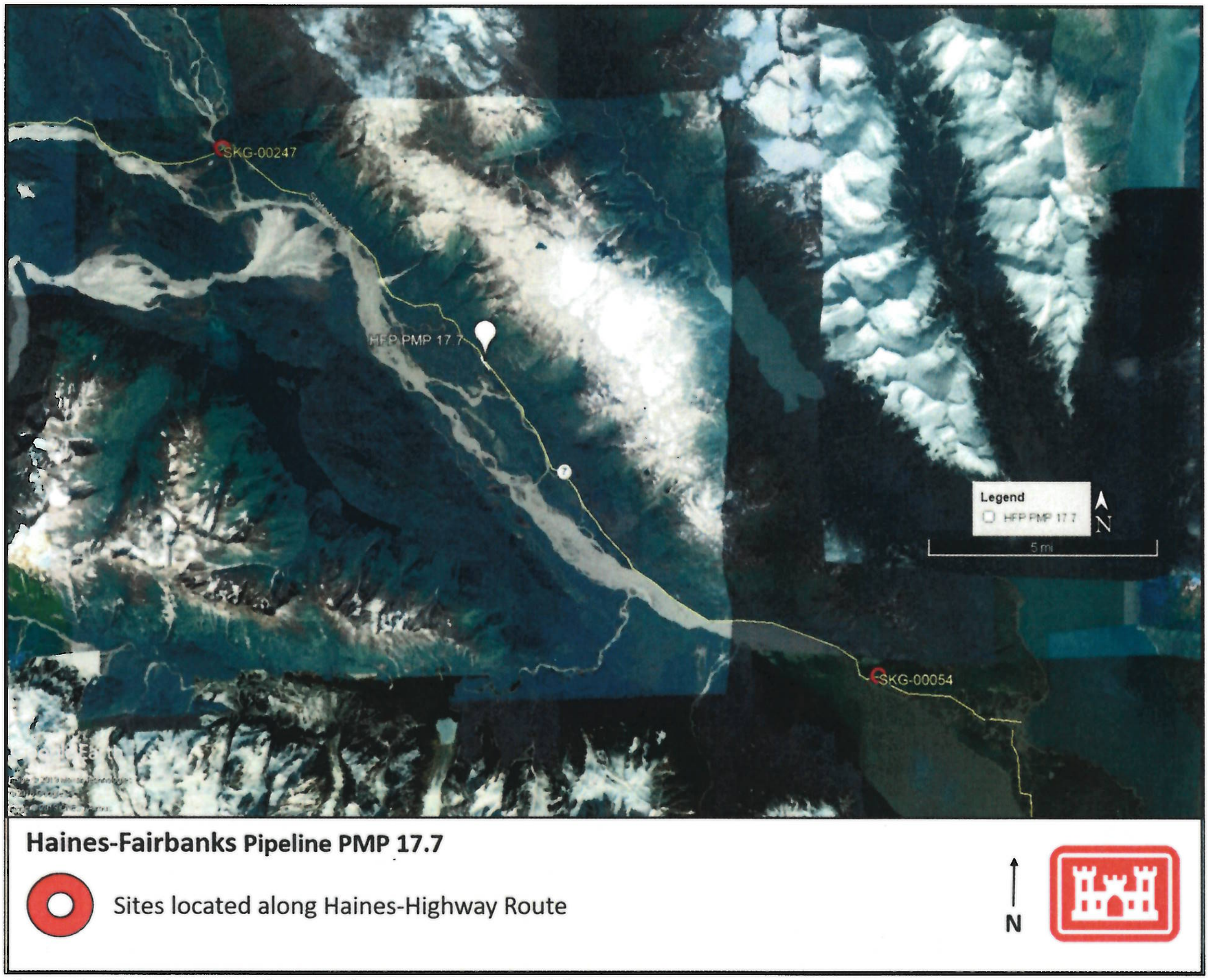

Figure 6. Historic properties crossing or on Haines-Highway access route.

Identification of Historic Properties

The USACE, Alaska District has reviewed documents in the AHRS document repository and mapper modules. Additionally general plans for the HFP indicated the location of features as did initial past field efforts by the USACE to identify the location of cultural resources within the APE. In 2004, the USACE, Alaska District conducted removal of four underground storage tanks and associated contaminated soil in Haines proper, the project was determined to have no effect to historic properties (USACE 2004). In 2007, USACE, Alaska District archaeologist, Margan Grover conducted a site visit to the PMP 17.7 release area. Grover documented heavy disturbance in the area citing past remediation efforts. During the 1968 spill, trenching was required to locate the high-pressure leak, as a result of attempts to locate the leak the trench filled with leaking fuel which was then burned off over the course of several months in the winter (Grover 2007). In 2007, the USACE, Alaska District found the Haines-Fairbanks Pipeline (SKG-00206) eligible under Criterion A as a discontinuous district with six contributing properties eligible under Criteria A and C. In 2012, the Federal Highway Administration (FHWA) recommended below ground sections of SKG-00206 as ineligible for listing on the NRHP due to lack of integrity.

The Haines-Fairbanks Pipeline (SKG-00206), the Chilkat River-Haines Highway Bridge (SKG-00247), and Yindastuki (SKG-00054) were identified to be within the proposed APEs for the PMP 17.7 undertaking (Table 2). Additionally, two areas containing depressions are located north and south outside the proposed APE, sites SKG-00544 and SKG-00545 were recorded by Cultural Resource Consultants (CRC) during 2006 and 2009 field surveys. SKG-00544 is located approximately 0.75 miles north along the highway from the APE and consists of eight depressions occurring on the south side of the highway in an area vegetated with cottonwoods and rosebushes The site was tested by Cultural Resource Consultants (CRC 2011) in 2006 and 2009, a shovel test halfway between two features revealed charcoal and calcined bone at 38-45 centimeters below surface. SKG-00544 is considered eligible for the NRHP under criterion D for its potential to yield important information. Site SKG-00545 is located 0.30 miles south along the highway of the project area. SKG-00545 is located on top of a steep bluff, examination of the area by CRC in 2006 and 2009 revealed charcoal and fire cracked rock, SKG-00545 has been determined eligible for listing on the NRHP under criterion D for its potential to yield important information. No other cultural resources were identified to be in either the site or linear APEs.

Table 2. Sites within and around Areas of Potential Effect (APEs) of PMP 17.7.

AHRS No.	Site Name	NRHP Status	‡Site APE	*Linear APE
SKG-00054	Yindastuki	Eligible		X
SKG-00206	Haines-Fairbanks Pipeline	Not Eligible	X	
SKG-00247	Chilkat River-Haines Hwy. Bridge	Eligible		X
SKG-00544	8 Depressions	Eligible		
SKG-00545	Testing on flat bench	Eligible		

Note:
‡ Site APE consists of area shown in Figure 5
* Linear APE consists of section of Haines Highway which will be used for transportation only (see Figure 6).

Assessment of Effect

In a letter dated November 28, 2011 the Alaska Department of Transportation and Public Facilities found that buried sections of Haines-Fairbanks Pipeline between Haines Highway Mileposts 3.5 and 23.5 did not retain sufficient integrity to contribute to the Haines-Fairbanks Pipeline (SKG-00206) and the SHPO concurred in a letter dated February 24, 2012. Although the section of pipeline is located on the east side of the APE for this specific task, the pipeline will not be disturbed during removal of contaminated soil in the area. In 2013, the FHWA entered into an MOA regarding the above-ground sections of SKG-00206. With the execution of that MOA and its fulfillment in 2015, the entire pipeline section (from Haines to the Canadian border) was considered not eligible for the NRHP. Pipeline Mile Post 17.7 falls within the designated linear boundary of SKG-00260, the Haines section of the Haines-Fairbanks Pipeline. Neither aboveground nor belowground elements of the pipeline in this area are eligible for listing on the National Register of Historic Places and as such soil excavation in the area of PMP 17.7 will not cause an adverse effect to SKG-00260.

Sites SKG-00054 (Yindastuki) and SKG-00247 (Chilkat River-Haines Highway Bridge) are both located along the designated linear highway transportation APE for the project. The designated linear APE crosses an area of approximately 22 miles and will be used for transportation purposes only (see figure 6). Two sites were identified during a search of the AHRS as occurring on or crossing the Haines Highway and as such warrant a brief discussion. The Yindastuki site is located approximately 11 miles south of the project area and occurs on both the north and south sides of the Haines Highway, which may be used during the project. The Yindastuki site was a once important permanent fishing village, the site consists of standing buildings and a cemetery. SKG-00054 is considered eligible for listing on the NRHP under Criterion A as an important historic settlement and as a traditional gathering place. Yindastuki is also eligible for listing on the NRHP under Criterion D for its potential to yield information important for understanding the Chilkat Tlingit culture and lifeways. The Haines Highway runs directly though the Yindastuki site, essentially bisecting it. Although the section of the Haines-Highway which runs through the middle of the Yindastuki site will be used for transportation to and from the project area and Haines, no adverse effect is expected to occur from the proposed action as the Haines Highway is crossed numerous times a day by motor vehicle traffic using the same proposed route.

The Chilkat River-Haines Highway Bridge (SKG-00247) is located 8 miles northwest of the proposed removal area. The Chilkat River-Haines Highway Bridge was constructed in 1958 and spans a distance of just over 500 feet long, crossing the Chilkat River. The Chilkat River-Haines Highway Bridge is one of the longest historic steel stringer bridges with a reinforced concrete deck in the State of Alaska and as such has been determined eligible for listing on the NRHP under Criterion C for its distinctive characteristics. The bridge will be used by project equipment (see table 1) to cross the Chilkat River. The USACE, Alaska District has determined that use of the Chilkat River Bridge in the manner proposed will not constitute an adverse effect to this historic resource as it will be used in a manner consistent with its historic purpose.

Two other sites are located north and south of the proposed project area. SKG-00544 and SKG-00545. Both sites were identified by CRC during surveys in 2006 and 2009. SKG-00544 is located north of the APE and consists of eight surface feature depressions located on the south side of the highway in a vegetated area. A shovel test pit was excavated between two of the features and revealed charcoal and calcined bone 38 to 45 cm below the surface. SKG-00545 is located south of the project 0.30 miles south along the highway of the project area. SKG-00545 is located on top of a steep bluff, examination of the area by CRC in 2006 and 2009 revealed charcoal and fire cracked rock. Although, both sites demonstrate the areas' potential for the presence of subsurface cultural resources, both SKG-00544 and SKG-00545 are located on slightly elevated areas. The project area by contrast is located in a low flat lying area frequently inundated by water and subject to groundwater action. In addition to the project areas' low probability for cultural resources to occur, the area has also been subject to past disturbances, for example during the initial construction of the Haines-Fairbanks Pipeline, the Haines Highway, and initial remedial action by the Army during the PMP 17.7 spill, and numerous environmental subsurface testing efforts, and groundwater monitoring well installations efforts since 2006. Furthermore, examination of the area by a USACE, Alaska District archaeologist in 2007 (Grover 2007), also deemed the site unlikely to contain unknown subsurface archaeological resources given its past history of disturbance.

Conclusion

The proposed undertaking has the potential to effect the Haines-Fairbanks Pipeline (SKG-00206), however SKG-00206 is not eligible for listing on the NRHP, and as such the project will not cause an adverse effect to SKG-00206. Known historic properties with subsurface components exist north and south of the project area, however these sites are located on higher potential terrain for the presence of cultural resources, whereas the proposed project area is located in a flat low-lying area subject to frequent flooding events and has a history of subsurface disturbance during past construction activity and environmental remediation efforts. As such the proposed project area has low probability for the presence of unknown subsurface cultural resources. Following 36 CFR § 800.4(d)(1), the USACE seeks your concurrence on the determination that the proposed 2020 undertaking to excavate and treat contaminated soils and water at PMP 17.7 will result in **no historic properties affected**. If you have any questions about this project, please contact Forrest Kranda by phone at 907-753-2736, or by email at forrest.j.kranda@usace.army.mil.

Sincerely,

Forrest J. Kranda
Archaeologist
Environmental Resources Section

Cc:
Michele Metz, Lands Manager, Sealaska Corporation
Les Katzeek, Council President, Chilkoot Indian Association
Kimberley Strong, Tribal Council President, Chilkat Indian Village
Alekka Fullerton, Borough Clerk, Haines Borough

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