Tanana Community Hall Lot
Property Assessment and Cleanup Plan

February 2015

SHANNON & WILSON, INC.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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Submitted To:
Alaska Department of Environmental Conservation
Contaminated Sites Program
555 Cordova Street
Anchorage, Alaska 99501

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TANANA COMMUNITY HALL LOT
PROPERTY ASSESSMENT AND CLEANUP PLAN

February 24, 2015

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ACRONYMS AND ABBREVIATIONS

ºF	degree Fahrenheit
ACC	Alaska Commercial Company
ADCCED	Alaska Department of Commerce, Community, and Economic Development
ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resources
ANCSA	Alaska Native Claims Settlement Act
ARRC	Alaska Railroad Corporation
AST	aboveground storage tank
ASTM	American Society for Testing of Materials International
ATV	all-terrain vehicle
bgs	below ground surface
BLM	Bureau of Land Management
BTEX	benzene, toluene, ethylbenzene, and xylenes
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
COC	chain of custody
COPC	contaminant of potential concern
CSM	conceptual site model
cy	cubic yards
DRO	diesel range organics
EPA	United States Environmental Protection Agency
ERNS	Emergency Response Notification System
ESA	Environmental Site Assessment
FAA	Federal Aviation Administration
GRO	gasoline range organics
IGAP	Indian General Assistance Program
IHS	Indian Health Services
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of detection
LUST	leaking underground storage tank
MS	Matrix Spike Sample
MSD	Matrix Spike Sample Duplicate
NATC	North American Trading Company
NCC	Northern Commercial Company
NPL	National Priorities List
PACP	Property Assessment and Cleanup Plan
PAH	polynuclear aromatic hydrocarbons
PCB	polychlorinated biphenyl
PID	photoionization detector
ppm	parts per million
QA	quality assurance
QC	quality control

RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
ROM	rough order of magnitude
RPD	Relative Percent Difference
RRO	residual range organics
R&R	Reuse and Redevelopment
SGS	SGS North America, Inc.
TSD	Treatment, storage, or disposal
TTC	Tanana Tribal Council
UAF	University of Alaska Fairbanks
UST	underground storage tank
WELTS	State of Alaska Well Log Tracking System

PROPERTY ASSESSMENT AND CLEANUP PLAN
TANANA COMMUNITY HALL LOT – ADEC FILE # 780.57.004

EXECUTIVE SUMMARY

This Property Assessment and Cleanup Plan (PACP) was prepared for the Tanana Community Hall Lot (Lot 7, Block 11; the Property) in Tanana, Alaska, by Shannon & Wilson, Inc. under contract with the Alaska Department of Environmental Conservation (ADEC). The overall purpose of the PACP is to present information related to site background in a single location; known, suspected, or potential environmental conditions that could pose a risk to human health and/or the environment; plans for reuse and redevelopment of the Property; and options to mitigate environmental concerns. This document is intended to support planning for corrective actions required to reuse and/or redevelop the Property. We investigated potential environmental concerns through a site reconnaissance and limited site exploration, interviews with community members, historical research, and environmental records review. We draw on the findings of our investigation to evaluate potential contaminant exposure pathways and provide recommendations for remedial action.

The Property is used frequently for a variety of community functions including meetings, dances, workshops/classes, holiday celebrations, potlatches, funerals, and activities for Elders and children. We document in this report that there is general consensus among community members regarding plans for redevelopment, with the majority proposing a public recreational space, which is consistent with current site use.

This PACP identifies two recognized environmental conditions (RECs) on Lot 7, the first being the presence of historical fuel contamination. The historical contamination on the Property is attributed to wooden-stave fuel tanks that existed on the Property over 50 years ago (prior to the early 1960s). A tar-like petroleum substance was encountered in the southern portion of the Property, on the ground surface and/or less than 1 foot below the ground surface (bgs). This material is believed to be Bunker C fuel, also known as No. 6 heavy fuel oil. Analysis of samples identified diesel range organics (DRO; up to 122,000 milligrams per kilogram [mg/kg]), residual range organics (RRO; 139,000 mg/kg), benzene (0.0591 mg/kg), and three polynuclear aromatic hydrocarbon (PAH) analytes at concentrations above ADEC soil-cleanup levels within the suspected Bunker C fuel storage pad area. Samples were not analyzed for PCBs or RCRA metals

(arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), which may be present in Bunker C fuel.

The second identified REC is the potential for historical leaks, drips, and spills from vehicles using the Property as an unpaved parking area and informal roadway. This environmental condition is considered to be of a lesser magnitude than historical contamination on the Property.

A conceptual site model (CSM) was prepared to evaluate the potential risk to human health from historical contamination on the Property. The two highest-risk contaminant exposure pathways for visitors to the site are direct exposure or windblown dust from contaminated surface soils, and the inhalation of outdoor air.

We recommend historical Bunker C contamination be excavated to below ADEC cleanup levels; our volume and cost estimates assume this will require the uppermost 2 to 3 feet bgs be removed. The volume of contaminated material is estimated at 350 to 1,000 cubic yards of soil, depending on the depth of the excavation and lateral extent of the former Bunker C pad. We further recommend that at least one groundwater sample be collected, as contaminants of potential concern (COPC) are present in the soil at concentrations above migration-to-groundwater cleanup levels.

The Property may be eligible for assistance under the ADEC Brownfields Program, as the responsible party at the time the material was spilled may not be considered liable for environmental contamination at the site. Depending on the method of groundwater sampling, extent of contaminated soil, and results of polychlorinated biphenyl (PCB) and metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) sampling, the rough order of magnitude (ROM) cost of remediation is estimated at between $65,000 and $80,000.

PROPERTY ASSESSMENT AND CLEANUP PLAN
TANANA COMMUNITY HALL LOT – ADEC FILE # 780.57.004

1.0 INTRODUCTION

Shannon & Wilson, Inc. has developed this Property Assessment and Cleanup Plan (PACP) to identify potential environmental concerns that may influence redevelopment or reuse of Lot 7, Block 11, Section 17, Township 4, Range 22, Fairbanks Meridian in Tanana, Alaska (The Property; Figure 1). The Property is located at the northeast corner of the intersection of Front Street and Koyukuk Street, adjacent to the Tanana Community Hall and along the Yukon River (Figure 2). Front Street is also known as First Avenue. A site plan showing the locations of test pits and analytical samples is included as Figure 3.

This PACP summarizes the results of a site reconnaissance and limited site exploration, interviews with community members, historical research, and environmental records review. We also develop a Human Health Conceptual Site Model and provide recommendations for remedial actions. Although this PACP is prepared for the Alaska Department of Environmental Conservation (ADEC), a primary objective is that it will be of use to the Tanana Tribal Council (TTC) and City of Tanana and inform plans for redevelopment of the Property (PACP Guidelines 2010).

1.1 Purpose

The ADEC has requested this environmental evaluation of riverfront Lot 7, adjacent to the Tanana Community Hall in Tanana, Alaska, to assess the viability of safe reuse and redevelopment of the Property. The subject property may be eligible for assistance under the Federal Reuse and Redevelopment (R&R) Program, also known as the Brownfields Program. This PACP is prepared as part of a DEC Brownfields Assessment of the Property, which was initiated by a request from members of the Tanana community (Appendix A).

The purpose of the PACP is to identify and clarify known and suspected environmental concerns that may affect R&R efforts through financial, schedule, or administrative means. Contaminated soil at this site was discovered in July 2013 by the City of Tanana, when wooden planks and heavy fuel oil were encountered while digging a drainage trench in the southern portion of the Property (Figure 3), adjacent to Front Street. A strong hydrocarbon odor, soil staining, and the seasonal presence of a tar-like substance at the soil surface have also been reported. The observed contamination has been attributed to a Bunker C fuel oil storage facility used to supply

stern-wheeler river boats, which were a principal mode of transportation in the area prior to the 1950s. In the following assessment, we investigate possible sources of contamination on the Property, including, but not limited to, Bunker C fuel oil and provide recommendations for remedial actions.

1.2 Scope of Services

We completed four tasks to investigate potential environmental concerns at the Tanana Community Hall Lot (Lot 7, Block 11) in Tanana, Alaska. Assessment activities include a site reconnaissance and limited site exploration, interviews with community members, historical research, and environmental records review. We draw on the findings of our investigation to evaluate potential contaminant exposure pathways and provide recommendations for remedial actions.

Jacob Tracy E.I.T., Shannon & Wilson Environmental Engineer, traveled to Tanana on August 29, 2014 for the limited site exploration portion of this investigation. With direct observation and field screening of suspect soils using a photoionization detector (PID), we identified key locations for collection of analytical laboratory samples. Mr. Tracy observed the excavation of four test pits and a 10-foot-long trench, and collected samples from the most contaminated portions of these locations for laboratory analysis (Figure 3). The excavated soil was replaced in its original location; no soils were stockpiled or removed from the Property. Analytical samples were collected for contaminants of potential concern (COPCs), which include residual range organics (RRO), diesel range organics (DRO), gasoline range organics (GRO), benzene, toluene, ethylbenzene, and xylenes (BTEX), and polynuclear aromatic hydrocarbons (PAHs). Analytical results are evaluated against ADEC soil-cleanup levels (migration to groundwater, inhalation, and direct contact) specific to the Property's location, conditions, and relevant contaminant exposure pathways.

Kristen Freiburger, Shannon & Wilson Project Manager, traveled to Tanana on September 30 and October 1, 2014 to conduct interviews with community members, review local historical records, and observe ongoing use of the subject property. Ms. Freiburger met with representatives of the TTC, City of Tanana, Environmental Protection Agency (EPA) Indian General Assistance Program (IGAP) program, and residents to discuss the nature and extent of contamination on the Property. Community members were questioned regarding the presence of contamination, current and historical site use, frequency of use, current and former site ownership, remediation efforts, and plans for redevelopment.

The historical research portion of this investigation included reviewing historical aerial photographs, publicly available documents, and user-provided documents that may be of relevance to the environmental condition of the subject property. We investigated current and former ownership, site use, and historical contamination on the Property and adjacent properties. We also identified and reviewed former environmental assessments conducted in Tanana, which include the subject property.

The purpose of the environmental records review was to identify previous activities that may have constituted environmental misuse and/or contributed to the presence of hazardous materials on the Property. We reviewed, to a reasonable extent, federal and state databases identified as standard environmental record sources in the American Society for Testing of Materials International (ASTM) International Standard E 1527-13 for Phase I Environmental Site Assessments (ESA). Given the scope of this PACP, we do not fulfill every requirement of a Phase I ESA in this report.

Finally, we draw on our findings to prepare a conceptual site model (CSM) that evaluates potential contaminant-exposure pathways and effects on soil, air, groundwater, and surface water quality. Conclusions address historical and contemporary recognized environmental conditions (RECs) and recommendations for corrective actions to mitigate them.

1.3 Project Objectives

The purpose of a PACP is to present information related to site background in a single location; known, suspected, or potential environmental conditions that could pose a risk to human health and/or the environment; plans for reuse and redevelopment of the Property; and options to mitigate environmental concerns. Our goal is to prepare a detailed PACP report documenting community and geographic context; ownership records and other pertinent historical information; historical environmental incidents and any past remedial actions; the nature and extent of current environmental conditions; the results of analytical sampling for hydrocarbon COPCs; plans for the intended R&R of the Property; and conclusions and recommendations that address potential contaminant exposure pathways and options for remediation.

Although this PACP is prepared for the ADEC, a primary objective is that it will be of use to TTC and the City of Tanana and support planning for any corrective actions that may be required to reuse or redevelop the Property as planned. We evaluate soil, air, and water analytical results, and compare them to ADEC cleanup levels. We then draw on these findings to identify possible remediation strategies appropriate to the extent and nature of contamination on the Property, and

appropriate to the community's rural setting. Cost estimates are included, as well as an evaluation of existing resources and possible funding sources.

1.4 Key Personnel

The following table summarizes key personnel, and serves to update the personnel table included in the September 4 Work Plan. The new ADEC Project Manager is Ms. Lisa Krebs-Barsis, while Mr. Bill O'Connell continues to serve as a technical resource.

TABLE 1
PROJECT TEAM

Name	Organization	Responsibility	Contact
Lisa Krebs-Barsis	ADEC	ADEC Project Manager	269-7551
Bill O'Connell	ADEC	Technical Contact	269-3057
Dennis Harwood	ADEC	Contract Manager	269-7547
Shannon Erhart	Tanana Tribal Council	Executive Director	366-7160
Patrick Moore	City of Tanana	Site Superintendent	366-1054
Kathleen Peters-Zuray	EPA IGAP	IGAP Coordinator for Tanana	366-7160
Kristen Freiburger	Shannon & Wilson, Inc.	Project Manager, PACP Report	O: 458-3146 F: 371-9022
Gerald Nicholia	Tozitna, Limited	Board Member	C: 366-1100
Nina Heyano	Tozitna, Limited	President	748-5460
Jacob Tracy	Shannon & Wilson, Inc.	Field Technician	O: 458-3152 F: 371-9022
Marcy Nadel	Shannon & Wilson, Inc.	Research, PACP Report	458-3150
Jon Lindstrom	Shannon & Wilson, Inc.	Contract Manager, Project Oversight	458-3141

Notes: O: Office Phone
F: Field Phone
C: Cell Phone

2.0 COMMUNITY OVERVIEW

2.1 Location, Climate, and Geologic Setting

The City of Tanana is a small community in Interior Alaska, located approximately 130 air miles west of Fairbanks on the Yukon River (Figure 1). The village is situated two miles west of the

confluence of the Tanana and Yukon Rivers, and is accessible by air or water. The river is generally ice-free from mid-May through mid-October.

The City encompasses 11.6 square miles of land along the northern riverbank of the Yukon, which flows locally east to west and regionally northeast to southwest. The TTC property Lot 7 is an undeveloped lot located near the eastern edge of Tanana (Figure 2). The southern boundary of the Property is approximately 100 feet from the bank of the Yukon River.

Tanana experiences seasonal temperature extremes, with a difference of 80 to 120 degrees Fahrenheit (ºF) between average maximum daily temperatures in the summer (64 to 70 ºF) and average minimum daily temperatures in the winter (-14 to -48 ºF). Average annual precipitation is 13 inches, much of which falls as snow (50 inches).

Tanana lies within the Intermountain Plateau of Interior Alaska, at the junction of the Kokrine-Hodzana Highland physiographic province to the north of the Yukon River and the Nowitna Lowland province to the south. To the north, repeated ridges of 2,000 to 4,000 feet are punctuated by isolated peaks of up to 5,700 feet. Ridges and mountains are composed primarily of schist and gneiss that form northeast-trending structures, and occasional granitic intrusions. The region is drained by a number of Yukon River tributaries, and there are few lakes. To the south, the former Yukon River floodplain exhibits gradual slopes and local relief of less than 250 feet. The predominant material near major rivers is alluvial silt (at least 180 feet thick), with sand dunes and windblown silt deposits farther to the south. Oxbow lakes and meander scars are common in the northern and eastern portions of the province, near the Yukon and Tanana Rivers.

Both provinces are underlain by permafrost, with the exception of recently abandoned flood plains. Permafrost is defined as ground that has remained at a temperature of 32 °F or less for two or more years. The thickness of the ‘active layer,’ the portion of the ground at or near the surface that undergoes an annual freeze-thaw cycle, is largely dependent upon the type of ground cover and snow depth but includes other factors. Seasonal frost penetration commonly exceeds 10 feet beneath roads or parking areas kept free of snow during winter.

2.1.1 Groundwater Characteristics

Establishing a site-specific groundwater-flow direction and horizontal hydraulic gradient is outside the scope of this PACP. Based on our knowledge of local conditions, we expect groundwater at the site flows to the west or southwest, roughly parallel to the flow of the Yukon River. Permafrost may impede groundwater movement in the vicinity of the Property.

Our observations are consistent with the groundwater flow direction reported in a 2002 document prepared by Ridolfi Engineers, Inc. to document sites of potential environmental concern in Tanana. The Ridolfi document identifies groundwater flow at the Tanana Federal Aviation Administration (FAA) Facility as towards the southwest. The FAA Tanana Station is an ADEC Contaminated Site located 1,700 feet northwest from the Property (ADEC File No. 780.38.001).

The ADEC Contaminated Site Database also contains information relating to groundwater in the property vicinity. The entry for Tanana Gas Company, located 1,100 feet west-northwest of the Property on Front Street and 75 feet from the Yukon River, states that depth to groundwater in Tanana is 25 to 30 feet bgs (File No. 780.26.002). It is unclear whether these values refer to the Tanana Gas Company site, or to Tanana as a whole.

We researched the State of Alaska Well Log Tracking System (WELTS) to obtain information about drinking water wells on or near the Property. The WELTS database, reviewed on November 18, 2014, identifies no drinking water wells on the Property or adjacent properties. Location information was not available for the Tanana City Well (#6568). Well #6568 was drilled in 1978 by the Bureau of Land Management (BLM), and the drilling log reports a static water level of 22 feet. Water is present between 22 and 58 feet bgs.

Groundwater depth was also identified in a 2009 Site Characterization Report for the Tanana Power Plant locality (Lot 8, Block 10) prepared by Amundsen Environmental Services. Groundwater was not encountered within 13.5 feet of the ground surface at the Tanana Power Site. According to the report, depth to groundwater within approximately 80 lateral feet of the riverbank varies between 10 and 16 feet bgs. At greater distances from the Yukon River, the groundwater-bearing unit (sand and gravel, between 10 and 52 feet bgs) is frozen (Appendix G). The power plant is located approximately 1,800 feet to the west of the Property.

2.2 Community Information

We researched historical and present-day community information using the Alaska Department of Commerce, Community, and Economic Development (ADCCED) Community Database, U.S. Census data from 2000 and 2010, historical records, and other publically available information.

2.2.1 History of Tanana

Located at the confluence of the Tanana and Yukon Rivers, what is now the City of Tanana was initially established as a trading center between the Koyukon and Tanana Athabascans. The original settlement name of Nuchalawoyya signifies “where the two great rivers meet.” European contact began circa 1880, when an Alaska Commercial Company (ACC) trading post named Harper’s Station was constructed 13 miles to the west of the present-day village. In 1887, the Saint James Mission, a school and hospital complex, was established closer to the present-day site of Tanana.

In 1898 the U.S. military founded Fort Gibbon in Tanana in response to a growing population of gold miners and traders in Interior Alaska. A post office and other city services were established during this period. The gold rush was short lived, and by 1906 the majority of gold seekers had left the Tanana area. Fort Gibbon was repurposed to construct and maintain a telegraph line between Fairbanks and Nome. When these forms of communication grew obsolete, the post was largely abandoned by 1923. The fort was used briefly as an aircraft fueling station during WWII, and may have served as a U.S. Army Signal Corps Station until 1941.

In the 1920s, the Saint James Hospital was transferred to the Bureau of Indian Affairs, and in 1949 Tanana’s hospital facilities were greatly expanded to become a regional healthcare center. The City of Tanana was incorporated in 1961, and the hospital complex continued to be a major employer. In 1982, Tanana was incorporated as a First Class City, and the town assumed control of the local school system. Hospital facilities have since been expanded and renovated, to include a counseling center, Regional Elder’s Residence, and other local services.

2.2.2 Governance

The Native Village of Tanana a federally recognized tribe, and the City of Tanana and TTC are jointly responsible for governance. The City of Tanana government includes an elected six-member city council and mayor, a five-member planning commission, and a four-member school board. The city council manages municipal services including the landfill, airport, dock, police, volunteer fire department, emergency medical services, road and streetlight maintenance, the school district, and public safety housing.

Tozitna, Limited is the Village Native Corporation, and the owner of the subject property. We observe that some individuals who hold leadership positions at Tozitna, Limited are also involved in the TTC government. Doyon, Limited is the Regional Native Corporation, and owns

large tracts of land outside the City of Tanana as well as subsurface rights to certain plots within city limits, including the Property.

2.2.3 Community Demographic Data

Tanana has a population of 238, according to a 2013 estimate by the ADCCED. According to the 2010 U.S. Census, 87% of residents are Alaska Native or part Native while 11% are Caucasian or part Caucasian. Less than 1% of residents are of other races. The population at the time of the 2010 Census was considered 53% male and 47% female, with a median age of 33 years. Approximately 30% of residents are under the age of 20, 20% between the ages of 20 and 40, 42% between the ages of 40 and 65, and 8% over the age of 65.

The 2010 Census identified 100 total occupied housing units and 57 households, with an average household size of three. Based on the U.S. Census Bureau's 2008-2012 American Community Survey 5-Year Estimates, the median household income in Tanana is $45,180 +/- $18,420, and per capita income is $21,130 +/- $5,210. According to 2008-2012 estimates 12.7% of the population lives in poverty.

The 2000 Census found that 60.2% of residents were employed, with an unemployment rate of 23.7%. However, 52.4% of adults were not considered part of the work force. Two thirds of full-time employment in 2000 was with the city, school district, or TTC. The BLM is an important seasonal employer. The Maudrey Sommer School (K through 12) employs five teachers and serves 40 students.

Many traditional Athabascan practices persist in Tanana, including dances, foot races, potlatches, and subsistence hunting and fishing. Some community members continue to speak Koyukon as their primary language. Subsistence foods include salmon, whitefish, moose, bear, ptarmigan, waterfowl, and berries. There are also ten commercial fishing permit holders in Tanana.

2.3 Community Resources and Infrastructure

This section summarizes existing and planned community infrastructure projects, including utilities (water, electricity, solid waste disposal, and telephone) and transportation (roads, airports and waterways).

2.3.1 Public Water Supply

The City of Tanana’s water supply is administered by Too-gha, Incorporated, a non-profit utility board (Public Water System ID #AK2360109). Too-gha, Inc. operates a single well on Park

Avenue, which according to the WELTS was completed prior to 1988 and has a 5,000 gallon per day capacity. The ADEC Division of Water categorizes the Tanana Safewater Facility Water Treatment System as a Class 2 system, with a rating of 44 out of 100. The water treatment system has a peak day design capacity of 10 to 50 thousand gallons per day.

The Tanana City Drinking Water Well is included in the ADEC Contaminated Sites Database, as an informational entry (File No. 780.38.004). Beginning in 1992, benzene was detected in the drinking water supply well above the maximum cleanup level. In addition to benzene, antimony and RRO were also detected near or above cleanup levels in 2001. There have been detections for benzene or other analytes in recent sampling events, including 2010, 2012, and 2014. According to the ADEC database the extent and source of contamination are unknown but numerous sites are suspected.

In 2009, the ADEC received approval to prepare an environmental management plan for Tanana, in order to evaluate environmental concerns which could be affecting drinking water. The report, generated by SLR International Corporation, identifies a number of suspected sites in close proximity to the city's water source (Appendix G). The groundwater source of the city's water supply is no longer considered affected, and site status was changed to informational in July 2014.

Buried water and sewer lines are present along major roadways in the central town area, though the area covered by sewer is more extensive than the area served by water. The ADCCED, Division of Community and Regional Affairs Community Profile Map was updated in 2009. According to this map, water lines do not extend east of Hill Street or between Eamole and Koyukuk Streets, depending on the location (Figure 2). However, a water hydrant was observed across Front Street from the subject property, and is visible in Photo 6 (Appendix E). It is likely that the city water system was extended between 2009 and present, and if a building were to be constructed on the Property it could presumably utilize the city water system. According to the 2009 Community Profile Map, sewer lines run along the western side of Koyukuk Street and southern side of Front Street adjacent to the Property. Based on this information the nearest sewer line is approximately one block from the subject property.

2.3.2 Energy Generation and Distribution

The Tanana Power Company, Incorporated, runs a diesel power plant that serves the community of Tanana. The Power Company is a private electrical utility, serving 104 homes and 35 commercial businesses. In June 2013, residential rates were $0.76 per kWh, or $0.30 per kWh after reimbursement under the Alaska Energy Authority's Power Cost Equalization program.

Power lines are present throughout the community, including along Front and Koyukuk Streets adjacent to the subject property.

2.3.3 Landfill Information

The Tanana Landfill is operated by the City of Tanana, and located over one mile west of town. The original permit for the Tanana Landfill was issued in 2007, and waste disposal practices prior to this date are unknown. The landfill uses an incinerator, and provides basic recycling services. According to the ADEC Spills List, in some cases the landfill incinerator has been used to dispose of petroleum products such as spilled heating oil or diesel fuel.

2.3.4 Other Utilities

Buried telephone lines are present throughout much of Tanana, and are included in the 2009 ADCCED, Division of Community and Regional Affairs Community Profile Map. Phone lines are buried along roadways, and do not extend east of Koyukuk Street. According to the Community Profile Map, the nearest telephone line to the subject property is approximately a half-block away. The telephone line terminates along Front Street between Eamole and Koyukuk Streets, in front of Lot 3, Block 10 (Figure 2).

2.3.5 Current Construction or Infrastructure Projects

The City of Tanana maintains 32 miles of roads in and around the community, and operates a river dock for both private and commercial use. The State of Alaska owns and operates Ralph Calhoun Memorial Airport, which is served by six passenger and freight airlines, and features a 4,400 by 100 foot gravel runway (2013 information). Additionally, the Yukon River is used as a seasonal runway by float planes.

To our knowledge, there are no major ongoing construction or infrastructure projects in the City of Tanana. Shannon & Wilson is currently working on a second project in Tanana, at the site of the former Tanana Power Plant. The Tanana Power Plant at Lot 8, Block 10 between Front Street and Second Avenue is listed in the ADEC Contaminated Sites Database (File No. 780.38.014).

In 2013, the ADEC contracted Shannon & Wilson to work with the City of Tanana to coordinate an excavation of contaminated soil from the power plant site. Approximately 2,300 cubic yards (cy) of soil exceeding the ADEC cleanup levels for DRO and other contaminants were removed and transported to an off-site landfarm. The 2014 excavation removed an additional 500 cy of soil from the base and sidewalls of existing excavations.

The City has a Volvo 460 track-mounted excavator with a three-cubic-yard capacity bucket and a John Deere 610 backhoe with a 12-foot reach. The TTC also has heavy equipment that could be available to assist in the remediation effort.

2.4 Community Involvement

We contacted individuals who may have relevant information regarding the use, history, and plans for R&R of the Property. We began by identifying interview targets prior to arriving in Tanana, based on documents such as the ADEC Brownfields Assessment or Cleanup Request Form (Appendix A). These individuals, where available, directed us to speak with additional community members, some of whom are members of an older generation.

We also extended an invitation to all community members and residents in Tanana to attend stakeholder meetings held on both days of the 2-day site visit (Appendix B). Kristen Freiburger spoke with individuals who passed by during the site evaluation, and inquired about her activities. Finally, we contacted via telephone relevant individuals who were out of town or otherwise inaccessible during the in-person site visit. Where possible, we requested that individuals fill out our Community Member Questionnaire, but in several cases chose to interview residents independently using questions drawn from the Questionnaire (Appendix C).

2.4.1 Stakeholder Meeting Summary

Two open house stakeholder meetings were organized by Ms. Kathleen Peters-Zuray, IGAP Coordinator, during Kristen Freiburger's time in Tanana. A flier was posted in central locations throughout the community, and is included as Appendix B. The meetings were held on September 30 and October 1, 2014 at the counseling center in Tanana. No community members attended to the first meeting on September 30, 2014. Ms. Marilyn Adams and Ms. Patty Elias attended the second meeting on October 1, 2014, and both completed questionnaires. Complete community questionnaires are included in Appendix C, and their responses are summarized in Section 2.4.3, Interviews and Input.

At the second community meeting Ms. Freiburger provided an overview of the ADEC Re-use and Redevelopment Program and the goals of this PACP project. Field notes collected during meetings and interviews conducted during Ms. Freiburger's time in Tanana are included in Appendix D.

2.4.2 Proposed Reuse and Redevelopment

There is general consensus among community members regarding the planned redevelopment of the site; the majority of subjects interviewed would like to see the site redeveloped as a public

recreational space, which is consistent with current site use. However, opinions regarding specific recreational facilities vary widely. Community members listed a basketball court, lawn and pavilion, outdoor stage/gazebo, playground, swimming pool, and raised bed garden as possibilities. Individuals appear not to be as concerned with specific plans for redevelopment as they are with removing historical contamination. A variety of residents stressed the importance of removing historical contamination as a first step in the remediation process.

The site is adjacent to the Tanana Community Hall building, and is currently used during community events. Even if no construction takes place, a clean open field that could continue to be used for community events may constitute 'redevelopment.' The majority of individuals interviewed stated that they expect the Tribe and/or City to lead redevelopment initiatives, and cited community resources they possess, such as heavy equipment. Finally, one questionnaire respondent stated that they would like to see housing constructed on the Property.

2.4.3 Community Member Interviews

A number of stakeholders provided input during preparation of this PACP. We prepared a Community Member Questionnaire, which was used to direct and supplement personal interviews during Ms. Freiburger's site visit on September 30 and October 1, 2014. The Questionnaire was completed by four Tanana residents during the two-day site visit (Appendix C). Personal interviews in the field were limited due to available resources and individual schedules, but in addition to the questionnaire five individuals were interviewed regarding their knowledge of the Property. Field notes summarizing these interviews are included in the second portion of Appendix D.

Ms. Peters-Zuray provided information on the background of the site, current site status, and goals for R&R of the Property. She also discussed the community layout, infrastructure, and observations of activities at the site and other contaminated sites in Tanana. The TTC is seeking funding to remove remaining historical contamination on the Property, which is believed to have originated from wood-stave tanks stored on the Property several decades ago.

Many community members noted heavy use of the site as a community gathering place. The site is used to prepare food for potlatches, to host holiday events and elder's events, and functions as a "community heart-space" according to one respondent. They also noted the site is used as a parking lot for events at the Tanana Community Hall and is an area where children frequently play. The lot also serves as an informal roadway, which field personnel noted during their visits to the site. Community members report that the site may be used as frequently as daily, depending on the season.

A recurring finding obtained from interviews was the description of a building previously located on the Property, which contained tanks, railroad ties, and "black tar" on the floor. Community respondents who remember the building noted that children enjoyed playing there, jumping from various railroad ties to avoid falling in the "tar." We estimate that the building existed during the 1950s, based on the age of interview respondents. Additionally, several community members further described the "black, tar-like" material as spilled "Bunker C" fuel.

According to community members, the Bunker C was used by river boats, and was warmed before it could be pumped towards the river. Interviewees report Bunker C was used in wood-burning boilers to increase fire temperature and also as a sole fuel source. Multiple respondents stated the spilled Bunker C fuel was not removed, but was simply covered with clean soil/gravel fill. Many community members have observed the contamination directly, and noted that visible "tar" appears on the ground surface in the spring time.

While the Yukon River occasionally floods (major floods in 1937 and 2009), survey respondents reported that the Property is not effected by flooding. This is due to its location on a bluff above the Yukon; according to Ms. Patty Elias, the 2009 flood reached a portion of Front Street, but did not affect the Property.

According to Ms. Peters-Zuray, many contaminated sites in Tanana have received funding from previous owners to assist with cleanup of contamination from historical use; however, this site has not. A small portion of the contamination was removed in 2013 when a drainage ditch was constructed along the southern portion of the site (Figure 3). The contaminated soil was removed from the Property and stockpiled at the landfill. The stockpile contains contaminated soil mixed with wood from the former tank frames and/or tank house (Appendix E, Photo 1).

Ms. Shannon Erhart, Executive Director of the Tanana Tribal Council, reported that TCC remediation efforts discussed in the ADEC Brownfields Assessment or Cleanup Request Form do not refer to the subject property (Appendix A, ADEC Brownfields Assessment or Cleanup Request Form). Soil remediation efforts that have been taking place "the last few years" are ongoing at the Indian Health Services (IHS) complex (File No. 780.38.003), which is located several blocks from the subject property.

2.4.4 Other Interviews and Input

On November 19, 2014, Kristen Freiburger and Marcy Nadel interviewed Jack Coghill, as suggested by several Tanana community members. While Mr. Coghill is not a resident of the community, he previously conducted business in Tanana and administered the former White Alice Site Road Tank Farm, which is the location of the nearest open DEC Contaminated Site

(File No. 780.38.010). Mr. Coghill remembered where the Northern Commercial Company (NCC) was located and pointed it out in the 1963 aerial photograph; NCC was located across the street from the site, where the current Tanana Teen Center is located. Mr. Coghill also recalled the wood stave tanks that contained Bunker C fuel, and reported that they were constructed and/or used by the North American Trading Company (NATC). Our conversation with Mr. Coghill was guided by the Community Member Questionnaire, which was completed during the interview (Appendix C).

We contacted Mr. John Carnahan of the ADEC Contaminated Sites Division, on November 18 to inquire about a document referenced in the Contaminated Sites Database. Mr. Carnahan stated that he is familiar with the project, and provided the document, a 2009 Environmental Management Plan prepared for the ADEC Brownfields Assessment Program by SLR International Corporation. The Environmental Management Plan is included in Appendix G.

We contacted Mr. Bruno Ridolfi of Ridolfi Engineers, Inc. on December 1 to obtain more information about potential polychlorinated biphenyl (PCB) contamination in the vicinity of the Tanana Community Hall. Mr. Ridolfi directed us to Mr. Bianco, who is also familiar with Ridolfi Engineers' 2009 draft report titled *Compilation of Environmental Information for Sites of Concern In and Around Tanana*. Their responses are discussed in Section 3.4, Historical Records Review.

We contacted Mr. Matthew Carr, EPA On-Scene Coordinator, on December 8 upon receiving a response from Ridolfi Engineers, Inc. Mr. Carr was involved with PCB sampling on Tanana roadways in 1994, sampling that is referenced in the 2009 Ridolfi Engineers draft report and the 2009 SLR International Corporation report (Appendix G). According to Mr. Carr, PCB field screening was used, and no analytical samples were collected. The remainder of our conversation with Mr. Carr is discussed in Section 3.4.

3.0 SITE OVERVIEW

3.1 Subsurface Conditions

Determining site-specific subsurface geology is outside the scope of this PACP. However, we were able to identify subsurface conditions in the vicinity of the Property, which are summarized in this section.

A 2009 *Site Characterization Report* for the former Tanana Power Plant locality (Lot 8, Block 10) prepared by Amundsen Environmental Services includes a cross-section of Tanana, proximal

to the Yukon River (Appendix G). In unfilled areas, the first 1 to 5 feet bgs are composed of organic material and/or organic-rich sediments. This unit is underlain by 2 to 10 feet of silt, which greater than approximately 80 feet from the Yukon River is frozen. Beneath the silt lies a 30 to 65 foot unit of water-bearing sand and gravel, which is frozen at depths greater than 15 to 20 feet bgs proximal to the river. Greater than approximately 40 feet from the Yukon the entire unit is frozen. Beneath the sand and gravel lie sandstone and claystone for the first 40 to 50 feet from the river, and schist at greater distances from the river. Depth to groundwater within approximately 80 feet of the riverbank varies between 10 and 16 feet bgs.

Subsurface conditions included in the 2009 Tanana Power *Site Characterization Report* are consistent with direct observations during our limited excavations on the Property, and with regional geology. Moist dark brown to black silty sand to sandy silt was encountered in Test Pit 1 and moist brown silty sand to sandy silt was encountered in Tests Pit 2 and 3. Proximal to the Yukon River, surface soils and sediments are dominated by alluvial deposits. At greater depths, schist is consistent with bedrock types in the Kokrine-Hodzana Highland physiographic province to the north. In the Nowitna Lowland province to the south, alluvial silt is common.

3.2 Current Site Use

The Property is partially vegetated and undeveloped (Appendix E, Photo 2). An informal roadway runs northwest-southeast across Lot 7, leading from Koyukuk Street to the Tanana Community Hall on adjacent Lot 8 (Photo 3). According to interviews with community members and observations during Ms. Freiburger's site visit on September 30 and October 1, 2014 the Property is frequently used for a variety of community functions. Community members report that the site is a common gathering space, used for meetings, dances, workshops/classes, holiday celebrations, potlatches, funerals, and activities for Elders and children.

Questionnaire respondents state that site use varies depending on the schedule of events at the Community Hall, with a frequency between daily and several times per month. When not in use for other activities, the Property is used as a parking area and roadway. While we did not observe any community functions taking place on the lot, the roadway is frequently used by the public (Photo 4). Its central location in town and along the Yukon River suggests the Property's high significance to the community of Tanana.

3.3 Ownership Information

We accessed the Alaska Department of Natural Resources (ADNR) Recorder's Office and Land Records databases on November 14, 2014 and the BLM General Land Office Records database on December 1, 2014. We requested the BLM Case File for the Property and reviewed it at the

Fairbanks District Office on December 5, 2014. We also include documents provided by other parties, namely Mr. Gerald Nicholia, Realty Director of the TTC and a Board Member of Tozitna, Limited, and Ms. Kathleen Peters-Zuray, the EPA IGAP Coordinator for Tanana and a representative of the TTC. We contacted the City of Tanana records department, but they were unable to provide additional ownership documents for the subject property.

The legal description of the Property is Lot 7, Block 11, Section 17, Township 4, Range 22, Fairbanks Meridian, but the Property is also referred to as US Survey No. 2754 A&B, Block 11, Lot 7, Fort Gibbon Recording District; Alaska Railroad Parcel F-82029 or R-82029; Patent No. 50-85-0281; or BLM Serial No. FF 014944 A. We conducted searches using each of these names and did not encounter any record of environmental liens against the Property.

Ownership Documents for the subject property are summarized below, with copies included in Appendix F.

- City Ownership Map Circa 1954 includes Lot 7, Block 11 (highlighted). Handwritten key shows Lot 7, Block 11 is owned by the Alaska Railroad Corporation (ARRC).
- United States Department of Interior, Bureau of Land Management Plat Map dated March 20, 1957 defines the boundaries of the lots in Blocks 1, 2, 10, and 11 in the vicinity of the Property.
- United States Department of Interior, Bureau of Land Management Memorandum dated December 7, 1984 describes a Trustee Deed dated August 25, 1958 that conveys U.S. Survey No. 2754 A&B, Block 11, Lot 7, to the ARRC, a federal entity. Memorandum also states that federal use of the land began in 1952.
- Alaska Railroad Transfer Act of 1982 transfers all lands and properties belonging to the Alaska Railroad, a federal entity, to the Alaska Railroad Corporation, a public corporation of the State of Alaska. United States Department of Interior, Bureau of Land Management Notice dated December 7, 1983 describes the delay of determination proceedings until November 14, 1983 so that claims on land owned by the Alaska Railroad prior to 1982 may be settled. According to the United States Department of Transportation, Federal Railroad Administration, land transfer was later delayed until January 5, 1985.
- United States Bureau of Land Management conducted a Pre-Determination Hearing on November 30, 1984 regarding claims on land owned by the Alaska Railroad, in accordance with the Alaska Native Claims Settlement Act (ANCSA), Section 3(e), as described in a letter to Mr. Mark Hickey, State Transfer Coordinator, Alaska Department

of Transpiration and Public Facilities dated December 13, 1984. Section 3(e) states that Native Corporations may lay claim to any federal land except "the smallest practicable tract, as determined by the secretary, enclosing land actually used in connection with the administration of any Federal installation." The letter includes an attached map and transcript of the Pre-Determination Hearing, which apply to multiple Alaska Railroad parcels throughout the state including parcel F 82029 (the Property).

- United States Department of Interior, Bureau of Land Management Memorandum dated December 7, 1984 describes a determination of non-use of Block 11, Lot 7. The decision states "in view of the above, I hereby determine there was no Federal use, as claimed, of the ARR parcel (R-82029) at Tanana immediately prior to July 2, 1974. Since use must be continuous through the village selection period… 1971 through… 1974… lands are considered 'public lands' under Sec. 3(e) of ANCSA." This determination conveys ownership to revert to the BLM, and also allows claims by local and/or regional native corporations to proceed as initiated.
- Exclusive License, dated January 5, 1985 (Book 7, Pages 500 through 510) conditionally conveys the use of Survey No. 2754B, Lot 7, Block 11, from the United Stated Department of Transportation to the ARRC, a state entity. The license is "subject to settlement or final adjudication of the unresolved claims of valid existing rights," namely claims filed with the Bureau of Land Management under ANCSA.
- United States of America Land Patent No. 50-85-0281 (Book 1, Page 539), dated March 29, 1985, conveys Patent No. 50-85-0281 describing Lot 7, Block 11, US Survey No. 2754A and B, to Tozitna, Limited under the ANCSA.
- United States of America Land Patent No. 50-85-0282 (Book 7, Page 573), dated March 29, 1985, conveys the subsurface estate beneath Patent No. 50-85-0281, describing Lot 7, Block 11, US Survey No. 2754A and B, to Doyon, Limited under the ANCSA.
- Quit Claim Deed dated November 20, 1992 (Book 8, Page 702) conveys Lots 3 through 10, Block 11, Townsite of Tanana, U.S. Survey 2754 A and B, from Alaska Rural Investments, Inc. to the Howard Rock Foundation. This document is consistent with the ownership history of Lots 3 through 6 and 8 through 10, but not the ownership history of Lot 7. In all previous records ownership of Lot 7, Block 11 has been distinct from the ownership of adjacent Lots 6 and 8. The inclusion of Lot 7 in this document may be an accidental addition. However, the Howard Rock Foundation may at one point have held legal claim to the Property.
- BLM Interim Land Information System Case Abstract dated October 14, 1994 describes Case 230R, BLM Serial No. AK FF 014944 properties that are owned by Tozitna,

Limited. Attached map dated October 1, 1994, Surveyed Township N North, Range 22 West of the Fairbanks Meridian, Alaska, identifies Block 11, Lot 1, 50-85-0281 and 50-85-0282 as one of several properties included in the Case File. Ownership identified in this document is consistent with ownership of the Property from 1985 through at least 1992. Mr. Nicholia was identified by Ms. Shannon Erhart, Executive Director of the TTC, as being the most knowledgeable individual in Tanana about land allocations and ownership. Given Mr. Nicholia's lack of knowledge of the 1992 Quit Claim Deed and the complex nature of establishing Native corporation ownership of the Property, we conclude that Tozitna, Limited was likely the sole owner of the Property from 1985 through present.

3.4 Historical Records Review

Historical records and previous environmental assessments are discussed chronologically, regardless of source. Copies of relevant documents are included in Appendix G, where they are not included in other Appendixes (Appendix F or Appendix I).

3.4.1 Alaska Digital Archives

Historical photographs were accessed through the Alaska Digital Archives, and include photographs of Fort Gibbon, Tanana, and other communities served by sternwheeler river boats between the years of 1896 and 1939. Original photographs are not included in this report, but may be accessed through the Alaska Digital Archives platform using included identifier codes. Photographs from this period show wood- and steam-powered sternwheeler river boats serving Tanana, and in one 1913 photograph a sternwheeler is shown pushing a supply barge (UAF-1994-70-396; UAF-1997-122-43). Development and commercial activity in Tanana are concentrated along the riverfront, and the only streets pictured are Front Street and Second Avenue (UAF-1994-70-405). The caption of a photograph of three sternwheelers taken between 1900 and 1902 in Saint Michael, Alaska states that the vessels are dry-docked at the NATC's dry dock facility (UAF-2003-174-245).

A 1908 prospector's map of the Yukon-Tanana region shows the location of Fort Gibbon, occupied between 1889 and 1923, with respect to the present-day Tanana. Fort Gibbon is located downstream (to the west) of the current Tanana town site, which is labeled "Indian Village" (UAF-M0043). The former location of Fort Gibbon is also observed in a photograph taken between 1912 and 1914, which shows the view from the tower at Fort Gibbon, facing east (UAF-1994-70-400). The village of Tanana is visible in the photograph, and is distinguished from the buildings of Fort Gibbon due to contrasting architectural styles. Finally, a photograph of Fort

Gibbon taken between 1896 and 1913 shows a sternwheeler river boat docked at the Fort, indicating that riverboats served both the Fort and the nearby community of Tanana (UAF-1974-130-123).

3.4.2 Provided Documents

Ms. Kathleen Peters-Zuray, the local IGAP Coordinator and a representative of the TTC, also provided historical documents including three photographs. The caption of an undated photograph of the Tanana Chief, a sternwheeler river boat, states that it traveled between Chena and Fort Gibbon between 1898 and the early 1940s. The two additional photographs show black railroad tanker cars, which were located to the west of the Tanana Community Hall circa 1972. Ms. Peters-Zuray also provided a photocopied page that discusses the construction of the 3,728-mile WAMCATS telegraph cable line and development of the region, beginning with Fort Gibbon.

During the September 30 and October 1, 2014 site visit, Ms. Dorothy Jordan of the City of Tanana referenced a 1955 map that shows Alaska Railroad ownership of the subject property. This map is believed to be the same map for which photographs were provided by Mr. Gerald Nicholia, Realty Director of the TTC (City Ownership Map Circa 1954, Appendix I).

3.4.3 United States Department of Interior Bureau of Land Management

The United States Department of Interior, BLM Notice dated December 7, 1983 describes the requirements for conveyance of Alaska Railroad land to a selected Native corporation under Section 3(e) of the ANCSA (Appendix F). The document discusses the selection by Native corporations of sites with an associated environmental risk.

> "It is critical that you identify any lands at this site [or sites] which contain or have previously contained hazardous materials or conditions that would make them unsuitable for return to public domain. Hazardous materials are generally defined as solids or liquids which can be characterized as highly ignitable, corrosive, reactive, radioactive, or toxic… Responsibility for hazardous materials of conditions remains with the holding agency."

The United States Department of Interior, BLM Memorandum dated December 7, 1984 also includes details regarding the environmental history of the Property (Appendix F). The Memorandum states that the Property was used in support of the Alaska Railroad's river barge operation, and was contracted out to Yutana Barge Lines from 1955 to 1975. According to the document, the Railroad continued to own the "boats, barges, equipment, buildings, docks and

other facilities." Use by the Railroad as a transportation facility began prior to 1955 (no starting date is included), and Federal use began in 1952.

Additionally, the Memorandum states that the Yutana Barge Contract describes the Property as having contained "two fuel tanks each of 2,500 bbl [barrels] capacity covered by a structure identified as 'tank house,' and a pump house on the property." Although the contract continued throughout the 1960s and 1970s, the tanks were present only prior to the early 1960s. The Memorandum further describes "a BLM aerial photograph dated July 28, 1963 [that] shows the remains of a building that seems to have been destroyed by fire." The date of this photograph matches the 1963 aerial photograph included in Appendix H.

3.4.4 Ridolfi Engineers, Inc.

In 2002 a draft report was prepared for the TTC detailing sites of potential environmental concern in Tanana by Ridolfi Engineers, Inc. A portion of the draft report, titled *Compilation of Environmental Information for Sites of Concern In and Around Tanana, Alaska,* was provided by Ms. Peters-Zuray during the site visit and included as an appendix in a 2009 Environmental Management Plan prepared by SLR International Corporation (Section 3.4.6).

The subject property is described in the Ridolfi Engineers document (Alaska Railroad Tank Site, O-13), as is the Tanana Community Hall (Village Community Center, O-8). The environmental history of Lot 7, the subject property, is described as follows.

> "Until the 1960's, this site held a pump house and two large wood stave tanks with capacity of 2,500 barrels each. The tanks were used in support of barge operations. Current ownership is debated; from 1955-1975, the Alaska Railroad contracted with Yutana Bargelines; however, there are also several letters to the file indicating a fire, and property transfer back to the state that occurred in the early 1960's. Presently the site holds some debris, and light vegetation."

The findings of the Ridolfi Engineers document are consistent with information from other sources, and imply that documentation (in addition to aerial photographs) supports a fire on the Property in the early 1960s. Furthermore, DRO, GRO, and BTEX are listed as COPCs for the subject property.

The Tanana Community Hall entry states soil sampling in the vicinity of the Hall indicated the presence of PCBs. The document sites source numbers, but no sources are included. We contacted Ridolfi Engineers, Inc. on November 1 to obtain more information about the potential for PCBs near the Hall. According to Mr. Bruno Ridolfi, PCB contamination in the vicinity of

the IHS complex has been excavated and removed by barge. Mr. Ridolfi stated that to the best of his knowledge no PCB contamination remains in Tanana. According to Mr. Paul Bianco, who is also familiar with the project, the source of information regarding PCBs near the Hall is a 1994 Trip Report titled "Tanana PCB Site Assessment" (Reference No. 13). The document was prepared for Mathew Carr, US EPA On Scene Coordinator in Anchorage, Alaska. Ridolfi Engineers were unable to provide the document, which is summarized elsewhere in the 2009 draft report as follows.

> "There is conflicting documentation concerning the use of and presence of PCB's on the local roadways. Several local sources indicate the historic use of waste oil, possibly containing PCB's on the roadways for dust abatement. Apparently, during the 1950's and 1960's, mixed waste oil was obtained from the USAF… and was spread on the roadways for dust abatement. The practice was ceased in 1980. In 1984, the USAF provided the Mayor with verbal information indicating the presence of PCB's in the waste oil tank… however, no data was provided. In 1994, a field assessment was made of several locations within the village using a 1 ppm screening threshold. Based upon the results of this screening effort, many later studies have indicated that there are no PCB's. The field analyses indicated PCB's in the roadways in front of Terry's Store, at the Old Power Plant, near the village community center, and in from of the school."

The Ridolfi Engineers draft report refers to the Tanana Community Hall as the Village Community Center, and marks the location of the Hall on the Sites of Concern Map as "O-8." We concur with this document that the existing evidence is ambiguous as to the presence of PCBs.

We contacted Mr. Matthew Carr, EPA On-Scene Coordinator, on December 8, 2014. Mr. Carr states that he was involved with a PCB field screening initiative in 1994 that investigated the presence of PCBs on Tanana roadways. The investigation was in response to concerns raised by community members that used oil containing PCBs may have been used for dust suppression. Roadways including Front Street were field screened for PCBs, but no analytical samples were collected. Mr. Carr reports that the investigation found some areas of elevated PCB concentrations (i.e., greater than 1 mg/kg), but that in most cases levels were "very low." As the goal of their investigation was limited to identifying acute risks to public health, no further actions were taken.

3.4.5 Amundsen Environmental Services

In 2009, a Site Characterization Report was prepared for the Tanana Power Plant locality (Lot 8, Block 10) by Amundsen Environmental Services. The document focuses on the Tanana Power Company site, located 670 feet to the west-northwest of the subject property (ADEC File No. 780.38.014), and is therefore not included in its entirety in Appendix G. Groundwater was not encountered within 13.5 feet of the ground surface at the Tanana Power Site. Figure 3, *Old Tanana Power Plant Property*, defines the cross-section A-A' shown in Figure 8, *Too'gha, Inc. Water Source Selection Geological Cross-Section, Tanana*. Figure 8 describes subsurface geology in Tanana proximal to the Yukon River. Depth to groundwater within approximately 80 feet of the riverbank varies between 10 and 16 feet bgs. At greater distances from the Yukon the cross-section indicates that the groundwater-bearing unit (sand and gravel, between 10 and 52 feet bgs) is frozen.

Figure 7, Neighborhood Land Use and Ownership (base map ADCCED, 1984), shows property ownership in the vicinity of Lot 8, Block 10. To the north, Lots 1 through 4, Block 4 along Second Avenue are labeled ACC. To the west, Lots 1 and 2, Block 9 along Hill Street are labeled as NCC. The map does not show the subject property, but shows that the ACC and NCC owned a number of parcels in the village of Tanana.

3.4.6 SLR International Corporation

In 2009 an Environmental Management Plan for the Tanana Airport Facility and Community was prepared for the ADEC Brownfields Assessment Program by SLR International Corporation with a, revision released in 2010. The report lists 11 active contaminated sites known to the ADEC, and 14 additional sites of potential environmental concern observed during the site visit. The assessment, provided by John Carnahan of the ADEC, is included in Appendix G of this report with Appendices C through H omitted.

One listed site, "Former Fort Gibbon Wood Stave Tank Farm," is interpreted as referring to the subject property. The entry states that "wooden containers and wood stave tanks were reportedly used to store fuel for the Fort Gibbon facility. Wood alone is not sufficient containment for fuel, and it is likely that historic contamination is present in the areas of any former wooden fuel storage containers." The fuel pump located adjacent to the Property is included in the report as Photograph 11 (page 59). The site is placed at the present-day location of the Community Hall in the report on Figure 2, *Contaminated Sites Location Map* (Site Number 9, page 36). The Wood Stave Tank Farm site is one of two associated with the former Fort Gibbon, the second of which

is the "Former Fort Gibbon Tank Farm" located near the intersection of Garden and Front Streets.

The SLR International report also includes "Front Street Dust Control," which may be of relevance to the subject property given its proximity to Front Street. The entry states that "oil believed to contain polychlorinated biphenyls was reportedly historically sprayed on the roads in Tanana for dust control. Front Street was allegedly heavily oiled and, as a result, heavy or residual range oils may be detectable in surface roads. Road samples in Tanana are reported to have been collected for petroleum hydrocarbon analysis, but these reports were not available to SLR." The site is located to the west of the intersection of Garden and Front Streets on the Contaminated Sites Location Map, but may refer to the entirety of Front Street.

3.4.7 ADEC Contaminated Sites Database

The ADEC Contaminated Sites Database contains two informational contaminated sites for the City of Tanana. The Tanana City Drinking Water Well site, File No. 780.38.004, states that one of several potential sources of contamination is the "former site of Northern Commercial Company (fuel storage and power plant) on the bank of Yukon across from Lot 1, Block 10 on Front Street." This statement further supports the interpretation that contamination on the subject property (Lot 7, Block 11) is not attributable to the Northern Commercial Company.

3.5 Historical Site Use

We investigated historical site use through a review of city and state records, interviews with community members and other individuals familiar with the Property, and aerial photographs.

3.5.1 Aerial Photographs

We reviewed aerial photographs available through Quantum Spatial and Google Earth. Five aerial photographs were purchased from Quantum Spatial and are included in this report. Purchased photographs are from the years 1953, 1963, 1982, 2009, and 2010 (Appendix H).

The earliest aerial photograph available is for 1953, and is of poor quality. The photograph, dated September 2, shows very little cleared land in the vicinity of the Property. A building is visible in the southern portion of the Property, and no improvements have been made directly adjacent to the Property. To the west, a four-building complex has been constructed on a portion of Lots 1 through 2, Block 10. It appears that Front Street has been partially constructed, and may end at or to the west of the Property. A portion of Koyukuk Street near the Yukon River and subject property may also be present as an informal roadway. Development in the village of Tanana is

concentrated along the Yukon River. The remainder of the townsite, including lots to the north and west of the Property, is densely vegetated.

The July 28, 1963 aerial photograph shows debris in the southern and southwestern portion of the Property in a footprint of approximately the same size and location as the building observed in the 1953 photograph. The northern portion on the Property is sparsely vegetated. The immediate vicinity of the Property (Lots 4 through 6, 8 through 9, Block 11, southern portion Block 1) to the north and east has been cleared, and is largely unvegetated. Front and Koyukuk Streets are present as dirt and/or gravel roads. Two small structures are observed in or near Block 11; an oblong structure or tower is located on Lot 5, and a small shack is present across Front Street from Lot 7 and 9. To the west, a four-building complex is present in Lots 1 through 2, Block 10, which is interpreted as the same buildings observed in the 1953 photograph.

By 1971, a structure of similar size and configuration as the present-day Community Hall has been constructed on Lot 8 to the east (photograph not purchased). The eastern portion of the Property appears to be used as storage for timber, railroad ties, and/or utility poles. An informal roadway cuts diagonally across the Property from the northwest to southeast, while the remainder of the lot appears unused. To the west, the four-building complex is no longer present and a single structure has been constructed in the eastern portion of Lot 1, Block 10 along Koyukuk Street. This structure is of a similar size and configuration as the present-day Tanana Teen Center.

The May 26, 1982 aerial photograph shows building-material storage on the Property and adjacent Lots 4 through 6 and 8 through 9. Specific materials are difficult to discern, but appear to be lumber and other elongate objects. Buildings to the east and west remain, and a portion of Second Avenue has been constructed. Two additional structures are present in the western portion of Lot 1, Block 10, and a portion of the lot remains vegetated.

In photographs from 2001, 2003, 2006, and 2007 the Property remains undeveloped and unoccupied (photographs not purchased). The northwest-southeast trending roadway, which was partially covered in the 1982 photograph, is present and appears to be in use. The remainder of the Property is lightly vegetated, and is not used for storage. Portions of Lots 4 through 6 and 9, Block 11, are re-vegetated. To the west, only one building remains on the western portion of Lot 1, Block 10.

The June 17, 2009 aerial photograph shows an oblong white object in the southern portion of the Property next to the roadway. The object does not appear to be a structure as there is minimal relief, and may be a tarp covering building materials or other storage objects. Additionally, a small structure has been constructed on Lot 6, Block 11 to the north, which is of the same size

and location as the present-day structure. A number of items are observed on Lot 6, to the west of the small structure. To the west of the Property, the portion of Lot 1, Block 10 at the intersection of Koyukuk Street and Second Avenue has been cleared,

By September 2009, the white object is no longer present (photograph not purchased). This leads to our conclusion that the object represents temporary storage.

The June 8, 2010 aerial photograph is the most recent aerial photograph available. Site use appears consistent with present-day, as does the configuration of buildings on adjacent properties. A blue object, which may be an all-terrain vehicle (ATV), is stored in the interior of the Property. The roadway observed in previous photographs is visible, and other portions of the Lot are lightly vegetated. A white structure has been constructed in the northeast corner of the Property, and on adjacent Lot 8. This structure may be temporary, and was not observed during the site reconnaissance portion of our investigation.

3.5.2 Interpretation of Site History

Our interpretation of site history is based on the review of historical records, aerial photographs, and interviews with community members and other individuals familiar with the Property. Definitive records are not available for the entire period of interest, in which case we identify the most likely scenario based on limited information.

The Property was likely used as a fueling station for Yukon River barges at some time between 1898 and 1952. According to a BLM Memorandum provided by Ms. Kathleen Peters-Zuray, the Property contained a tank house with two 2,500 barrel (210,000 gallons) fuel tanks, and a pump house.

Several community members indicated that contamination at the site is attributable to Bunker C fuel oil, which is consistent with direct observations during the site visit and the results of analytical sampling. According to Mr. Jack Coghill, stern wheeler river boats during this period used a combination of wood and heated Bunker C fuel oil. Mr. Charlie Campbell states that Bunker C was used in steamboat boilers after wood, and Mr. Pat Moore notes boats switched from wood to Bunker C sometime between the 1930s and 1950s. We therefore interpret the contents of these tanks to have been Bunker C fuel oil, which has a distinctive tar-like consistency.

Use of the Property as a transportation facility began prior to 1955, though no starting date is known. According to Mr. Alfred Ketzler, elders report that activities leading to contamination occurred in the 1920s through the 1950s (Appendix A). Mr. Coghill reports that the tank was

owned by "NATC," and that the last stern wheeler to visit Tanana was in 1953. We believe NATC refers to North American Transportation and Trading Company, which operated river boats along the Yukon River during at least the 1900s.

It is likely military personnel constructed wooden-stave tanks to support river boat operations prior to the 1950s, which delivered supply barges to communities along the Yukon. These tanks, along with the tank house and pumps, may have been sold or transferred to the Alaska Railroad in 1952. Written records were not encountered for this period; Tanana's Plat Map is dated 1957, and the earliest record of ownership of the Property is from 1958.

According to the BLM Memorandum, the Alaska Railroad leased the land to Yutana Barge Lines from 1955 to 1975, though the fuel tanks were only present until the 1960s. This is consistent with historical photographs, which show a large building in the southern portion of the Property in 1953 and building rubble in 1963. The building and tanks may have been destroyed by fire, as suggested by both the BLM Memorandum and Ms. Marilyn Adams. According to Ms. Peters-Zuray the "railroad oil/fuel tanks" were sold and moved to "Coghill fuel"; however, Mr. Coghill clarified that he purchased railroad car tanks rather than tanks owned by the Alaska Railroad. Historical records and aerial photos support the interpretation that the Property remained vacant and largely unused between the early 1960s and present-day.

Community members mention several possible additional sources of contamination, including the NCC, ACC, Fort Gibbon tank farm, and Fort Gibbon WWII lend-lease program. We conclude that the NCC was a precursor to the ACC, and that while this entity owned much of the land in the vicinity of the Property prior to 1977, the store was located on Lots 1 through 2, Block 10. Multiple sources identified the approximate location of the NCC store and NC Creek, and Mr. Coghill specified this location on November 19. To our knowledge neither entity owned or operated facilities on Lot 7, and these reports are likely due to the proximity of NCC land to the subject property.

It is possible that Fort Gibbon operated the site as a fuel terminal for stern wheeler river boats prior to the Alaska Railroad, though definitive documentation is not available. Additionally, we conclude that it is possible but unlikely that the Property housed other fuel distribution facilities for Fort Gibbon. The Fort Gibbon WWII lend-lease Airforce fuel station mentioned by Ms. Peters-Zuray is likely the "Former Fort Gibbon Tank Farm" to the west of the property, included in SLR's 2009 Environmental Management Plan.

3.6 Adjoining Property Ownership Information

We accessed the ADNR Recorder's Office and Land Records databases on November 14, 2014 and the U.S Department of Interior BLM General Land Office Records database on December 1. Additional property records were provided by Mr. Gerald Nicholia, Realty Director, TTC. Ownership Documents for the adjoining properties are included in Appendix I, where they are not duplicates of documents in Appendix F.

Adjoining lots include Lot 1, Block 10 to the west; Lot 6, Block 11 to the north; Lot 5, Block 11 to the northeast; and Lot 8, Block 11 to the east. Front Street and the Yukon River are to the south.

- City Ownership Map Circa 1954 includes Lots 3 through 6, and 8 through 9, Block 11; and Lots 1 through 3, Block 10. A handwritten key shows that these lots are owned by the Northern Commercial Company.
- United States of America Land Patent No. 1180100 (Fairbanks 015403), dated March 6, 1958, conveys US Survey No. 2754 A and B with the exception of Lot 7, Block 11, to Roger R. Robinson, Trustee for the townsite of Tanana.
- Quitclaim Deed dated December 15, 1976 (Book 4, Pages 11 and 112) conveys a minimum of Lots 8 and 10, Block 11; and Lots 1 through 3, Block 10 from the Northern Commercial Company to the Alaska Commercial Company.
- Warranty Deed dated October 3, 1977 (Book 4, Pages 803) conveys Lots 3 through 6 and 8 through 9, Block 11; Lots 1, except the west 60 feet thereof, and 2 through 3, Block 10; and other properties from the Alaska Commercial Company to CDC Sales, Inc.
- Warranty Deed dated October 1, 1984 (Book 4, Pages 487) conveys Lots 3 through 6 and 8 through 9, Block 11; Lots 1, except the west 60 feet thereof, and 2 through 3, Block 10; and other properties in and outside of Tanana from CDC Sales, Inc. to Alaska Rural Investments, Inc.
- Quitclaim Deed dated November 20, 1992 (Book 8, Page 702) conveys Lots 3 through 10, Block 11, Townsite of Tanana, U.S. Survey 2754 A and B, from Alaska Rural Investments, Inc. to the Howard Rock Foundation.
- Annotated Plat Map, prepared beginning in 1996 by Mr. Nicholia and Ms. Nina Heyano, President of Tozitna, Limited, includes all adjacent properties. Lots 3 through 6, and 8 through 10, Block 11, are labeled as "Tanana Tribal Council." Lots 1, except the western portion, 2 and 3, Block 10, are shown as labeled as "Tribe," while the western portion of Lot 1 is shown as "Tom Mogg."

- Warranty Deed dated June 12, 1997 (Book 10, Pages 84 and 85) conveys Lots 3 through 6, and 8 through 9, Block 11; and Lots 1, except the west 60 feet thereof, and 2 through 3, Block 10, from the Howard Rock Foundation to the Tanana Tribal Council.

3.7 Adjoining Property Site Use

We are unaware of any improvements made to the land adjacent to the Property until the construction of the Tanana Community Hall. According to Mr. Coghill, the land to the north and east of the Property was cleared for development by one of his employees prior to 1963. The Hall was likely built on Lot 8, Block 11 in the mid to late 1960s (between 1963 and 1971), prior to ownership of Lot 8 by the TTC. The Hall uses heating oil, and a 500-gallon aboveground storage tank (AST) is located to the north of the building (Photo 3, Appendix E). To our knowledge no permanent structures have been constructed on Lots 5 and 6, Block 11. The area has served as storage for building materials and other objects, and in a limited capacity as a parking area during events at the Community Hall.

Based on the above mentioned-documents, interviews with community members, and aerial photograph review, we conclude that the NCC (later ACC) operated a store to the west of the subject property, on a portion or the entirety of Lots 1 through 3, Block 10. The four-building complex visible in aerial photographs from 1953 and 1963 is interpreted as the NCC store, which may have continued operation through the early or mid-1970s. Multiple interviewees identified the NCC property and/or “NC creek” in this vicinity. The store was then relocated elsewhere in Tanana, and may have changed ownership at this time.

Following the NCC store, three buildings were constructed on the adjacent lot to the west. All three buildings are observed in the 1982 aerial photograph, though they were likely constructed during the 1970s (Appendix H). The easternmost building, located across Koyukuk Street from the Property, currently serves as the Tanana Teen Center. The other two buildings may have been a private residence, and were excluded from deeds referencing the remainder of Lot 1 beginning in 1977. The southern most of these two structures was removed between 1982 and 2001, while the northern one remains.

No ownership records are available for the western 60 feet of Lot 1, but the Annotated Plat Map prepared beginning in 1996 by Mr. Nicholia and Ms. Heyano lists Tom Mogg as the owner. The northeastern portion of Lot 1 was cleared prior to 2009, and a private residence constructed after June 2010. The house was observed during the site reconnaissance, and is visible (right) next to

the Teen Center (left) in Photo 2 (Appendix E). Both structures use heating oil, and have outdoor ASTs with a capacity of 300 and 500 gallons, respectively.

Ms. Patty Elias, Mr. Patrick Moore, and Mr. Marti Starr identify the Property or its vicinity as the site of a sawmill. The 1982 aerial photograph shows large quantities of lumber on nearby lots, specifically Lots 4, 5, and 9, Block 11. Mr. Starr identified the former location of the sawmill as north of the Property, on Lots 5 and 6, Block 11 and/or Lots 8 and 9, Block 1. We therefore conclude the sawmill was not located on the Property; rather, it was nearby.

4.0 SITE RECONNAISSANCE AND SAMPLING

Shannon & Wilson, Inc. personnel performed a site reconnaissance, limited site exploration, and interviews with community members during two visits to Tanana. Jacob Tracy, field technician, traveled to Tanana on August 29, 2014 for the site reconnaissance and limited site exploration. Kristen Freiburger, Project Manager, traveled to Tanana on September 30 and October 1, 2014 to conduct interviews with community members, review local historical records, and observe ongoing use of the subject property. Both Jacob Tracy and Kristen Freiburger are qualified Environmental Professionals, as defined by ASTM 1527-05. Their activities are documented in our field notes, sampling-log sheets, and digital photographs (Appendices D and E).

4.1 Deviations

The September 4, 2014 Work Plan outlined procedures for field screening using both PID and PetroFLAG instruments, depending on site conditions. The field technician was able to identify the extent of contamination based on the distinct odor and appearance of tar-like material near the soil surface. PID and direct observation were used to guide the selection of sampling locations; as direct observation appeared adequate, PetroFLAG was not used as part of our field-screening efforts. Because there were no costs for PetroFLAG analyses, three additional analytical samples were collected to further delineate the site.

It was not possible to mark property boundaries, as GPS information was not available through the City of Tanana, as proposed. Property boundaries were therefore not marked with plastic fencing.

4.2 Methodology

During the site reconnaissance, current site use, observations of surface contamination, soil disturbance, local topographic gradient, and other relevant factors were noted.

The limited site exploration utilized direct observation and PID field screening of suspected soils to identify locations for the collection of samples for laboratory analysis. Our field technician observed the excavation of four test pits and a test trench, and selected samples from the most visually contaminated portions of these locations (Figure 3). Following the excavation, soil was replaced to its original location; no soils were stockpiled or removed from the property.

Analytical samples were collected for COPCs, which include RRO, DRO, GRO, BTEX, and PAHs. Analytical results are compared to ADEC cleanup levels (migration to groundwater, direct contact, and inhalation; Table 3).

4.2.1 Excavations

The City of Tanana provided an operator and backhoe with a 12-foot reach to execute the limited site exploration portion of this investigation. Our field technician was present for the entirety of the excavation. Four test pits and a 10-foot-long trench were excavated in suspected areas of the property (Figure 3). The dimensions of each test pit are approximately two feet by five feet, and they ranged from one foot (Test Pit 4) to four feet in depth (Test Pit 1). The dimensions of the Test Trench were 5 feet by 10 feet, excavated to a depth of one foot.

We assessed the depth of contaminated soil and its distribution throughout the Property. Test Pits 1 and 4 are located in the central southern portion of the subject property and Test Pits 2 and 3 in the northern portion (Figure 3). A pad of highly contaminated material was observed in the southern portion of the site during the 2013 construction of a drainage ditch along Front Street. Test Pit 1 was excavated to confirm the presence of this contaminated soil, and the potential corners of the pad of tar-like material were identified through surface scraping (Test Trench, Test Pit 4). Test Pit 4 may be located just outside the eastern boundary of the Property. No excavation occurred in the ditch or roadway where contamination was first observed in 2013. Locations for Test Pits 2 and 3 were selected to assess the apparent absence of contamination in the northern portion of the Property. No test pits were located in the direct center of the Property in order to avoid the roadway. Permafrost was not encountered during the limited site exploration.

Buried tanks, pipes, and spigots were not observed on the subject property, but fuel-soaked wood debris was encountered in Test Pits 1 and 3, as well as the Test Trench. A rusted metal pump and piping were encountered across Front Street from the subject property, which are described in Section 4.3. No utilities were encountered during the excavation, as utilities are confined to the roadway (Figure 2).

Test pits and the test trench were backfilled as soon as practical to prevent prolonged exposure of contaminated material to ambient air. Backfill was used to replace the excavations to roughly the

level of the former ground surface, and compacted by tracking over the surface. Soil was replaced at approximately the same depth from which it was removed, and contaminated material was not mixed with uncontaminated material. Backfilled test pits were observed by Kristen Freiburger during the second site visit (Photo 6).

4.2.2 Field Screening

Field screening of suspected soils was conducted using a calibrated, hand-held MiniRae 2000 Portable volatile organic compound Monitor (Model PGM 7600) manufactured by Rae Systems, Inc. The PID is equipped with a 10.6 electron-Volt lamp to estimate the relative concentration of volatile organic compounds in soil samples or the air. This instrument measures total volatile compounds present as vapors, and is a semi-quantitative indication of volatile hydrocarbons present. The PetroFLAG test kit was not used as an additional field-screening tool.

Mr. Tracy selected soils for field screening based on visual and olfactory observation at a rate sufficient to readily delineate accessible contamination on the property. Field screening procedures are described in the September 4, 2014 Work Plan, which was prepared in accordance to the ADEC *Draft Field Sampling Guidance* (2010). Detailed PID field screening results are included below; PID field screening did not yield any volatile detections. PID results are reported with a 1.0 part per million (ppm) reporting limit. August 29, 2014 field notes tabulate readings based on direct PID readout values, and are below the reporting limit (Appendix D).

TABLE 2
FIELD-SCREENING RESULTS

Location	Sample Depth (feet)	Sample Time	PID Reading (ppm)	Sample Name
Test Pit 1	1	14:00	<1.0	*11738-TP1S1*
Test Pit 1	2	14:05	<1.0	No sample
Test Pit 1	3	14:10	<1.0	No sample
Test Pit 1	4	14:15	<1.0	*11738-TP1S4*
Test Pit 2	1	14:40	<1.0	*11738-TP2S1*
Test Pit 2	2	14:43	<1.0	No sample
Test Pit 2	3	14:46	<1.0	No sample
Test Trench (West)	0.5	15:15	<1.0	*11738-TS1*
Test Pit 3	1	15:45	<1.0	*11738-TP3S1*
Test Pit 3	2	15:48	<1.0	No sample
Test Trench (West)	0.75	16:00	<1.0	*11738-TS2*

4.3 Observations

No surface staining or stressed vegetation was observed on the surface soil at the Property or on the west side of the Tanana Community Hall building. However, tar-like material is present in near-surface soil at certain locations throughout the site (Photo 7, Appendix E). Field personnel noted a hydrocarbon odor and staining approximately 1 to 1.5 feet bgs in Test Pit 1 (Photo 8). Tar-like material and tar-covered wood were observed in the uppermost 0.5 feet of Test Pit 1 (Photo 9). The uppermost 0.5 feet of the Test Trench, measured at its west end, was also tar-like and emitted a strong hydrocarbon odor (Photos 10 and 11). This material was interpreted by the field technician to be Bunker C fuel oil, due to its color, texture, and lack of PID response. No odor or visual indication of contamination was observed in Tests Pit 2 or 3 (Photo 12). Wooden debris and stained soil were also encountered during the excavation of Test Pit 4 (Photo 13).

The thickness of this tar-like material is 3 to 6 inches in Test Pits 1 and 4, and the length of the Test Trench (Appendix D). It is our interpretation that the Bunker C pad extends between these two test pits, and is present in the majority of the southern portion of the Property. The southern boundary of contamination identified in the field-visit site sketch is proposed by Mr. John Basket, an equipment operator with the City of Tanana who assisted with the construction of the drainage ditch in 2013 and the excavation of Test Pits on August 29, 2014. Please refer to Figure 3 for our best estimate of the lower extent of contamination on the Property based on field observations (lower limit). We also identify an upper limit of the contaminated pad, in the event

that observed limits merely local boundaries. The upper limit of contamination is not shown in Figure 3.

A rusted metal pump and piping were observed across Front Street from the Property, which we believe to be associated with fuel distribution at the site (Appendix E, Photo 5). The approximate location of this feature is shown on Figure 3. The piping did not appear to be connected to infrastructure or leading to the Property, and no petroleum odors or surface staining were encountered around the pump. It is unknown if the current location is where the pump was operated or if it was moved to the present location after a period of non-use. The pump and piping were observed during both site visits to the Property and vicinity, but no excavation was conducted at this location.

4.4 Soil Sampling

Analytical grab samples were collected from Test Pit 1, Test Pit 2, and Test Pit 3 and the Test Trench on the subject property. Soils samples were submitted to SGS North America, Inc. (SGS) for analysis of GRO, DRO, RRO, and BTEX analysis. One sample was also submitted for analysis of PAHs. SGS is an ADEC-approved laboratory.

4.4.1 Sampling Rationale

Grab samples were collected from freshly uncovered soils in the test pits and trench, either in situ or while soil was in the excavator bucket. Samples were collected in accordance with sampling procedures outlined in the 2014 Work Plan. Test Pit locations were selected based on direct observations of the field technician and input provided by City of Tanana personnel regarding the extent of the 2013 excavation. Analytical samples were collected from Test Pits 1, 2, and 3 and the Test Trench as part of a limited sampling effort to assess the lateral extent of soil contamination. A pad of highly-contaminated material was observed in the southern portion of the site, and its corners were identified through surface scraping (Test Trench, Test Pit 4). Test Pit 1 and the Test Trench were sampled to represent the contaminated pad, which is believed to be the area with the highest levels of contamination. Test Pits 2 and 3 were sampled to assess the apparent absence of the tar-like material in the northern portion of the Property and provide information for limited site delineation. Duplicate samples were collected from the same locations and according to the same procedures as primary samples.

4.4.2 Analytical Testing Methods

We submitted soil samples to SGS in Anchorage, Alaska. Samples were submitted for analysis of RRO by Alaska Method AK 103, DRO by Alaska Method AK 102, GRO by Alaska Method AK 101, BTEX by EPA Method 8021B, and PAH by EPA Method 8270D. We requested a standard data turnaround time (approximately two weeks) for analytical samples.

4.5 Analytical Results and Discussion

DRO, RRO, and benzene, were detected above ADEC soil-cleanup levels in four of the six sample locations. Three PAH analytes were detected above one or more ADEC cleanup levels in the single location tested (Test Trench sample *11738-TS1*). DRO was detected above migration-to-groundwater cleanup levels in Test Pit 1 sample *11738-TP1S1* (1 foot bgs), Test Trench samples *11738-TS1* and *11738-TS2* (0.5 foot bgs and 0.75 foot bgs, respectively), and Test Pit 2 sample *11738-TS2S1* (1 foot bgs). RRO was also detected above both migration-to-groundwater and direct-contact cleanup levels in Test Pit 1 sample *11738-TP1S1* (1 foot bgs) and Trench Sample *11738-TS1* (0.5 foot bgs). Benzene was detected above migration-to-groundwater cleanup levels in Test Trench sample *11738-TS2* (0.75 foot bgs). The following PAH analytes were also detected in Test Trench sample *11738-TS1* (0.5 foot bgs): 1-methylnaphthalene and 2-methylnaphthalene above migration-to-groundwater cleanup levels, and benzo(a)anthracene above the direct-contact cleanup level. Analytical results are presented in Table 3.

We propose soil-screening levels for this site to be those listed in 18 AAC 75.341 Table B1 and B2, Method Two for the “Under 40 Inches” precipitation zone. These cleanup levels are tabulated along with analytical results in Table 3.

4.6 Quality Assurance Summary

Quality assurance (QA)/quality control (QC) procedures assist in producing data of acceptable quality and reliability. Analytical results for laboratory QC samples were reviewed and a QA assessment of the data was conducted. The QA review procedures provide documentation of the accuracy and precision of the analytical data and confirm that the analyses are sufficiently sensitive to detect analytes at levels below suggested action levels or regulatory standards. The laboratory report for analytical samples is included in Appendix J, including the case narrative describing laboratory QA results and the completed ADEC data review checklist.

4.6.1 Sample Handling

Analytical grab samples were flown from Tanana via commercial airline as checked luggage, following proper chain-of-custody (COC) procedures. We hand-delivered soil samples to the SGS sample-receiving facility in Fairbanks on September 4, 2014. SGS then shipped them to their analytical laboratory in Anchorage, where they arrived in good condition. We reviewed the COC records and laboratory sample-receipt forms, and found that samples were kept properly chilled during shipping from Fairbanks to Anchorage.

4.6.2 Analytical Sensitivity

The limit of detection (LOD) for each project sample was less than the ADEC-soil-cleanup levels for RRO, DRO, GRO, and BTEX analyses. LODs for PAHs benzo(a)pyrene and dibenzo(a,h)anthracene exceeded ADEC Table B soil-cleanup levels for sample *11738-TS1*. We cannot determine whether these PAH analytes may have been present in the samples at concentrations greater than regulatory limits but less than analytical reporting limits.

Laboratory method blanks were analyzed in association with samples collected for this project, to check for possible contributions to the analytical results attributable to laboratory-based contamination. No analytes were detected in each of the method blanks.

We submitted trip blanks with soil samples for analysis of GRO and BTEX to determine if cross-contamination among samples or contamination from an outside source may have occurred during shipment or storage. No analytes were detected in either of the trip blanks, indicating no cross-contamination occurred.

4.6.3 Accuracy

The laboratory assessed the accuracy of their analytical procedure by analyzing laboratory control samples (LCSs) and LCS duplicates (LCSDs). These QC samples allow the laboratory to evaluate their ability to recover analytes added to clean matrices. LCS and LCSD recoveries were within laboratory-control limits for each analysis.

Accuracy was also evaluated for BTEX and PAH analyses by assessing the recovery of matrix spike (MS) and MS duplicate (MSD) samples. These QC samples allow the laboratory to evaluate their ability to recover analytes added to matrices similar to the project samples.

MS/MSD recoveries were within limits for the BTEX and PAH analyses except the MS/MSD recoveries for o-xylene were above laboratory limits. The spiked sample set was not part of our project sample set, so project results are considered unaffected by the MS/MSD failure.

Accuracy was also evaluated for each sample by assessing the recovery of analyte surrogates added to individual project samples. There were no QC-sample or surrogate-recovery failures associated with the project samples with the following exceptions. The DRO surrogate, 5a-androstane and RRO surrogate, n-triacontane-d62, were recovered outside QC limits in samples *11738-TP1S1, 11738-TS1, 11738-TS2,* and *11738-TS11* due to sample dilution. Additionally, PAH surrogates 2-fluorobiphenyl and terphenyl-d14 were recovered outside QC limits in sample *11738-TS1* due to sample dilution. Sample results are not considered affected by surrogate recovery failures due to dilution. The GRO surrogate, 4-bromofluorobenzene, was recovered below laboratory limits in sample *11738-TS11*; the associated project sample result is considered biased low, and flagged with a "JL" in Table 3.

The sample results for the sampling event are considered accurate based on LCS/LCSD, MS/MSD, and/or surrogate recoveries, except where noted above.

4.6.4 Precision

We collected two sets of field-duplicate samples to evaluate the precision of analytical measurements (RRO, DRO, GRO and BTEX) and reproducibility of our sampling technique. To evaluate the precision of the data we calculated the relative percent difference (RPD; difference between the sample and its duplicate divided by the mean of the two). We evaluate RPD only where the results of analyses for both the sample and its duplicate are above the limit of quantitation.

The field-duplicate samples were *11738-TS1/11738-TS11* and *11738-TS2/11738-TS12*. RPDs were within QC goals (below 50 percent) for each analyte, where calculable.

Laboratory analytical precision can also be evaluated by laboratory RPD calculations. The LCS/LCSD and MS/MSD RPDs provide information regarding the reproducibility of laboratory procedures, and are therefore a measure of analytical precision. The RPDs associated with RRO, DRO, GRO, BTEX, and PAH analyses were within laboratory-control limits. The sample results for this project are considered precise based on field-duplicate RPD and LCS/LCSD RPD calculations.

4.6.5 Data Quality Summary

By working in general accordance with our Work Plan, we consider analytical samples to accurately and precisely represent site conditions at the locations and times they were obtained. No samples were rejected as unusable due to QC failures based on our QA review, and our completeness goal of obtaining at least 80 percent useable data was met. Our QA review indicates that analytical results are generally sensitive, accurate, precise, and complete, with exceptions noted above.

In general, the quality of the analytical data for this project does not appear to have been compromised by analytical irregularities, and the results are valid for interpreting soil quality at the locations the samples were collected. The laboratory report and ADEC data-review checklist for the project sample results are provided in Appendix J.

4.6.6 Field Instrument Use and Calibration

Equipment and instrument calibration provide checks that accurate and reliable measurements are obtained. Mr. Tracy calibrated the PID before use on August 29, 2014, according to the manufacturer's instructions (Appendix D). The calibration result recorded in the field screening log was 101 ppm, using 100 ppm isobutylene calibration gas. No maintenance or error messages were displayed.

5.0 ENVIRONMENTAL REVIEW AND SUMMARY

5.1 Environmental Records Review

We researched federal and state database records during the weeks of November 17 and 24, 2014 for pertinent information regarding the environmental condition of the Property and adjacent parcels. Record sources were accessed directly, so environmental-records source information is not included as an appendix.

5.1.1 Federal Records Sources

The National Priorities List (NPL) specifies those properties that are assigned the EPA's highest cleanup priority. We reviewed the EPA website for listed and delisted NPL sites in the vicinity of the Property, and there are none in the community of Tanana. The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) is also compiled by the EPA. The CERCLIS list includes sites the EPA has investigated or is currently

investigating for potential hazardous substance contamination and for possible inclusion on the NPL. According to the CERCLIS list, there are no CERCLIS sites in the Tanana area. The closest NPL and CERCLIS sites are in and around Fairbanks.

The EPA Region 10 report is used to identify Resource Conservation and Recovery Act (RCRA) treatment, storage, or disposal (TSD) facilities subject to corrective action within 1 mile of the Property and facilities not subject to corrective action within 0.5 mile of the Property. There are no listed hazardous materials TSD facilities in or around the City of Tanana. There are, however, two RCRA Hazardous Waste Generators located in Tanana. The "USDOT FAA Tanana" (Handler ID #AK9690502167) and "PHS Hospital Tanana Health AK Native" (Handler ID #AK2750361097) are both Conditionally Exempt Small Quantity Generators (CESQG). Neither is located on the subject property or adjacent properties.

The Emergency Response Notification System (ERNS) reports hazardous substance releases in quantities greater than the reportable quantity. The Property is not shown on the ERNS list for releases that occurred between 1982 and 2014. However, the ERNS list includes an oil spill that occurred on August 28, 2002, in the Yukon River near Tanana (Incident ID #621367). The U.S. Fish and Wildlife Service is listed as the responsible party, and reports that material was released from a 55-gallon drum due to a leak. The quantity of the leak is not included in the ERNS database entry.

The EPA Brownfields list was researched to identify EPA Brownfields Assessment, Cleanup, and Revolving Loan Fund Grantee sites in and around Tanana. Brownfields sites are defined as those for which the real property, expansion, redevelopment, or reuse may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. There are no current Brownfields sites within 0.5 mile of the subject property, the closest of which is located in Nenana.

The National Park Service's National Register Documentation on Listed Properties database was researched to identify cultural, historical, and archeological resources on the Property. The National Register of Historic Places is the Nation's official list of cultural resources worthy of preservation. There is one Registered Historic Place in Tanana: the Tanana Mission at 1205 Denali Way, east of Tanana (Reference Number 77000230). The register does not list cultural resource sites or cultural resource districts on the Property.

5.1.2 State Records Sources

We reviewed the ADEC Spills List, the State Landfill and Solid Waste Disposal Site List, Registered Underground Storage Tank (UST) database, Leaking Underground Storage Tank (LUST) database, Contaminated Sites database, and Solid Waste Management Facility Information database to obtain information about the subject property and its vicinity.

5.1.2.1 Spills List

An entry in the ADEC Spill List (No. 13309919502) was created in 2013 to describe historical hydrocarbon contamination encountered on the subject property. The contamination was discovered by the City of Tanana during the construction of a drainage ditch along Front Avenue. The original entry that includes this reference number is no longer available in the public Spills List. Spill No. 42131, titled "Tanana City Hall, Historic Contamination - 7/14/2013" describes 100 gallons of "Bunker" which was identified in June 2013 by Mr. Arvin Kangas. The Tanana Tribal Council is listed as the responsible party, and according to the ADEC spill listing the site is undergoing on-site treatment. The nature and listing date of this spill are consistent with information regarding the PACP subject property. We therefore interpret this ADEC Spills List entry as relating to Lot 7, though the facility name "Tanana City Hall" is inconsistent with the site location.

There are also three ADEC Spills List entries for which location information is not available. Spill No. 7014, facility name "Tanana City" is listed on April 19, 1996. According to the entry, a 130-gallon release of diesel at the gas station was identified by Ms. Ava Edwardsen, with Tozitna, Limited listed as the responsible party. The spill was the result of a deteriorated gate valve that leaked heating fuel; the released fuel was incinerated.

Spill No. 22545, facility name "Tanana City" is listed on July 5, 2004. According to the entry, a 100-gallon release of diesel was identified by Mr. Herbie Edwin, with Mr. Terry Edwin and the Tanana Tribal Council listed as the responsible party. The diesel was placed in a lined, bermed area, and the spill was closed less than two months later.

Spill No. 36642, facility name "Tanana City" is listed on June 1, 2007. According to the entry a 3-gallon release of hydraulic oil diesel was identified by Mr. Lyle Gresehover, with Brice, Inc.

listed as the responsible party. The spill occurred following a heavy equipment line failure, and contaminated material was incinerated in an approved landfill.

5.1.2.2 Solid Waste Sites List

The State Landfill and Solid Waste Disposal Site List includes the Tanana Landfill, which is located over 1 mile west of town. The ADEC Solid Waste Program categorizes the landfill as Class III active, and current authorization expires in 2017 (ADEC Landfill Permit #SW3A063-17). There are no closed, inactive, removed, or retired landfills or waste disposal sites included in the ADEC Solid Waste Facilities Database. Please refer to Section 2.3.3, Landfill Information.

5.1.2.3 Registered Underground Storage Tank Database

We reviewed ADEC Registered UST records on November 17 for registered UST sites on the Property and adjacent properties. Precise location information is unavailable for most sites, but there are two registered USTs that could be located on adjacent properties. There are no registered USTs on the subject property.

The database identifies a 1,000-gallon gasoline UST that was removed from the ground at "Tanana Commercial" on Front Street (Facility ID #3275). Tanana Commercial may refer to the former location of the NCC, later known as ACC, on Lots 1 through 3, Block 10 across Koyukuk Street from the Property.

The database also identifies a 25,000-gallon gasoline UST that was removed from the ground at the Tanana Gas Company on Front Street, Box 36 (Facility ID #2457). Three 10,000 gallon gasoline USTs remain in use at the site. This registered UST site likely refers to the same location as the Tanana Gas Company site in the ADEC Contaminated Sites database. This site is located 1,100 feet to the west-northwest of the subject Property.

5.1.2.4 Leaking Underground Storage Tank Database

We reviewed the ADEC's LUST database on November 17 for information regarding registered LUST sites within 0.5 mile of the Property. There are three LUST sites within a 0.5-mile radius, only one of which is listed as "Open." The remaining two are listed as "Cleanup Complete." The results of this search are summarized in Table 1, LUSTs within a 0.5-Mile Radius (Appendix K).

The single open LUST site in the vicinity of the Property is the BLM Alaska Fire Service Tanana Station on White Alice Site Road (ADEC File No. 780.38.010). The site is 700 feet to the east-southeast of the Property, and may be hydrologically up-gradient. The property was used for fuel storage and distribution in the 1970s and 1980s by Jack Coghill's Nenana Fuel Company. Multiple USTs were removed from the site prior to 1994, containing aviation gasoline and JP-4 jet fuel. DRO contamination was encountered at 1 foot bgs on the 5-acre site (maximum 33,200 ppm). Contamination was also present at the surface, and stressed vegetation noted.

Approximately 12 cy of contaminated soil was excavated and stockpiled onsite. Limited soil excavation was completed in 2003, but was not approved by ADEC. Solid waste, including a battery pile, has been removed by the responsible party. In 2006, ADEC approved decommissioning and spreading of petroleum contaminated soil across site, which may be ongoing. Contaminated soil at the site meets ADEC migration-to-groundwater standards, leading the ADEC to conclude that the BLM Alaska Fire Service Station should be a low priority site. We therefore conclude that the White Alice site is unlikely to influence groundwater quality and poses a minimal risk to the subject property.

5.1.2.5 Contaminated Sites Database

We reviewed the ADEC Contaminated Sites database on November 17 for sites within 1.0 mile of the Property. This list is assumed to be equivalent to a State Hazardous Waste Sites list, as required by the ASTM International Standard E 1527-13. There are 14 contaminated sites within a 1.0-mile radius of the Property, which represent nine distinct locations. Two of these sites are informational, 9 are listed as "Open," and three are listed as "Cleanup Complete," one with institutional controls. These contaminated sites are summarized in Table 2, Contaminated Sites within a 1.0-Mile Radius (Appendix K).

The Property is listed in the contaminated sites database, as Tanana Community Hall (File No. 780.57.004). The ADEC file states "initial information collected indicates the area was previously used for storage of bunker-C fuel oil at a wood-stave tank farm… Contaminated material from the 2013 trenching was removed and transported to a liner near the landfill to undergo natural attenuation." An update on September 12, 2014 describes the proposed scope of this PACP, following the submission of the Work Plan.

Several community members report that surface contamination has been covered with a layer of fill material. In July 2013, the City of Tanana official discovered contamination on the Property, when wooden planks and heavy fuel oil were discovered while digging a trench adjacent to Front Street. A small portion of the contamination was removed in 2013 when a drainage ditch was constructed along the southern portion of the site (Figure 3). The contaminated soil was removed from the Property and stockpiled at the landfill, where it is mixed with wood debris from the former tank frames and/or tank house (Appendix E). Ms. Shannon Erhart, Executive Director of the Tanana Tribal Council, reported that TTC remediation efforts discussed in the ADEC Brownfields Assessment or Cleanup Request Form refer to the IHS complex, not the subject property (Appendix A). We are not aware of any remediation efforts that have occurred on the subject property, other than those discussed here.

The nearest open contaminated site, other than the subject property itself, is BLM Tanana Lot 3 Former Tank Farm on White Alice Site Road (File No. 780.38.010). This site is discussed above, as it is also the nearest open LUST site to the Property.

The nearest "closed with institutional controls" contaminated site is the Tanana Power Company, located at 2nd and Hill Streets, which is closed with institutional controls (File No. 780.38.014). The site is located 670 feet west-northwest from the subject property, and is the location of ongoing remediation efforts by Shannon & Wilson, Inc. on behalf of ADEC. Prior to excavation, surface soils were stained and had elevated concentrations of BTEX, GRO, DRO, RRO, SVOCs, PAHs and trace levels of pesticides (DDT). An estimated 2,300 cy of contamination soil was removed for offsite treatment in 2013, and an additional 500 cy were removed in August 2014. The City of Tanana applied for and received a DEC Brownfields Assessment and Cleanup service award, which has been used to remove petroleum-contaminated soil from two building footprint excavations. This site is not believed to be up-gradient of the Property, and despite its proximity is interpreted as having minimal influence on the environmental condition of the Property.

The remaining 11 entries in the ADEC Contaminated Sites database are greater than 1,000 feet from the Property, and located to the northwest or west-northwest and therefore are not are not located hydrologically up-gradient from the Property. Given their location with respect to the Property, these sites are not believed to pose a practical environmental risk to the Property's soil, air, or groundwater quality.

5.2 Known or Potential Sources

We evaluated potential environmental risk due to observed environmental conditions at and proximal to the subject property.

5.2.1 Recognized Environmental Concerns

An REC is the presence or likely presence of a hazardous substance or petroleum product under conditions that indicate an existing release, past release, or material threat of a release into structures on the Property or to the Property's ground surface, groundwater, or surface water (ASTM International Standard E 1527-13). This assessment identifies two RECs in relation to the Property.

Historical contamination is observed in multiple locations throughout the subject property, and is attributed to leaking wooden-stave tanks (installed prior to the 1960s) which likely contained Bunker C oil, also known as No. 6 heavy fuel oil. Tar-like fuel oil is observed on the ground surface and/or directly beneath a thin layer of soil cover, with a thickness of approximately 3 to 6 inches. Analytical sampling identifies DRO, RRO, benzene, and three PAH analytes at concentrations above ADEC soil-cleanup levels at one or more locations. In the case of duplicate samples *11738-TS2* and *11738-TS12*, soil which did not have directly observable contamination (color, texture, or odor) contained DRO and benzene at concentrations above ADEC soil-cleanup levels. Samples were not analyzed for PCBs or RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), which have occasionally been detected in Bunker C fuel. The history of the Property is not well documented, and it is possible that additional sources of historical contamination are present.

The Property is unpaved, and has been used as a parking area and informal roadway for cars, trucks, and ATVs for many years. Leaks, drips, and spills from vehicles were not observed during visual inspection of the Property, but contamination may be present in or under soil or gravel fill.

This assessment identifies no other controlled or historical RECs in reference to the subject property other than the Bunker C contamination addressed in this PACP. A controlled REC is defined as an environmental condition that indicates a past release on the Property or into the Property's ground, groundwater, or surface water that has been addressed to the satisfaction of the applicable regulatory authority, but where contamination has been allowed to remain in place

subject to the implementation of required controls. A historical REC is defined as an environmental condition that may have constituted a REC in the past, but has been closed by a regulatory agency or otherwise is no longer considered to pose a material threat.

5.2.2 Other Environmental Concerns

Other Environmental Conditions include known, suspected, or potential sources of hazardous substances or petroleum products that are not considered RECs due to: (a) the absence of a confirmed release or other material threat; (b) insufficient information to evaluate the condition; (c) de minimis conditions that are not expected to be subject to regulatory action; or (d) exclusion from the ASTM definition of hazardous material (e.g., asbestos-containing materials).

A 2002 Ridolfi Engineers, Inc. report states that PCBs were encountered during soil sampling in the vicinity of the Tanana Community Hall, located on adjacent Lot 8, Block 11 (Appendix G). The Hall is less than 25 feet to the east of the subject property boundary.

The source of this information is identified as a 1994 field-screening effort conducted by the EPA On-Scene Coordinator's office (Mr. Matthew Carr). According to Mr. Carr, the investigation found some areas of elevated PCB concentrations (i.e., greater than 1 mg/kg) but that in most cases levels were "very low." Front Street, located to the south of the Property, was one of the roads tested. It is possible PCB contamination is present on or directly adjacent to the Property.

A 2009 SLR International Corporation report states that historically Front Street was heavily oiled for dust control (Appendix G). Oil used for dust control reportedly contained PCBs, and analytical samples were collected for petroleum compounds but the results are unknown. Front Street runs along the southern property boundary, and is topographically higher than the Property. It is possible that surface runoff could have transported sediment from the road on to the Property prior to the 2009 installation of a drainage ditch along Front Street. It is also possible that oil used for dust control (if present) could have migrated to the subject property through surface water runoff.

Heating oil is commonly used to heat public and residential structures in the community of Tanana. ASTs are present on adjacent properties to the east (Tanana Teen Center, private residence) and west (Tanana Community Hall). This assessment did not identify any USTs on

adjacent properties. Releases from active and/or abandoned heating oil tanks could potentially affect the Property's soil and/or groundwater.

5.3 Known or Perceived Data Gaps

We are unable to definitively document site history or use prior to the 1950s. The earliest available ownership documents and historical references specific to the Property are for the years 1952, 1954, and 1958. The earliest historical photograph available is from 1953 (Appendix H). We therefore rely on historical documentation that is not specific to the Property, and on interviews with community members and other individuals with knowledge of the Property, to document site history and use prior to 1952.

Personal interviews were limited by individual schedules and access. For example, potential interview subjects Ms. Shannon Erhart, Mr. Lester Ehiet, and Mr. Alfred Ketzler were not present in Tanana during our September 30 and October 1 site visit. Whenever possible we attempted to contact individuals with relevant information about the Property after leaving Tanana, but contact information was not always available.

The environmental records review portion of this PACP does not wholly comply with ASTM E 1527-13, as required for a complete Phase I Environmental Site Assessment. Threatened and endangered species, wildlife sanctuary information, wetlands inventories, and fire insurance maps were not assessed as part of our review.

5.4 Conceptual Site Model

We prepared a CSM for the Property; completed ADEC CSM forms are included in Appendix L. The CSM developed for the site describes the primary contaminant sources, release mechanisms, secondary sources, mechanisms of retention in or transport of exposure media, receptors who may come in contact with the exposed media, and intake routes through which receptors may be exposed. A graphic presentation of the CSM is also presented in Appendix L. This CSM does not address the possibility of PCB or metals contamination. If PCBs or metals are detected on the property, it may be necessary to revise the CSM.

5.4.1 Potential COPCs and Affected Media

Soil data collected during our investigation activities indicate fuel releases occurred at the site. Interviews conducted with community members indicate the primary source for soil contamination includes leaks from the former wood-stave tanks containing Bunker C fuel. Chromatographic signatures for the analytical samples collected at the site are consistent with a heavy hydrocarbon fuel source. Additional surface spills or releases on this property may have contributed to benzene contamination discovered beneath the Bunker C layer, but are not considered to be a primary source of contamination at the site.

Bunker C hydrocarbons released to the environment from the former wood-stave tanks have adsorbed to surface soils (0 to 2 feet bgs), where they could potentially migrate to the groundwater or volatilize to the atmosphere.

5.4.2 Discussion of Exposure Pathways

This section evaluates potential contaminant exposure pathways for hydrocarbon contamination on the subject property. Complete ADEC Human Health CSM Graphic and Scoping Forms are included in Appendix L.

5.4.2.1 Soil Exposure Pathways

Community members noted “tar-like” material rises to the surface in the spring. Analytical sampling and field observations confirmed the presence of contaminated soil within the first foot of surface soils; therefore, we consider incidental soil ingestion and dermal absorption of surface soils to be complete pathways. We identify potential receptors as site visitors, trespassers, recreational users, and utility or construction workers. Potential future receptors include subsistence harvesters or consumers as potential future receptors.

Additionally, inhalation of fugitive dust is also considered a complete contaminant exposure pathway for the receptors listed above due to contamination presence in the uppermost two centimeters of soil.

5.4.2.2 Groundwater Exposure Pathways

Contamination in near-surface soils could possibly migrate from the subsurface to the groundwater, although this is not a likely transport mechanism for Bunker C fuel. The

mobility of contaminated soils at the site is limited by both adsorption to the soils in the subsurface and the viscosity of Bunker C fuel. However, there is no data available with respect to groundwater quality at the site and a sample collected from Test Pit 1 had benzene concentrations above ADEC groundwater cleanup levels. We cannot adequately assess the risk to groundwater and cannot conclude that the migration-to-groundwater pathway is insignificant. Ingestion of groundwater is unlikely due to the availability of clean water supplied by the City of Tanana, but we listed it as a complete exposure pathway due to the lack of available data.

Dermal absorption of contaminants in groundwater is also considered a complete pathway for site visitors, trespassers, recreational users, and utility or construction workers.

5.4.2.3 Air Exposure Pathways

Volatilization of hydrocarbons from surface soils (0 to 2 feet bgs) has the potential to migrate to outdoor or indoor air. Surface soils at the site are directly affected by hydrocarbon contamination. Results of our limited site investigation document RRO and DRO concentrations above ADEC direct-contact or inhalation cleanup levels (Table 3) in several analytical samples. Additionally, benzo(a)anthracene was detected above the direct-contact cleanup level and benzene, 1-methylnaphthalene, and 2-methylnaphthalene were found above migration-to-groundwater cleanup levels in surface or near-surface soils. The exposure pathway via outdoor air is considered complete for site visitors, trespassers, recreational users, and utility or construction workers.

The Tanana Community Hall is used frequently by the community for events and meetings. During our site investigation soils near the adjacent Tanana Community Hall were scraped away from the surface at Test Pit 4. We observed surface staining and wood debris; analytical samples were not submitted. The potential for exposure via indoor air is possible but unlikely due to the skirted crawlspace beneath the Tanana Community Hall. However, additional data is required and we considered the pathway complete for site visitors.

5.4.2.4 Surface Water and Sediment Exposure Pathways

Runoff of exposed soils by rain and/or snowmelt may result in dermal absorption of contaminates through contact with on-site or nearby surface-water bodies. Additionally,

direct contact with surface-water sediments may result in ingestion of contaminates from hand-to-mouth activities. We consider these pathways to be complete for site visitors, trespassers, recreational users, and utility or construction workers.

Surface water on the property, mainly consisting of puddles during breakup or after rainfall, is not used as a drinking-water source; therefore, ingestion of surface water is not considered a complete pathway.

5.4.2.5 Biota Exposure Pathway

Some residents of Tanana have expressed interest in developing a community garden on the Property. Gardens grown in areas with contaminated soil or water may result in exposure through ingestion of farmed foods. At this time we consider this pathway incomplete; however, it is possible the pathway would be complete if site activities change from current use. Subsistence harvesters, consumers, and famers would be considered receptors if the pathway were complete.

5.5 Cleanup Criteria

The applicable ADEC soil-cleanup levels are included in Table 3, including migration-to-groundwater, direct-contact, and inhalation cleanup levels. Soil cleanup levels are those listed in 18 AAC 75.341 Table B1 and B2, Method Two for the “Under 40 Inches” precipitation zone.

We propose that the most stringent cleanup criteria be applied to this site, which in most cases are migration-to-groundwater cleanup levels. For RRO, ethylbenzene, total xylenes, and seven of the 18 PAH analytes, direct-contact or inhalation cleanup levels are more stringent or equal to migration-to-groundwater cleanup levels. We do not consider migration-to-groundwater to be a likely transport mechanism for Bunker C fuel at this site, due to its high viscosity and adsorption to soils. However, we cannot adequately assess the risk to groundwater due to a lack of data on groundwater quality at the site, and therefore consider migration-to-groundwater to be a complete pathway.

Direct contact and inhalation of outdoor air are both identified as contaminant exposure pathways for visitors to the site. If migration-to-groundwater is not considered, the most stringent cleanup level for DRO and GRO will rise significantly (RRO cleanup levels would not be significantly affected). DRO is detected above ADEC cleanup levels at several locations and

is considered a primary COPC. The migration-to-groundwater cleanup level for DRO is 300 mg/kg, while that for direct contact (the next most stringent) is 10,250 mg/kg. If the direct-contact cleanup level were used for DRO, detections at two sample locations would no longer be considered above cleanup levels (*11738-TP2S1* and *11738-TS2;* Table 3).

5.6 General Environmental Overview

Historical hydrocarbon contamination on the Property is described by multiple community members, and directly observed during our site reconnaissance and limited site exploration. Historical contamination is attributed to Bunker C heavy fuel or No. 6 fuel oil releases, though other historical releases are possible. Analytical sampling identified DRO, RRO, benzene, and three PAH analytes at concentrations above ADEC soil-cleanup levels at one or more locations in the upper 1 foot of soil.

Analytical sampling identified concentrations of RRO that are well above ADEC soil-cleanup levels, and one detection of benzene and GRO. Additionally, PID screening of suspected soils did not identify volatile organic compounds. These observations are consistent with Bunker C being the primary source of contamination at the site.

We identify multiple potential exposure pathways, some of which represent a higher risk to human health than others (Appendix L). Contamination is present on the soil surface, facilitating exposure to site visitors. Contact with contaminated surface soil through direct exposure or windblown dust is considered the primary transport mechanism of contaminated soils. A secondary but clearly established exposure pathway is the inhalation of outdoor air.

The Property is heavily used by the public, as a community gathering space during events at the adjacent Tanana Community Hall for residents of all ages. At other times the Property is used as an informal roadway and parking area. The contaminant exposure pathways are considered complete for visitors to the site and therefore have the potential to affect a large proportion of the community of Tanana.

Through historical research we also identified an additional COPC, for which analytical samples were not collected during the limited site exploration. Bunker C fuel may contain PCBs and/or RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), as historically small amounts of used oil may have been blended with Bunker C fuel as an alternate

means of disposal. We were unable to document the source of Bunker C material, and have no information pertaining to the likelihood of PCBs or metals in detectable concentrations. In 2004 the California EPA Office of Environmental Health Hazard Assessment published a report titled "*Used Oil in Bunker Fuel: A Review of Potential Human Health Implications.*" The report describes this practice, which occurred in the U.S. during and prior to the 1990s. According to the California EPA, "in the 1990s, 10 to 25 percent of all marine fuel sold on the United States West Coast was estimated to have been blended with used oil… at concentrations ranging from 1 to 3 percent – a very small percentage of the total fuel volume… Used oil can easily conceal any unwanted or waste chemicals – including solvents, metals, PCBs and acidic materials."

Additionally, two historical sources raise the possibility of PCB contamination in the vicinity of the Tanana Community Hall and/or adjacent to Front Street, due to the spreading of PCB-containing oil for the purposes of dust abatement. We interpret the likelihood of PCB contamination from this source to be minimal. However, there is not enough information to adequately evaluate the risk to human health from PCB contamination, as its presence on the Property is not confirmed.

Finally, this assessment identifies potential leaks, drips, and spills from vehicles as a recognized environmental concern. The source of this concern is the use of the Property as an unpaved informal parking lot and roadway for many years. This environmental condition is considered to be of a lesser magnitude than other historical contamination on the Property. Additionally, excavation of surface and near-surface soils to address historical contamination may address this concern.

6.0 RECOMMENDED ACTIONS

6.1 Recommended Remedial Actions

We recommend action be taken to address the REC of historical petroleum contamination on the Property. This PACP documents the presence of heavy fuel oil, believed to be Bunker C or No. 6 fuel oil, which was likely used prior to the early 1960s by stern wheeler river boats operating on the Yukon River. Analytical sampling identified DRO, RRO, benzene, and three PAH analytes at concentrations above ADEC soil-cleanup levels at one or more locations in the upper 1 foot of soil. In the case of benzene, 1-methylnaphthalene, and 2-methylnaphthalene, concentrations are

encountered above migration-to-groundwater cleanup levels but below those for inhalation or direct contact.

Contaminant exposure pathways identified in our CSM include direct exposure to contaminated soils through dermal contact and outdoor air inhalation (Appendix L). We recommend remediation by excavation, due to the high potential for direct contact with visitors to the site, the shallow depth of contaminated soil, the ease of visual assessment of contamination based on color and texture, and the limited lateral extent of the affected area. We estimate the extent of the Bunker C pad is between 4,500 and 9,100 square feet, based on direct observations made during the limited site exploration and aerial photographs of the site (Appendix D; Appendix H). If the uppermost 2 feet of soil are excavated, this will yield between 350 and 700 cubic yards. If the uppermost 3 feet are excavated, this will yield between 500 and 1,000 cubic yards.

The Property is also used as a parking area and informal roadway for cars, trucks, and ATVs, and has been for many years. Leaks, drips, and spills from vehicles have the potential to affect the quality of surface and near-surface soils. While we identify these present-day and historical actions as an REC, we do not recommend remedial actions beyond those required by the presence of historical contamination. Excavation of contaminated soil will also eliminate the indoor-air exposure pathway; therefore, this cleanup plan does not include further evaluation of this pathway.

To assess the risk of groundwater as a complete exposure pathway, we recommend collecting a minimum of one groundwater confirmation sample on or down-gradient of the Property. The installation of temporary well points using a professional drill rig is the only groundwater-collection method that does not depend on depth to groundwater or other site conditions. The installation of temporary well points using a handheld drill rig or a pre-pack well are less costly alternatives that do not require the mobilization of a drill rig, as discussed in Section 6.2.2.

Interviews indicate the pump and piping across Front Street (Figure 3) may have been associated with Bunker C and the Property. We recommend investigating the pump and any associated piping that may be buried around the pump or under Front Street.

Samples were not analyzed for PCBs, which may be present in Bunker C fuel, in the vicinity of the Tanana Community Hall, and/or adjacent to Front Street. Some Bunker C fuel may contain PCBs or metals, due to the blending of small quantities of used oil with Bunker C and other

marine fuels. Additionally, two historical sources raise the possibility of PCB contamination in the vicinity of the Tanana Community Hall and/or adjacent to Front Street, due to the spreading of PCB-containing oil for the purposes of dust abatement.

It is possible that PCB or metals contamination is present on or directly adjacent to the Property. We therefore recommend PCB field screening in the southern and eastern portions of the Property, and that two PCB and one RCRA-metals confirmation samples be collected. The results of analytical sampling of Bunker C material and soils adjacent to Front Street would assess the presence of PCBs or metals from these two possible sources. Petroleum remediation efforts may need to be modified if PCBs or metals are present above ADEC cleanup levels on the Property.

The ingestion of wild or farmed foods exposure pathway is disregarded at the present, as a vegetable garden is not located on the Property. In the event that the Property is used for gardening or harvesting at any point in the future, this exposure pathway should be reevaluated.

6.2 General Remediation Strategies

We discuss remediation strategies for soil, air, groundwater, and surface water runoff in the following sections.

6.2.1 Soil Management Strategies

We recommend all observed heavy fuel oil be removed from the Property. Presumed Bunker C material is present in an easily identified pad, which may relate to the footprint of a former tank house building. The building is encountered in historical documents and referenced in interviews, though its precise location is unknown. While Bunker C material is easily identified through color, texture, and odor, benzene and DRO were also detected above ADEC cleanup levels in *11738-TS2*, which did not appear contaminated during the limited site exploration (Appendix D). We recommend the use of field-screening tools such as a PID, PetroFlag and/or PCB field screening to aid excavation. Our cost estimates assume 2 to 3 feet bgs will be excavated under and near the footprint of the former tank house.

We identify two possible extents of contamination at the site, a lower limit and an upper limit. The lower limit of the Bunker C pad is the north-western edge of the Test Trench, eastern edge of Test Pit 4, and southern property line as boundaries (area shown in yellow, Figure 3). While

these were the approximate limits of contamination observed during site exploration, it is possible these limits are only local boundaries and that contamination may be present beyond these locations. The upper limit of the Bunker C pad includes areas outside the subject property boundaries. The upper limit includes the edges of Front and Koyukuk Streets and the western wall of the Tanana Community Hall as boundaries.

The lower limit is approximately 4,500 square foot area, which if excavated to 2 feet bgs would yield approximately 350 cubic yards of contaminated soil. The upper limit is approximately 9,000 square foot area, which would yield approximately 500 cubic yard of contaminated soil if excavated to 2 feet bgs. If the lower and upper limits were excavated to 3 feet bgs, between 700 and 1,000 cubic yards of soil would be removed.

We recommend that the excavation of suspected soils is guided by direct observation (visual and olfactory) and the use of field-screening tools (PID, PetroFLAG, and/or PCB field screening). While we did not encounter any PID readings above background during the initial site exploration, there may be areas where BTEX and GRO are present that may produce PID detections. Any excavations of contaminated material should be conducted in accordance with ADEC regulations and guidance for contaminated sites and USTs (18 AAC 75 and 18 AAC 78), and with standard practices for site investigations. Analytical and confirmation samples are required, and should be collected in accordance with the 2010 ADEC *Draft Field Sampling Guidance* document.

We recommend excavated soil be remediated or stockpiled at a pre-determined location. We recommend clearing an area at the landfill and conducting active landfarming due to Tanana's remote location. Landfarming, with fertilizer, water addition and aeration, has the potential to remediate Bunker C contaminated soil considerably faster than stockpiling.

An existing landfarm is located at the Tanana Landfill covering an area of at least 135 feet by 173 feet with 4-foot-wide, 3-foot-high soil berms. The landfarm was expanded by approximately 8,000 square feet in August 2014 to include additional material excavated from the Former Tanana Power Site. A separate cell could be constructed at this location, to landfarm RRO-, DRO-, and benzene-contaminated material from Lot 7, Block 11.

Further, we recommend the site not be developed as a garden until the site is declared "cleanup complete" when COPCs are not detected above ADEC cleanup levels. However, we note that a

"cleanup complete" designation does not indicate the complete absence of COPCs. If a garden is to be installed, we recommend that the northern portion of the site be selected and raised beds filled with clean soil used.

6.2.2 Water Management Strategies

Groundwater quality at the Property is unknown, therefore migration-to-groundwater cannot be eliminated as a potential contaminant exposure pathway. We recommend a minimum of one groundwater confirmation sample be collected, either on or down-gradient of the Property. We provide three alternatives for the collection of a groundwater sample: the installation of a temporary well point or points using a professional or handheld drill rig, a pre-pack well or wells.

The installation of temporary well points using a drill rig is the only alternative that is not limited by depth to groundwater and other site conditions, and is therefore recommended. Wells would be installed using direct push technology and the smallest drill rig available to a depth of approximately 15 to 30 feet bgs. We have requested a quote for three temporary well points through GeoTek Alaska, which is included in Section 6.5. Mobilization of the drill rig to Tanana alone would cost $10,000, which is approximately 70% of the total cost of well installation (Appendix M, Table M-1). However, a drill rig could be in Tanana at the time of the project, which would reduce or eliminate mobilization costs.

Temporary wells could be installed by an environmental professional with a handheld drill rig to prevent the high cost of mobilizing a professional drill rig; however, the viability of this method is highly dependent on depth to groundwater and soil conditions. This option is only viable if groundwater is present within approximately 10 to 15 feet bgs, and if gravel is absent from the subsurface. The Property is adjacent to the Yukon River, but the site is situated on a bluff with approximately 22 feet of local elevation gain. Groundwater information specific to the Property is unavailable, but is interpreted to be between 10 and 30 feet bgs based on other locations in Tanana. While investigating subsurface conditions of the Property is outside the scope of this PACP, we expect that excavations below 4 feet would encounter silty sand, sandy silt, or silt.

The "pre-pack wells" method refers to the use of a pre-assembled shallow groundwater well (screen, sand pack, and casing) installed using a backhoe or excavator with a reach long enough to meet groundwater depth. Shannon & Wilson, Inc. has used this method in other Alaskan

villages to decrease the total cost of monitoring well installation by removing drill rig mobilization costs. This option is also only viable if groundwater is present within approximately 15 feet bgs. We propose the excavation of a 15 foot bgs test pit to investigate the viability of the handheld drill rig and pre-pack well alternatives.

6.2.3 Other Materials Management

Inhalation of outdoor air or air inside the Tanana Community Hall by community members who visit the Property is considered a complete exposure pathway requiring further investigation. Removal of the contaminated soil on and near the surface would eliminate this risk and therefore we do not propose additional investigation of this exposure pathway. Soil excavation is discussed above in Section 6.2.1.

6.3 Community Resources

The TTC and City of Tanana have experience with other environmental remediation of contaminated sites in the village, applicable to the subject property. Existing resources and possible funding sources are discussed below.

6.3.1 Resource-Leveraging Opportunities

The majority of individuals interviewed stated they expect the TTC and/or the City of Tanana to lead R&R initiatives. The ADEC Brownfields Assessment or Cleanup Request Form was prepared before property ownership was established, but representatives for these two entities state their desire to assist in the redevelopment initiative (Appendix A). The Request Form, signed by Ms. Shannon Erhart, Executive Director of the TTC and Mr. James Roberts, the former EPA IGAP coordinator for Tanana, reads “the Community of Tanana has all the tools and labor force to get this job done. Tanana can and will clean this mess up with help from the DEC.” Furthermore, the document reports “EPA IGAP has yards of prime black soil from another project that needs to be utilized” and could be repurposed for landscaping and/or the construction of a garden on the Property.

An enclosed letter from the City of Tanana to the TTC further states “the City will offer to supply clean fill dirt and virgin gravel for any backfill efforts as well as any heavy equipment needed.” The City of Tanana may intend to conduct the excavation at no cost. The City has a Volvo 460 track-mounted excavator with a three-cubic yard capacity bucket and a John Deere

610 backhoe with a 12-foot reach. According to Mr. Patrick Moore, the city rents the backhoe for a cost of $950 per 8 hour day as of July 2014. A trained operator charges $120 per hour. The TTC also has heavy equipment which could be available to assist in the remediation effort.

6.3.2 Funding Sources

The Property may be eligible for assistance under the ADEC Brownfields R&R Program. This PACP identifies the Alaska Railroad as the likely responsible party for Bunker C contamination on the Property. However, in selecting the land for transfer under Section 3(e) of the ANCSA, Tozitna, Limited assumed responsibility for any hazardous materials and conditions on the Property. According to a BLM Notice dated December 7, 1983, "responsibility for hazardous materials of conditions remains with the holding agency," in this case the new owners (Appendix F). With no responsible party, there is a high potential that contamination will remain in place, as it has for a minimum of the last 50 years (1960s to present-day).

We consider Lot 7, Block 11 to be well suited for the Brownfields Program. The Property is located in a central location with a high significance to the community, adjacent to the Tanana Community Hall and along the Yukon River. The site is already used for community functions including meetings, dances, workshops/classes, holiday celebrations, potlatches, funerals, and activities for Elders and children. Contamination is present at and near the surface, therefore multiple exposure pathways are identified in the CSM (Appendix L, Conceptual Site Model).

To fulfill all of the requirements of R&R Initiative, we recommend TTC develop a formal redevelopment plan for the Property. There is general consensus among community members regarding the redevelopment of the site; the majority of subjects interviewed would like to see the site redeveloped for as a public recreational space, which is consistent with current site use. The ADEC Brownfields R&R Program requires that eligible properties show documentation regarding reuse and redevelopment. According to the Brownfields Assessment or Cleanup Request Form, "documented means that it is in a resolution, business plan, or economic development plan, or that funding for reuse is actively being sought and can be documented" (Appendix A). This PACP may qualify as documentation sufficient to initiate remedial action, but more extensive documentation could be required.

6.4 General Outline of Remedial Requirements

Analytical sampling for RRO, DRO, GRO, BTEX, and PAH on August 29, 2014 established DRO, RRO, benzene, and three PAH analytes are present in concentrations above ADEC soil-cleanup levels at one or more surface-soil locations on the Property. Excavation of contaminated soil is therefore required, though options for remediation may vary. Samples were not analyzed for PCBs or metals, which may be present in Bunker C fuel and/or remain in the vicinity of the Property due to historical dust suppression practices. We recommend excavation of contaminated material and collecting a minimum of one groundwater sample. Below is a general outline of proposed remedial actions to address impacted media.

- Construction of a project-specific landfarm. This may require land clearing and initial soil sampling at the base of the landfarm area.
- Excavation of petroleum-contaminated soils using an excavator and field-screening methods (PID, PetroFlag, and/or PCB field screening). The volume of contaminated soil is estimated at 350 to 1,000 cy of soil, depending on the depth of the excavation (approximately 2 to 3 feet) and the lateral extent of the expected Bunker C pad.
- Collection of analytical characterization and confirmation samples. Characterization of contaminated material removed during the excavation, and confirmation samples of clean material at the base and sidewalls of the excavation area.
- PCB field screening and the collection of two analytical samples for PCBs and one for metals analysis (eight RCRA metals: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). PCBs and/or metals may be present in Bunker C fuel, and PCBs may be present in the vicinity of the Tanana Community Hall or Front Street. The soil cleanup level for PCBs and some metals is very stringent, and if they are present in the vicinity of the Property they have the potential to substantially expand the scope of work. PCB and metals sample collection should be conducted prior to proceeding with excavation work.
- Backfill the excavation with clean fill material. The City of Tanana can provide clean fill and/or gravel to fill in excavated areas.
- On-going landfarm management should include frequent soil hydration, aeration, fertilization, and progress sampling at appropriate intervals.

- Collection of a minimum of one groundwater sample, preferably on the Property. A groundwater sample down-gradient of the Property may be sufficient. Groundwater sampling methods suggested in this PACP include installation of temporary well points using a professional or handheld drill rig, or a pre-pack well.

We recommend that remediation efforts be considered in two phases. The first phase would consist of PCB field screening and sampling, collection of a sample of Bunker C fuel for metals analysis, and digging a test pit to determine depth to groundwater and the viability of different groundwater collection methods. If PCBs or metals are encountered above screening levels, a new method of remediation or an expanded scope may be necessary. The second phase would consist of landfarm development, removing soil contamination, and collecting a minimum of one groundwater sample.

6.5 Rough Order of Magnitude Cost Estimates

Costs of remediation include coordination time with ADEC, TTC, and City of Tanana, the preparation of a consultant work plan, and remedial actions approved by ADEC. Several major factors have the potential to affect the cost of remediation. Contaminated material present in the immediate vicinity of the Property but outside property boundaries may or may not be addressed. The collection of groundwater samples through a temporary well point installed using a handheld drill rig or a pre-pack well is less expensive that the installation of temporary well points by a qualified driller, but may not be possible due to local site conditions. Additionally, if PCBs or metals are found to be present this has the potential to substantially expand the scope of remediation efforts on the Property.

Two rough orders of magnitude (ROM) cost estimates are developed for the site remedial activities outlined in Section 6.2. The ROM cost estimates are presented in Appendix M. The costs have been broken out by method of groundwater sampling (with a professional drill rig or without), and include planning and work plan preparation, field work, and report preparation. Our ROM cost estimate totals $80,000 for groundwater sampling using a professional drill rig, which is a viable alternative given any depth to groundwater (Table M-1). Our ROM cost estimate totals $65,000 for groundwater sampling using an alternate method, which is not viable for a depth to groundwater below approximately 15 feet (Table M-2).

The intent of these ROM cost estimates is to provide preliminary costs associated with site remedial activities. Following completion of various tasks, it may be necessary to modify the project scope and associated costs as site-specific information is acquired. We therefore recommend adding a contingency factor, which is included in the attached ROM cost estimates.

Based on our past experiences a contingency of between 10 and 30 percent is appropriate for this type of project.

7.0 CONCLUSIONS

We recommend action be taken to address the REC of historical contamination on Lot 7, Block 11 in Tanana, Alaska. Historical contamination on the Property is attributed to wooden-stave tanks that existed on the Property over 50 years ago (prior to the early 1960s). A tar-like petroleum compound was encountered in the southern portion of the Property in a distinct layer within the upper 1 foot bgs. This material is believed to be Bunker C, also known as No. 6 heavy fuel oil. The fuel oil is observed on the ground surface and/or directly beneath a thin layer of soil cover, with a thickness of approximately 3 to 6 inches. Analytical sampling identified DRO (up to 122,000 mg/kg), RRO (139,000 mg/kg), benzene (0.0591 mg/kg), and benzo(a)anthracene (7.94J mg/kg), 1-methylnaphthalene (148 mg/kg), and 2-methylnaphthalene (85.1 mg/kg) at concentrations above ADEC soil-cleanup levels within the suspected Bunker C pad area.

This PACP also identifies a second REC, the potential for leaks, drips, and spills from vehicles using the Property as an unpaved parking area and informal roadway. This environmental condition is considered to be of a lesser magnitude than historical contamination on the Property. Additionally, excavation of surface and near-surface soils to address historical contamination would also address this concern.

A CSM was prepared to evaluate the potential risk to human health from historical contamination on the Property. The two highest-risk contaminant exposure pathways for visitors to the site are direct exposure or windblown dust from contaminated surface soils and the inhalation of outdoor air. The Property is used frequently for a variety of community functions including meetings, dances, workshops/classes, holiday celebrations, potlatches, funerals, and activities for Elders and children.

We recommend historical Bunker C contamination be excavated to below ADEC cleanup levels before reuse of the Property; our volume and cost estimates assume this will require the uppermost 2 to 3 feet bgs be removed. The volume of contaminated material is estimated at 350 to 1,000 cubic yards of soil, depending on the depth of the excavation and lateral extent of the former Bunker C pad. Landfarming, with the addition of fertilizer and water and with aeration, may be used to remediate Bunker C contaminated soil. Additionally, the possibility of PCB and RCRA metals contamination exists as a minor constituent in Bunker C, or PCB contamination in the vicinity of the Tanana Community Hall and/or adjacent to Front Street. We further

recommend that two PCB and one metals soil samples and a minimum of one groundwater sample be collected for confirmation purposes. Depending on the results of PCB and metals sampling, the method of groundwater sampling, and the extent of contaminated soil, the ROM cost of remediation is estimated at between $65,000 and $80,000.

There is general consensus among community members regarding plans for R&R, with the majority proposing a public recreational space, which is consistent with current site use. The Alaska Railroad is found to be the likely responsible party for Bunker C contamination on the Property, but is no longer considered liable. Tozitna, Limited is believed to be the current property owner, and is considered liable for environmental conditions on the Property. The TTC and City of Tanana have proposed they assist with redevelopment efforts, and the Property may be eligible for assistance under the ADEC Brownfields Program.

8.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

This Property Assessment and Cleanup Plan was prepared by Kristen Freiburger, Senior Chemist and Marcy Nadel, Geologist in our Shannon & Wilson, Inc. Fairbanks office under the supervision of Jon Lindstrom, PhD, Senior Associate. Jake Tracy, E.I.T., Environmental Engineer from our Anchorage office served as a field technician for the limited site exploration portion of this investigation. Mrs. Freiburger also served as community interviewer. These individuals have the specific qualifications based on education, training, and experience, to assess a property of this nature, history, and setting, and they have developed and performed the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312. Shannon & Wilson declares that, to the best of our professional knowledge and belief, Ms. Freiburger, Ms. Nadel, Mr. Lindstrom, and Mr. Tracy meet the definition of “Environmental Professional” as defined in 40 CFR 312.10.

9.0 LIMITATIONS

This report was prepared for the exclusive use of our clients and their representatives in the study of this site. The findings we have presented within this report are based on the limited research, sampling and analyses that we conducted. They should not be construed as definite conclusions regarding the site’s soil or groundwater. It is possible that our subsurface tests missed higher levels of petroleum hydrocarbon constituents, although our intention was to sample areas likely to be affected. As a result, the sampling and analysis performed can only provide you with our professional judgment as to the environmental characteristics of this site, and in no way guarantees that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc.

The data presented in this report should be considered representative of the time of our site assessment. Changes in site conditions can occur with time, due to natural forces or human activity. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised. Shannon & Wilson, Inc. has prepared the attachments in Appendix N, "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of our reports.

Copies of documents that may be relied upon by our client are limited to the printed copies (also known as hard copies) that are signed or sealed by Shannon & Wilson, Inc. with a wet, blue ink signature. Files provided in electronic media format are furnished solely for the convenience of the client. Any conclusion or information obtained or derived from such electronic files shall be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, or you question the authenticity of the report please contact the undersigned.

10.0 REFERENCES

Alaska Climate Research Center, 2014, Fairbanks, Alaska climate data: Fairbanks, Alaska, Alaska Climate Research Center, available: http://climate.gi.alaska.edu/Climate/Fairbanks, accessed September 2014.

Alaska Department of Commerce, Community, and Economic Development Community and Regional Affairs, 2009, Tanana community profile maps: Available: http://commerce.state.ak.us/dnn/dcra/planninglandmanagement/communityprofilemaps.aspx, accessed August, 2014.

Alaska Department of Commerce, Community, and Economic Development Community and Regional Affairs, 2014, Tanana community database: Available: http://commerce.alaska.gov/cra/DCRAExternal/community/Details/a6949f52-35a8-476e-ab6e-935d67c97b6b accessed August, 2014.

Alaska Department of Environmental Conservation (ADEC), 2010, Draft field sampling guidance: Juneau, Alaska, ADEC Division of Spill Prevention and Response, Contaminated Sites Program, 60 p., May, available: http://dec.alaska.gov/spar/guidance.htm.

Alaska Department of Environmental Conservation (ADEC), 2010, Site characterization work plan and reporting guidance for investigation of contaminated sites: Juneau, Alaska, ADEC Division of Spill Prevention and Response, Contaminated Sites Program, 7 p., September, available: http://dec.alaska.gov/spar/guidance.htm.

ASTM International, 2013, Standard practice for environmental site assessments: phase I environmental site assessment process, E1527-13: West Conshohocken, Pa., ASTM International, Annual book of standards, v. 11.05, pesticides, antimicrobials, and alternative control agents; environmental assessment; hazardous substances and oil spill response, 47 p., available: www.astm.org.

Branson, Willie and Haglin, Mark, 2010, Community wildfire protection plan Tanana, Alaska: 22 p., available: http://forestry.alaska.gov/pdfs/cwpp/Tanana20CWPP_204-26-11.pdf.

Dr. Ernest A. Cook Photograph Collection, 1913-1939, Tanana riverfront: Alaska's Digital Archives photograph no. UAF-2003-109-240, available: http://vilda.alaska.edu/cdm/index.

Denton, Joan, 2004: Used Oil in Bunker Fuel: A Review of Potential Human Health Implications: Office of Environmental Health Hazard Assessment, California Environmental Protection Agency, available: http://www.oehha.ca.gov/risk/pdf/usedoilinbunkerfuel.pdf.

Fairbanks Chamber of Commerce, 1908, Map of Yukon-Tanana region, Alaska: Alaska's Digital Archives image no. UAF-M0043, available: http://vilda.alaska.edu/cdm/index.

NOAA Hazardous Materials Response and Assessment Division, n.d., Fact sheet: No. 6 fuel oil (Bunker C) spills: Seattle, Wash., NOAA, 2 p., available: https://dec.alaska.gov/spar/perp/response/sum_fy05/041207201/fact/noaa_971_no_6.pdf.

R.C. Force Papers, 1900-1902, Three vessels in dry dock: Klondyke, Portus B. Weare, John Cudahy: Alaska's Digital Archives photograph no. UAF-2003-174-245, available: http://vilda.alaska.edu/cdm/index.

Reed Family Papers, 1900-1923, Fort Gibbon WAMCATS at Tanana: Alaska's Digital Archives photograph no. UAF-1968-21-154, available: http://vilda.alaska.edu/cdm/index.

Richard Frank Photograph Collection, 1913-1939, Tanana, Alaska Alaska's Digital Archives photograph no. UAF-1997-122-42, available: http://vilda.alaska.edu/cdm/index.

Richard Frank Photograph Collection, 1913-1939, Tanana, Alaska Alaska's Digital Archives photograph no. UAF-1997-122-43, available: http://vilda.alaska.edu/cdm/index.

Rivenburg, Lawyer and Cora Photograph Album, 1912-1914, At Tanana, Alaska, July 7, 1913: Alaska's Digital Archives photograph no. UAF-1994-70-396, available: http://vilda.alaska.edu/cdm/index.

Rivenburg, Lawyer and Cora Photograph Album, 1912-1914, Front Street, Tanana, Alaska: Alaska's Digital Archives photograph no. UAF-1994-70-405, available: http://vilda.alaska.edu/cdm/index.

Rivenburg, Lawyer and Cora Photograph Album, 1912-1914, Ship ahoy, Tanana, Alaska: Alaska's Digital Archives photograph no. UAF-1994-70-395, available: http://vilda.alaska.edu/cdm/index.

Rivenburg, Lawyer and Cora Photograph Album, 1912-1914, Tanana, Alaska as seen from Fort Gibbon: Alaska's Digital Archives photograph no. UAF-1994-70-400, available: http://vilda.alaska.edu/cdm/index.

U.S Federal Railroad Administration, 2014, Alaska railroad: Available: https://www.fra.dot.gov/Page/P0548.

Wenger, Jason, 2014, Fort Gibbon and the Village of Tanana: University of Alaska Anchorage Digital Archives Partnership, LitSite Alaska, 2 p., available: http://www.litsite.org/index.cfm?section=Digital-Archives&page=Government&cat=Military&viewpost=2&ContentId=2732.

Wahrhaftig, Clyde, 1965, Physiographic divisions of Alaska: U.S. Geological Survey Professional Paper 482, 52 p., available: http://pubs.er.usgs.gov/publication/pp482.

Woods, G. M., 1896-1913, Ft. Gibbon from radio tower: Alaska's Digital Archives photograph no. UAF-1974-130-123, available: http://vilda.alaska.edu/cdm/index.

Table 3: Analytical Soil Sample Results
Tanana Community Hall Lot PACP

			Sample ID	TP1-S1	TP1-S4	TP2-S1	TP3-S1	TS1	TS11	TS2	TS12
			Sample Date	8/29/2014	8/29/2014	8/29/2014	8/29/2014	8/29/2014	8/29/2014	8/29/2014	8/29/2014
			Duplicate						DUP of TS1		DUP of TS2
			Approximate Depth - feet below ground surface	1	4	1	1	0.5	0.5	0.75	0.75
Analyte	**Migration to Groundwater Cleanup Level**	**Direct Contact Cleanup Level**	**Inhalation Cleanup Level**	Test Pit 1	Test Pit 1	Test Pit 2	Test Pit 3	Trench	Trench	Trench	Trench
Gasoline Range Organics	300	1,400	1,400	<2.83	<1.88	<3.28	<1.77	1.70J	1.96JL*	19.7	26.6
Diesel Range Organics	250	10,250	12,500	**10,800 JH***	<12.2	**1,150 JH***	<11.8	**122,000**	**87,900**	**623 JH***	**840 JH***
Residual Range Organics	11,000	10,000	22,000	**36,800**	64.5	5,340	9.67J	**139,000**	**87,100**	2,970	3,280
Benzene	0.025	150	11	<0.0141	<0.00935	<0.0164	<0.00885	<0.00835	<0.00905	**0.0396**	**0.0591**
Ethylbenzene	6.9	10,100	110	<0.0283	<0.0187	<0.0328	<0.0177	<0.0168	<0.0181	1.27	1.73
o-Xylene	63 (total)	20,300 (total)	63 (total)	<0.0283	<0.0187	<0.0328	<0.0177	0.0194J	<0.0181	0.705	0.958
P & M -Xylene				<0.0565	<0.0374	<0.0655	<0.0354	<0.0335	<0.0362	3.62	4.93
Toluene	6.5	8,100	220	<0.0283	<0.0187	0.0262J	<0.0177	0.0121J	0.0159J	1.68	2.32
1-Methylnaphthalene	6.2	280	760	--	--	--	--	**148**	--	--	--
2-Methylnaphthalene	6.1	280	750	--	--	--	--	**85.1**	--	--	--
Acenaphthene	180	2,800	--	--	--	--	--	47.5	--	--	--
Acenaphthylene	180	2,800	--	--	--	--	--	<4.17	--	--	--
Anthracene	3,000	20,600	--	--	--	--	--	33.5	--	--	--
Benzo(a)anthracene	3.6	4.9	--	--	--	--	--	**7.94J**	--	--	--
Benzo(a)pyrene	2.1	0.49	--	--	--	--	--	<4.17	--	--	--
Benzo(b)fluoranthene	12	4.9	--	--	--	--	--	<4.17	--	--	--
Benzo(g,h,i)perylene	38,700	1,400	--	--	--	--	--	2.60J	--	--	--
Benzo(k)fluoranthene	120	49	--	--	--	--	--	<4.17	--	--	--
Chrysene	360	490	--	--	--	--	--	19.5	--	--	--
Dibenzo(a,h)anthracene	4	0.49	--	--	--	--	--	<4.17	--	--	--
Fluoranthene	1,400	1,900	--	--	--	--	--	4.81J	--	--	--
Fluorene	220	2,300	--	--	--	--	--	43.7	--	--	--
Indeno(1,2,3-cd)pyrene	41	4.9	--	--	--	--	--	<4.17	--	--	--
Naphthalene	20	1,400	28	--	--	--	--	3.12J	--	--	--
Phenanthrene	3,000	20,600	--	--	--	--	--	102	--	--	--
Pyrene	1,000	1,400	--	--	--	--	--	35.9	--	--	--

All sample results shown above are listed in milligrams per kilogram (mg/kg).

The ADEC soil cleanups listed in this table are for the Under 40 Inch Zone.

Bold Indicates the detected result or limit of detection exceeds one or more of the listed ADEC soil cleanup levels

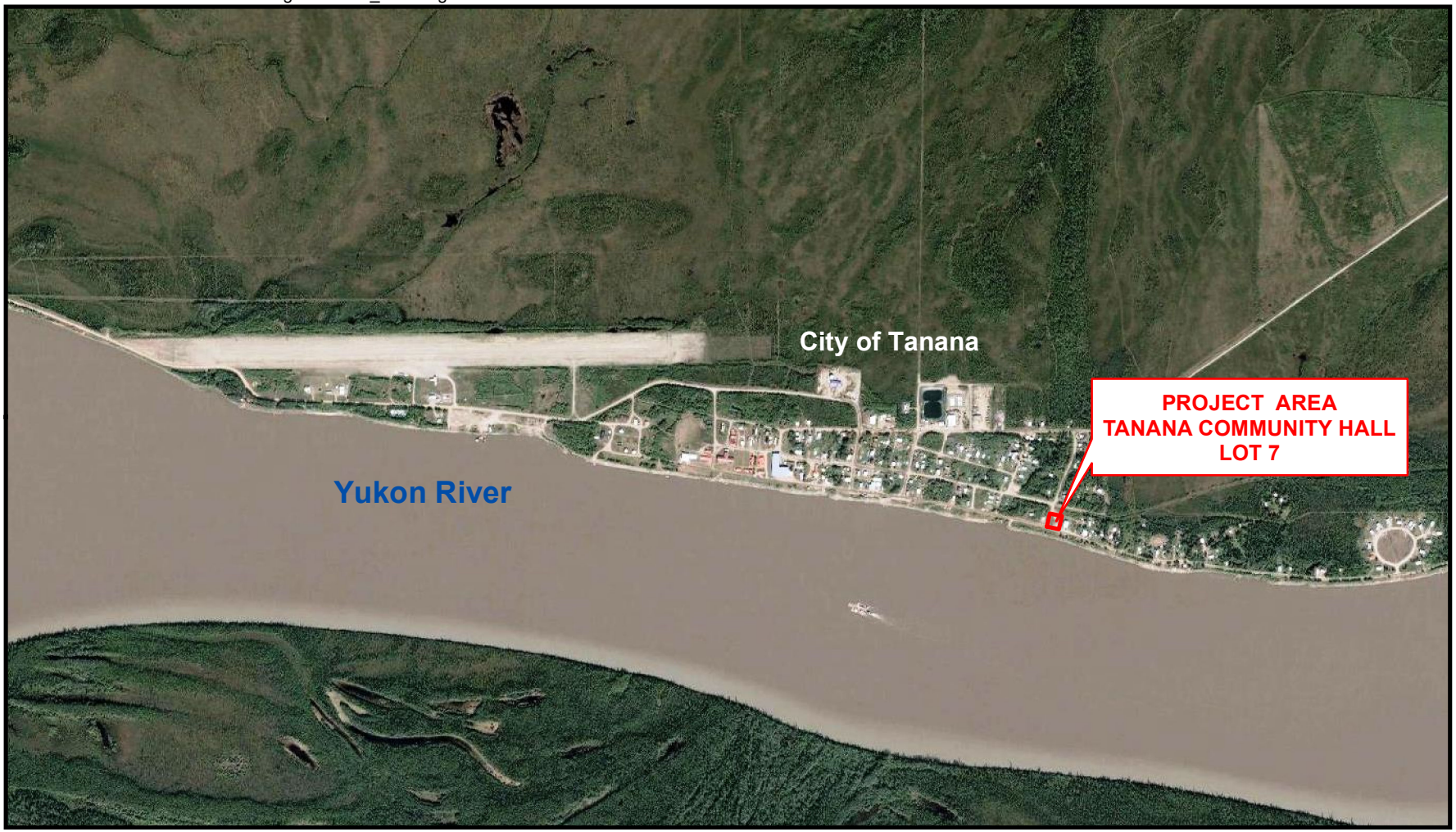
< Result not detected above the laboratory detection limit; listed as less than limit of detection

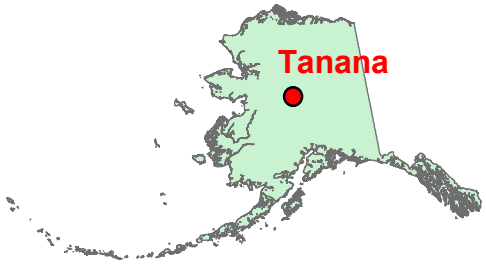
JH* Estimated result, biased high; flag applied by Shannon & Wilson, Inc.

JL* Estimated result, biased low; flag applied by Shannon & Wilson, Inc.

J Estimated result detected below the laboratory limit of quantitation; flag applied by the laboratory

X1700-1750\1738 Tanana PACP\Figures\2014_1738 Figure1.mxd





N

2,000 4,000 Feet

Property Assessment and Cleanup Plan
Tanana Community Hall Lot

VICINITY MAP

February 2015 31-1-11738-004

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 1

COMMUNITY MAP Courtesy of Department of Commerce, Community, and Economic Development Community and Regional Affairs

Community Map
TANANA

65° 10' 23" N 152° 05' 00" W (NAD 83)
Approximate Elevation: 232' at Tanana Airport ALCAP TAS-401
Township 4 North, Range 22 West, F.M., AK
U.S.G.S. Quadrangles "TANANA A-4 & A-5", Alaska
FT GIBBON RECORDING DISTRICT

LEGEND

- Residential Building
- Commercial Building
- Public Building
- (1937) Flood Elev. 225.16' (Based on this Map)
- ANCSA 17(b) Easement
- Force Main Line
- Sewer Line
- Water Line
- Underground Telephone
- Electric
- Fuel Line
- Edge of Water

SCALE: 1"=100'
SCALE IN FEET
0 100 200
Date of Photography: June 17, 2009
Magnetic Declination computed by U.S.G.S. Geomag Program using WMM-2005.COF model as of August 1, 2009
SHEET 2 of 5

AREA MAP INSET 1"=2640'

BUILDING KEY

1. Tanana Tank Farm
2. Tanana Power
3. City Shop
4. Fire Department
5. Tanana City Hall
6. Arctic Mission Church
7. Lift Station
8. Tanana Teen Center
9. Tanana Community Hall
10. Doggy Heaven

Property Assessment and Cleanup Plan
Tanana Community Hall Lot

COMMUNITY MAP

February 2015 31-1-11738-004

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 2

TANANA COMMUNITY MAP SHEET 2 1"=100' (2009 PHOTOGRAPHY)

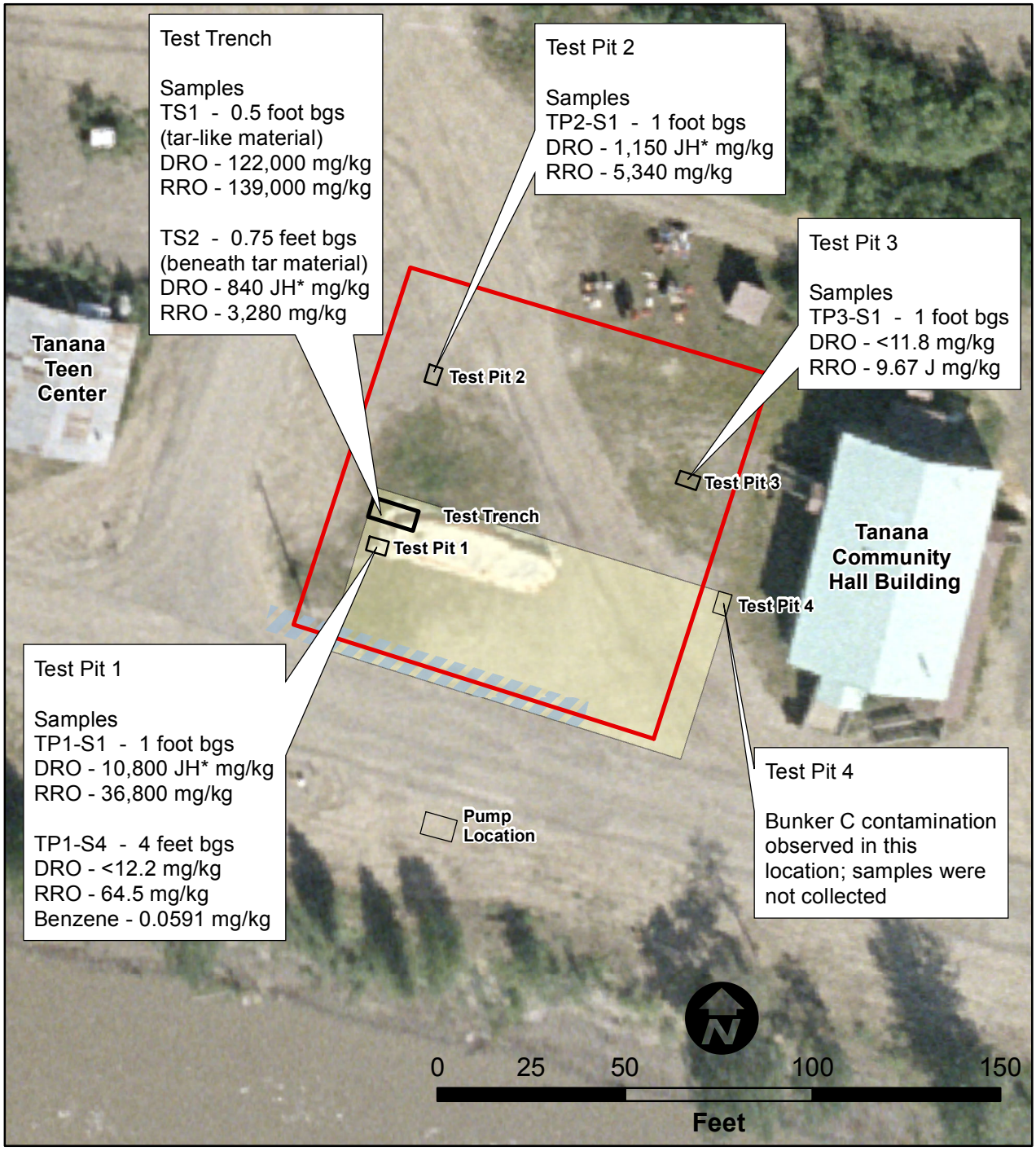


Image provided by Alaska Department of Commerce, Community, and Economic Development (2009 Airphoto)

LEGEND

- Approximate 2013 ditch excavation
- Est boundary of contamination (lower limit)
- Approximate Lot Line Block 11, Lot 7
- JH* Estimated result, biased high
- DRO diesel range organics
- RRO residual range organics
- mg/kg milligrams per kilogram

Property Assessment and Cleanup Plan
Tanana Community Hall Lot

SITE MAP

February 2015 31-1-11738-004

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 3

APPENDIX A

DEC BROWNFIELD ASSESSMENT OR CLEANUP REQUEST FORM

DEC's Reuse & Redevelopment Program

DEC Brownfield Assessment or Cleanup Request Form – 2014

General Requirements: The proposed site should be one for which the community has solid reuse or redevelopment plans. It would be beneficial if the community has also explored funding opportunities for the intended reuse.

The deadline for receipt of requests is December 18, 2013.

Site Name: Tanana Community Hall
Known as: Fort Gibbons Wood Stave Tank Farm

Submitted by: Tanana Tribal Council

A. THRESHOLD CRITERIA: The following must be TRUE:

1. This site **IS NOT** federally or state owned.

2. To our knowledge, this site or facility **HAS NOT** received funding for remediation from the Leaking Underground Storage Tank (LUST) Trust Fund.

3. The Applicant/Organization requesting this service **IS NOT** directly responsible for causing the potential contamination.

4. The Owner of the property is not directly responsible for causing the potential contamination, **OR** the Owner has no financial capacity to properly address the assessment or cleanup of the site.

5. There is a documented reuse or redevelopment plan for the site that is described in this request. (Documented means that it is in a resolution, business plan, or economic development plan, or that funding for reuse is actively being sought and can be documented).

If any of the above statements is NOT TRUE, your site is probably not eligible for brownfield services. If you have questions or concerns, please call us to discuss them.

B. UNRANKED CRITERIA

1. To the best of your knowledge, is the Owner of the property in question:

☐ Private ☐ City/Public ☐ Native Corp. ☒ Tribe

2. Known or suspected contaminant(s) at the site (check one):

☐ Hazardous Substances ☐ Petroleum Only ☒ Hazardous Substances and Petroleum

3. Is this site currently listed on DEC's *Contaminated Sites* database?

☐ Yes ☒ No If Yes, please list the DEC file number here:

4. Is this site referred to by any other name? Fort Gibbons Wood Stave Tank Farm

☒ Yes ☐ No ☐ Unknown If Yes, please provide name(s) here:

C. RANKING CRITERIA

The following ranking criteria will be used to prioritize and select one to three projects for our fiscal year 2015 funding (FY15 begins July 1, 2014). The number of sites selected depends on our actual FY15 funding amount. The project must provide a definite benefit to the community, and we must be able to cover the needed scope of work with our available funding. Each of these questions must have a response in order for your request to be considered.

1. Project Summary

Explain *in your own words* what you are hoping to gain through this effort; i.e., what would you like to see *in place* of the site for which you are requesting assessment or cleanup, and how will this project help you achieve your goals for the site?

2. Applicant/Owner

a. Applicant - Who is applying for this service? Provide the name and address of the **organization** applying for the DBAC service, the name of the contact person, email, telephone, and fax numbers. If Applicant is Village IGAP staff OR Tribal Response Program staff, please provide the **name of your EPA Project Officer**.

b. Property Owner - The owner of the property must allow DEC access to the site. If the applicant is different from the owner, attach *written consent* for access from the owner. (*Note: the applicant must be able to secure access for DEC and its contractors to conduct the assessment or cleanup.*)

3. Project Team

We ask that you form a project team (three or more individuals or organizations) to ensure continuity beyond this effort and coordination for success of the overall project. Attach a letter of support from each team member. Team members may include: city or village government representatives, city or tribal council members, village or regional corporation representatives, environmental managers, elders or other community leaders, local non-profit or community development organizations, and other interested parties. List team members, the organizations they represent, and their contact information below.

4. Site Information

a. Current Site Condition and Use - Provide the common name of the site, address, approximate acreage, zoning, and types of buildings. Please attach a site map or aerial photograph showing the site's location in the community and adjacent land use. Identify on the map or aerial photo any areas of known or suspected contamination (for Question 5). Identify approximate property boundaries.

b. Historical Site Use - Describe, to the best of your ability, the previous known uses of the site, and when the different activities occurred. Summarize any historic or cultural significance of the property. Identify when and how the site became or may have become contaminated, with what substance(s), and where any contamination is likely to be found.

c. Reason for Concern - What is the reason for concern? Please discuss community concerns with the site in general, and identify any specific problems if possible.

5. Project Scoping Information

a. Findings from Past Environmental Assessments - Has the site had previous assessment activities?

☒ No ☐ DBA ☐ Targeted Brownfield Assessment (TBA) ☐ Other_____

Please describe any previous environmental work that you are aware of, such as site assessments or cleanup activities. It will be important that we have all documents and information if not already available in our files. Please attach copies of executive summaries or summary and conclusions sections from any past reports. If a DBAC service is approved for your project, complete copies of previous reports must be made available if not already in DEC files.

b. Project Need - Describe to the best of your ability what your project team believes are the needed environmental assessment or cleanup activities, and what result you would like to see from this project. Include any constraints as to when this work must be completed (e.g., to meet construction timeline, property transaction pending, etc.).

6. Community Planning and Reuse

a. Reuse or Redevelopment Plans - It is critical that any brownfield project have an *end use* in mind that the requested assessment/cleanup effort will clearly help make possible. Please describe the reuse or redevelopment plan that this proposed work is meant to facilitate. Reuse goals can include: new construction, redevelopment using existing infrastructure, creation of recreation areas, preservation of green space, enhancement of sustainable subsistence habitat, etc.

b. Documentation of Reuse Planning - Please attach any documentation referencing resolutions, business planning, community planning, a proposal for grant funding, or loan applications, that helps support the vision for the reuse or redevelopment of the property in question. Examples may include documentation of public meetings been held specifically to discuss the reuse interests in the site, or a resolution passed by the city or tribal council showing support for the redevelopment.

c. Other Community Plans or Projects - It is helpful to know if other work is being planned or underway in your community that may help assist in this effort, such as available equipment or other resources. Describe any other community projects that may be scheduled or pending, such as: water and sewer upgrades, a new landfill, road or airport construction, a new school or addition, fuel-storage tank farm upgrades or relocations, new housing, or construction/refurbishment/relocation of other facilities.

7. Public Involvement

a. Public Benefit - Referring to Question 6(a) above, briefly describe how your proposed reuse or redevelopment plans for the property will provide a benefit to the public. Why is this important to your community? Some things to consider: creation of jobs, preservation of historically or culturally significant property, location for community activities or educational purposes, preservation of subsistence habitat, reuse or recycling of materials or infrastructure, cost savings to the community, or increased property values.

b. Community Support and Resources - Is the community strongly supportive of this project? Our contractors doing assessment or cleanup work often require local assistance with site visits, setting up interviews with people knowledgeable about the site, lodging, excavation equipment, and local transportation. Describe the community's support for this work *and* any local resources or individuals that are available to assist with the DBAC project work being requested.

c. Community Resources for Other Phases of the Revitalization Project - Does the community have financial or other resources for other phases of the project, such as equipment, labor, in-kind services, or funding for cleanup or new construction? Will this DBAC be used to leverage other funding or services for the project? If so, please describe.

DISCLAIMER (FINE PRINT)

The selection of a site for a DBAC in no way implies that DEC accepts liability for any contamination that may exist at the site, nor is DEC responsible for any necessary cleanup of hazardous substances that may be found at the site. Liability for contamination on a property is specifically addressed in Alaska Statute (AS) 46.03.822, which outlines those who are liable for the release of a hazardous substance. The general liability categories include: (1) those with an ownership interest in the property; (2) those in control of the substance at the time of the release; or (3) those who arrange for disposal or transport of the substance.

Brownfield work focuses on clarifying environmental concerns associated with property for which there is no known viable responsible party. By applying for a DEC Brownfield Assessment or Cleanup, it should be clear to all parties associated with a request that the work requested of DEC is designed to identify, clarify, and in some cases, remediate environmental hindrances that currently impede the continued use, proposed use, redevelopment, or sale of a property. Work conducted by DEC may result in identifying a property as a contaminated site, and require the site be listed on DEC's *Contaminated Sites Database*. With listing comes the requirement of potentially responsible and liable parties to address cleanup of contamination in accordance with regulatory requirements.

Submit Completed Forms by December 18, 2013, to:

By email: Melinda.Brunner@alaska.gov or
By fax: (907) 451-2155 c/o Melinda Brunner

Or by regular mail:

DEC Brownfield Assessments
c/o Melinda Brunner
Alaska Department of Environmental Conservation
610 University Avenue
Fairbanks, Alaska 99709

If you have questions, call Melinda Brunner at (907) 451-5174, Keri DePalma at (907) 451-2156, or John Carnahan at (907) 451-2166.

1. Project summary: We are hoping to gain a clean useable property to benefit the greater community of Tanana. The site in question is in prime area for public functions. The community of Tanana would like to put a basketball court in this spot which would also utilize the street light. I would also like to put in a raised bed garden for the community.
2. Applicant/Owner: Tanana Tribal Council is the owner and is applying for a brownfield service.

James Roberts EPA-IGAP
Box 130 hayslough@yahoo.com
Tanana, AK 99777 Ph# 907-366-7160 Fax# 907-366-7195

Project Team:
Tanana Tribal Council
James Roberts EPA-IGAP Environmental Specialist.
Shannon Erhart Executive Director Tanana Tribal Council
Helium Edwardson Natural Resource Director Tanana Tribal Council

Site Information

Current site condition and Use

Tanana Community Hall parking lot is the one that needs to be assessed. Approximately 2 acres of land needs to be cleaned.

Historical site use- The Community Hall is a vital part of Tanana and the hall has been in the center of most community functions. The community hall has dog races, potlatches, dances, bazaars, and many important community functions happen here. The owner of the tank farm was the Alaska Railroad which was owned by the federal government. The contamination can be found on the surface and it comes up year to year. There is also a major runoff towards the river that is exposed from valve. We fully don't know the scope of contamination.

Reason for concern: The contamination comes up to the surface and residents walk on the tar. The tar is starting to work its way into the Yukon River. The contamination is in the way of development of key and vital property to the community members.

Project Scoping Information

Past Environmental Assessments: I haven't seen any assessments in print nor am I aware of one here at The Tribal Council.

Project Need: Remove all pipes tanks that stored the bunker fuel. Remove haul away, bury or burning the waste if possible or remediate. The Tanana Tribal Council has been remediating soil the last few years. The work force and equipment is available as is the experienced hands in soil removal.

Community Planning and Reuse

Tanana Tribal Council will furnish and complete community raised bed gardens and recreational areas for youth. Provide a lawn and pavilion to get out of the elements and enjoy a clean area to have outside events when attending or using the Community hall.

Documentation of Reuse Planning- Tanana Tribal Council needs this property cleaned for future building. The mentioned area needs to be cleaned first

b) The immediate reuse would be getting raised bed gardens and green houses. Gardening is tough in Tanana, poor soil and massive overgrowth dominate. Safe gardening away from bears in a central location would be safer. The availability and access to water and sewer make this a prime area to rebuild. We would like to make some gardens after land is cleaned up. EPA IGAP has yards of prime black soil from another project that needs to be utilized. EPA IGAP also has the ability for landscaping.

Other Community Plans or Projects: EPA trains over 40 community members every year in the 40 hour hazmat and refreshers. The work force and equipment are on the ground level and in place. The City of Tanana and Tanana Tribal Council have the capacity to finish this project.

Public Involvement

Public Benefit: The first benefit would be to have the property produce food for the community members. Having personal experience with these successful gardens I am an advocate for gardening. I can produce my own lumber and have the equipment to get this done.

Community Support and Resources: Many older residents would like to see this century old spill taken care of. The City of Tanana and the Tanana Tribal Council would like this prime location utilized.

Community Resources: The Community of Tanana has all the tools and labor force to get this job done. Tanana can and will clean this mess up with help from the DEC.

Shannon Erhart Ex Dir _____ December 18, 2013

James Roberts EPA IGAP _____ December 18, 2013

CITY OF TANANA
P.O. Box 249
Tanana, Alaska 99777
(907) 366-7159 • Fax (907) 366-7169

17th December 2013

Shannon Erhart
Executive Director
Tanana Tribal Council
P.O. Box 130
Tanana, Alaska 99777

RE: Soils Remediation on Block-11, Lot-7 Tanana Townsite

Dear Shannon,

We are pleased to provide support to the Tribe's efforts in Soils Clean-Up Project on Blk-11 of Lot-7 in Tanana Townsite. We understand that too, the Tribe owns Lots- 3, 4, 5, 6, 7, 8 and 9 in Block 11. That property size is over half of that Block and that site has a long history of being a storage site for many years of Petroleum products original owned by Alaska Commercial Co. (ACC).

A number of our Elders have pointed out to us that, that site will need to be cleaned up someday because of what they saw happening there in the 20's, 30's, 40's and 1950's. I believe I've heard that it was also a Storage site for Bunker Cruel for the old Stern Wheeler boats.

As apart of our Community Plan, the Tribe has listed as one of its priorities is to replace the old Community Hall with a much larger facility with bathrooms, kitchen and much more energy efficient. This property is one of the most beautiful sites in Tanana right on the Yukon River frontage located above the 100 year flood plain for building purposes. It is also an ideal location for future housing development right on Second Street since the sewer and water is right in that street for easy connection/hook-up.

The City will offer to supply clean fill dirt and virgin gravel for any backfill efforts as well as any heavy equipment needed at our costs.

Thank you for all your support and we will work together with ADEC for the betterment of our Community.

Respectfully,

APPENDIX B

COMMUNITY MEETING POSTER

Tanana Tribal Council

PO Box 130

Tanana, Alaska 99777

907-366-7170

Community Input wanted regarding old tankfarm by the Community Hall!

Kristen Freiburger Senior Chemist with Shannon & Wilson will be in Tanana on Sept 30 and Oct 1, to gather any information regarding the old tank farm that used to be located between the Hall and the Lions Club back in the early 70's. For the purpose of cleaning up the contaminated soil. Who was the landowner ? who owned the tank farms? Who is the current land owner? Do you think this area is contaminated and should be cleaned up?

Kristen will be available on sept 30 at 1pm at the counseling center for informal gathering, interviews, and also on Oct 1, at 1pm. Snacks will be provided!

Any questions call Kathleen Zuray 366-7170

APPENDIX C

COMMUNITY MEMBER QUESTIONNAIRES

- Ms. Patty Elias, Tanana Resident
- Ms. Kathleen Peters-Zuray, IGAP Coordinator & Tanana Resident
- Ms. Marilyn Adams, Tanana Resident
- Mr. Pat Moore, City of Tanana & Tanana Resident
- Mr. Jack Coghill, Former Owner White Alice Site Road Tank Farm

COMMUNITY MEMBER QUESTIONNAIRE
FIRST AVE & KOYUKUK STREET, TANANA, AK

Name: Patty Elias Date: September 30, 2014

Shannon & Wilson has been contracted by the Alaska Department of Environmental Conservation (ADEC) to conduct a Property Assessment and Cleanup Plan (PACP) for the vacant lot at First Ave & Koyukuk St., next door to the Community Hall. The purpose of this PACP is to identify any environmental concerns which may influence plans for redevelopment, and it is just a first step in addressing contamination at the site.

During the last week of August, Jake Tracy from our Anchorage office located the contamination and collected laboratory samples. However, the most important part of this PACP is community input. Kristen Freiburger will be in Tanana on September 30th and October 1st to learn as much as possible about the history of the site and your plans for redevelopment. We will compile information from both site visits and submit a public report to ADEC in December, which ADEC will use in deciding how to proceed. Anyone can request a copy of this report from ADEC.

Please answer the following questions to the best of your knowledge.

1. What purpose does the site (northeast corner of First Ave & Koyukuk St) serve for you to and your neighbors? It is our community gathering Place; parking lot sometimes, cooking site sometimes for winter funeral potlatches, visiting spot on the benches on the bank and constant playspace for our kids when the Gathering gets too long (or its just more exciting to be outside + free when you're young...)

2. How often is the site used? Often, dependent on weather/season. @ least monthly, dances, sometimes days in a row for classes

3. Who uses the site most often? Do children play here? Pets? Adults, entire community Dances, holiday celebrations, Potlatches, Workshops, Meetings Kids and pets are often playing outside the Hall and all around that area

4. Do you know of any spills at the site, or any contamination present (diesel, fuel oil, gasoline, other hazardous substances)? How would you describe it?

very contaminated, just from hearing what others (who were young kids growin up here) have said City "Fathers-Mothers", Council members there was a sawmill operating there in late 60s - early 70s that I recall

5. What has the site been used for in the past?

Owner	From - To	Type of Business
as far as I know it's been the City's "new" ~~old~~ Community Hall	1970's? — present	now has it been transferred to the Tribe, I believe because city couldn't afford it (and Tribe could?)

6. Has the site ever been associated with military activity/Fort Gibbon (1898-1923)?

Yes | No | Don't know

✓

7. Where was the Alaska Commercial Company located? When was the store in operation?

across the street — on front street, from present Community just down fr. where (Lion's Club) old / Teen Center now is located, the lot below (from there to NC Creek, I believe)

8. Has the site ever been associated with the Alaska Commercial Company store?

Yes No Don't know ✓

9. Does the Yukon River commonly flood this area? When was the last major flood, and how high was the water? not commonly, but occasionally
last time was 2009, came over the road, near there
but never in that lot — I do remember them pilin up sandbags to make a fuel (or water) reservoir that time

10. Has anyone in your community attempted to clean up the site? If so, what was done?
not that I know of

11. To your knowledge, has any material been removed from the site? Where was it taken?

Yes No Don't know ✓

12. How would you like to see the site redeveloped? What is your end goal?
I think a playground / ball field? is a great idea
don't know if there's a community plan that addresses this lot, but we all use this space daily
its sort of a community heart-space
it would be wonderful (health wise - safety) to have a community swimming pool

13. Do you and your neighbors generally agree? If not, what are other ideas?

usually, we can disagree, but consensus works
I oppose the Road to Tanana (in Principle) but my own kids
(therefore grandchildren) say a road will make it easier for them to come home
the cost to fly an entire family in the Bush is prohibitive

14. When do you see this redevelopment taking place, how long will it take?

immediately —

15. Who will redevelop the site, and using what resources?

the youth / our own workforce (the City equipment, the Tribes)

16. Additional comments/concerns:

I would very much like to see a compilization of the other
questionnaires collected — I'd appreciate known the history + extent
of contamination ... also, what others fr. Tanana would like to
see done with it. (An outdoor stage / gazebo? — street dances *)
*(I saw one in McGrath Music Fests?
yrs. ago.)
when Tanana students went to perform @ McGrath's Fair)

Thank you very much for your time,

Kristen Freiburger

Tanana Phone: (907) 371-9022
Fairbanks Phone: (907) 458-3146
Email: KRF@shanwil.com
Address: 2355 Hill Road
Fairbanks, Alaska 99709

Thanks for listening ...

COMMUNITY MEMBER QUESTIONNAIRE
FIRST AVE & KOYUKUK STREET, TANANA, AK

Name: Kathleen Peters-Zaman Date: 9/30/2014

Shannon & Wilson has been contracted by the Alaska Department of Environmental Conservation (ADEC) to conduct a Property Assessment and Cleanup Plan (PACP) for the vacant lot at First Ave & Koyukuk St., next door to the Community Hall. The purpose of this PACP is to identify any environmental concerns which may influence plans for redevelopment, and it is just a first step in addressing contamination at the site.

During the last week of August, Jake Tracy from our Anchorage office located the contamination and collected laboratory samples. However, the most important part of this PACP is community input. Kristen Freiburger will be in Tanana on September 30th and October 1st to learn as much as possible about the history of the site and your plans for redevelopment. We will compile information from both site visits and submit a public report to ADEC in December, which ADEC will use in deciding how to proceed. Anyone can request a copy of this report from ADEC.

Please answer the following questions to the best of your knowledge.

1. What purpose does the site (northeast corner of First Ave & Koyukuk St) serve for you to and your neighbors? This is community use area, due to the community Hall, is ~~within~~ located on this land. The Hall is used for community meetings, dances, potlatches, activities for Elders, children & all ages. This hall was built in the 60's, and is on land that was occupied by a tank farm & distribution.

2. How often is the site used? weekly or several times a month, depends on the event. It is a highly used area.

3. Who uses the site most often? Do children play here? Pets? All ages use this area.

4. Do you know of any spills at the site, or any contamination present (diesel, fuel oil, gasoline, other hazardous substances)? How would you describe it? The site was used previously as a fuel tank transfer site, there were old RR oil Road oil tanks on the land to store oil.

5. What has the site been used for in the past?

Owner	From - To	Type of Business
VACHON?	Owned a store Early 1900's	store
Northern Commercial Company	1900's	store
Alaska Railroad Company	1960 - 70's	fuel tank distribution
Tozitna Native Corperation Land		Corp Land
City of Tananer	14 c3	1970's ?
Tanana Tribal Counci	14 c3	1980's ?

6. Has the site ever been associated with military activity/Fort Gibbon (1898-1923)?

Yes possably era, + after, No Don't know

During WWII, There was a Lend Lease fuel station in Tanana, behind community hall area, this was for the Air force, the tank farm, pipes, and distribution, recreation area is in the front of the hall. This could be why?

7. Where was the Alaska Commercial Company located? When was the store in operation?

Back then it was called Northern Commercial Company 1950, 60's, before then Elders said the store owner was "Vachon". And located by the NC Creek, located near current community hall.

8. Has the site ever been associated with the Alaska Commercial Company store?

(Yes) No Don't know

NC Company was bought by ? Gene White, which became Alaska Commercial Co, and was relocated downtown, where Tanana Comm. Co currently is.

9. Does the Yukon River commonly flood this area? When was the last major flood, and how high was the water? 2009 was the major flood in Tanana, which, had it occured for 75 years. the hall is on high ground and was not impacted.

10. Has anyone in your community attempted to clean up the site? If so, what was done?

This was not a federal agency site, and was, used by private business, therefore, there was no funding to use to address the contaminated soil.

11. To your knowledge, has any material been removed from the site? Where was it taken?

(Yes) No Don't know

1972 there were railroad oil/fuel tanks there, which was moved to Coghill fuel up the rd, where coghill sold oil.

12. How would you like to see the site redeveloped? What is your end goal?

I would like to see the contaminated soil cleaned up, along w/ the fuel tank lines and attachments, that are there. I want to see this area reused and continue to be used as a community center.

13. Do you and your neighbors generally agree? If not, what are other ideas? Across the road from the community hall is the Teen Center, which is opened by Stan Zuray during the winter for teens. This can be a beautiful multi-use area for community.

14. When do you see this redevelopment taking place, how long will it take? Future

15. Who will redevelop the site, and using what resources? Tribe / city / Hazina

16. Additional comments/concerns: Thank you for addressing this area, and for coming and working together to clean up contam areas in Tanana.

Thank you very much for your time,

Kristen Freiburger

Tanana Phone: (907) 371-9022
Fairbanks Phone: (907) 458-3146
Email: KRF@shanwil.com
Address: 2355 Hill Road
Fairbanks, Alaska 99709

COMMUNITY MEMBER QUESTIONNAIRE
FIRST AVE & KOYUKUK STREET, TANANA, AK

Name: Marilyn Adams Date: Oct. 1st 2014

Shannon & Wilson has been contracted by the Alaska Department of Environmental Conservation (ADEC) to conduct a Property Assessment and Cleanup Plan (PACP) for the vacant lot at First Ave & Koyukuk St., next door to the Community Hall. The purpose of this PACP is to identify any environmental concerns which may influence plans for redevelopment, and it is just a first step in addressing contamination at the site.

During the last week of August, Jake Tracy from our Anchorage office located the contamination and collected laboratory samples. However, the most important part of this PACP is community input. Kristen Freiburger will be in Tanana on September 30th and October 1st to learn as much as possible about the history of the site and your plans for redevelopment. We will compile information from both site visits and submit a public report to ADEC in December, which ADEC will use in deciding how to proceed. Anyone can request a copy of this report from ADEC.

Please answer the following questions to the best of your knowledge.

1. What purpose does the site (northeast corner of First Ave & Koyukuk St) serve for you to and your neighbors? We use it as transportation thru-fare, open field.

2. How often is the site used? daily

3. Who uses the site most often? Do children play here? Pets? People who live up beyond this site. Yes. Kids use it to play especially at special moments at the Community Hall.

4. Do you know of any spills at the site, or any contamination present (diesel, fuel oil, gasoline, other hazardous substances)? How would you describe it? Yes, this bldg was still standing w/ wooden tanks + iron rungs that we climbed as children. The contaminated compact oil was only covered by more soil. (black tar-like material)

5. What has the site been used for in the past?

Owner	From - To	Type of Business
A.C.Co.	1950 - ?	

6. Has the site ever been associated with military activity/Fort Gibbon (1898-1923)?

Yes No Don't know

7. Where was the Alaska Commercial Company located? When was the store in operation?

next to the contaminated site, the store was down the street, where it is presently T.C. Co.

8. Has the site ever been associated with the Alaska Commercial Company store?

(Yes) No Don't know

9. Does the Yukon River commonly flood this area? When was the last major flood, and how high was the water? 1937 + 2009

10. Has anyone in your community attempted to clean up the site? If so, what was done?

dumped more soil on it
might have been the City.

11. To your knowledge, has any material been removed from the site? Where was it taken?

(Yes) No Don't know

barrels, the wood bldg - may have been burnt up.

12. How would you like to see the site redeveloped? What is your end goal?

Cleaned deeply + used as a safe place for children to play.

13. Do you and your neighbors generally agree? If not, what are other ideas?

Unknown

14. When do you see this redevelopment taking place, how long will it take?

Unknown

15. Who will redevelop the site, and using what resources?

Hopefully this will go cleaned up to the Tanana Native Council.

16. Additional comments/concerns:

Site had dirt pushed over the contamination, so it is still there

Thank you very much for your time,

Kristen Freiburger

Tanana Phone: (907) 371-9022
Fairbanks Phone: (907) 458-3146
Email: KRF@shanwil.com
Address: 2355 Hill Road
Fairbanks, Alaska 99709

COMMUNITY MEMBER QUESTIONNAIRE
FIRST AVE & KOYUKUK STREET, TANANA, AK

Name: Pat Moore Date: 10/1/2014

Shannon & Wilson has been contracted by the Alaska Department of Environmental Conservation (ADEC) to conduct a Property Assessment and Cleanup Plan (PACP) for the vacant lot at First Ave & Koyukuk St., next door to the Community Hall. The purpose of this PACP is to identify any environmental concerns which may influence plans for redevelopment, and it is just a first step in addressing contamination at the site.

During the last week of August, Jake Tracy from our Anchorage office located the contamination and collected laboratory samples. However, the most important part of this PACP is community input. Kristen Freiburger will be in Tanana on September 30th and October 1st to learn as much as possible about the history of the site and your plans for redevelopment. We will compile information from both site visits and submit a public report to ADEC in December, which ADEC will use in deciding how to proceed. Anyone can request a copy of this report from ADEC.

Please answer the following questions to the best of your knowledge.

1. What purpose does the site (northeast corner of First Ave & Koyukuk St) serve for you to and your neighbors? Parking right now, but they need land so needs it cleared up

2. How often is the site used? Regularly

3. Who uses the site most often? Do children play here? Pets? Tanana town hall

4. Do you know of any spills at the site, or any contamination present (diesel, fuel oil, gasoline, other hazardous substances)? How would you describe it?

Bunker C, tar-like, black

5. What has the site been used for in the past?

Owner	From - To	Type of Business
TOzitna	current	
(see last question)		

6. Has the site ever been associated with military activity/Fort Gibbon (1898-1923)?

Yes No Don't know

This site is not where Fort Gibbon was located. They were near the school.

7. Where was the Alaska Commercial Company located? When was the store in operation?

There used to be 3 different companies. Where store is now was Alaska Commerical company. Tanana Commercial was next to Tanana Power site. Northern Commercial next to the Tanana Teen Center (current) Not on the site

8. Has the site ever been associated with the Alaska Commercial Company store?

Yes (No) Don't know

9. Does the Yukon River commonly flood this area? When was the last major flood, and how high was the water? ~2009, does not reach the site. Another in 2012

10. Has anyone in your community attempted to clean up the site? If so, what was done? None, maybe just put gravel on top of it

11. To your knowledge, has any material been removed from the site? Where was it taken?

(Yes) No Don't know

Taken to landfill. Took soil from drainage ditch last year there. I went to see it. Took pictures. You can see the wood from the old platforms

12. How would you like to see the site redeveloped? What is your end goal? He would like to see it turned into housing.

13. Do you and your neighbors generally agree? If not, what are other ideas? not sure

14. When do you see this redevelopment taking place, how long will it take? unknown

15. Who will redevelop the site, and using what resources? Joint between city and tribe but likely tribe

16. Additional comments/concerns: Lot 7 now belongs to Tozitna, was originally owned by Railroad (federal) since it was federal it was elisible for Tozitna to purchase

Thank you very much for your time,

Kristen Freiburger

Tanana Phone: (907) 371-9022
Fairbanks Phone: (907) 458-3146
Email: KRF@shanwil.com
Address: 2355 Hill Road
Fairbanks, Alaska 99709

recommends talking
- to Jack Coghill about what years bunker C was ran
- also to talk to Lester Ehrel

-Also see field notes with additional interview information

COMMUNITY MEMBER QUESTIONNAIRE
FIRST AVE & KOYUKUK STREET, TANANA, AK

Name: Jack Coghill Date: 11/18/14

Shannon & Wilson has been contracted by the Alaska Department of Environmental Conservation (ADEC) to conduct a Property Assessment and Cleanup Plan (PACP) for the vacant lot at First Ave & Koyukuk St., next door to the Community Hall. The purpose of this PACP is to identify any environmental concerns which may influence plans for redevelopment, and it is just a first step in addressing contamination at the site.

During the last week of August, Jake Tracy from our Anchorage office located the contamination and collected laboratory samples. However, the most important part of this PACP is community input. Kristen Freiburger will be in Tanana on September 30th and October 1st to learn as much as possible about the history of the site and your plans for redevelopment. We will compile information from both site visits and submit a public report to ADEC in December, which ADEC will use in deciding how to proceed. Anyone can request a copy of this report from ADEC.

Please answer the following questions to the best of your knowledge.

1. What purpose does the site (northeast corner of First Ave & Koyukuk St) serve for you to and your neighbors?

N/A, doesn't live in Tanana

2. How often is the site used?

N/A (not much anymore)

3. Who uses the site most often? Do children play here? Pets?

N/A

4. Do you know of any spills at the site, or any contamination present (diesel, fuel oil, gasoline, other hazardous substances)? How would you describe it?

- thick tar-like material, Bunker C for rv. boats
- one great big tank by rv. bank, wooden stave tank storing Bunker C
- nearby (to W) (maybe): Northern Commercial Co. 7,000 gal stand-up tank, diesel, and/or black railroad car tanks, 10,000 gallons

5. What has the site been used for in the past?

Owner	From - To	Type of Business
NATA or (NATC) — mentioned as name more often	Gone by 60's	Tank for rv. boats
	Last wood and bunker C powered boat: Nenana, 1953 (afterwards ran on diesel)	
		Tank and pump/steam house for warming bunker C so it would flow, also on rv. bank
		Wood used in addition to bunker C, used together for additional power

6. Has the site ever been associated with military activity/Fort Gibbon (1898-1923)?

Yes No Don't know

Didn't discuss

7. Where was the Alaska Commercial Company located? When was the store in operation?

Northern Company / Alaska Commercial Company to the west of site, pointed to buildings in 1963 air photo (by "NC creek"), down river from wood tanks

8. Has the site ever been associated with the Alaska Commercial Company store?

(Yes) No Don't know

Nearby/site upriver from NC

9. Does the Yukon River commonly flood this area? When was the last major flood, and how high was the water? N/A, not asked

Tank on Ru. bank, beach area

10. Has anyone in your community attempted to clean up the site? If so, what was done?

Unsure, contam. sitting there

11. To your knowledge, has any material been removed from the site? Where was it taken?

Yes No (Don't know)

12. How would you like to see the site redeveloped? What is your end goal?

N/A, not Tanana resident

(4th pg omitted)

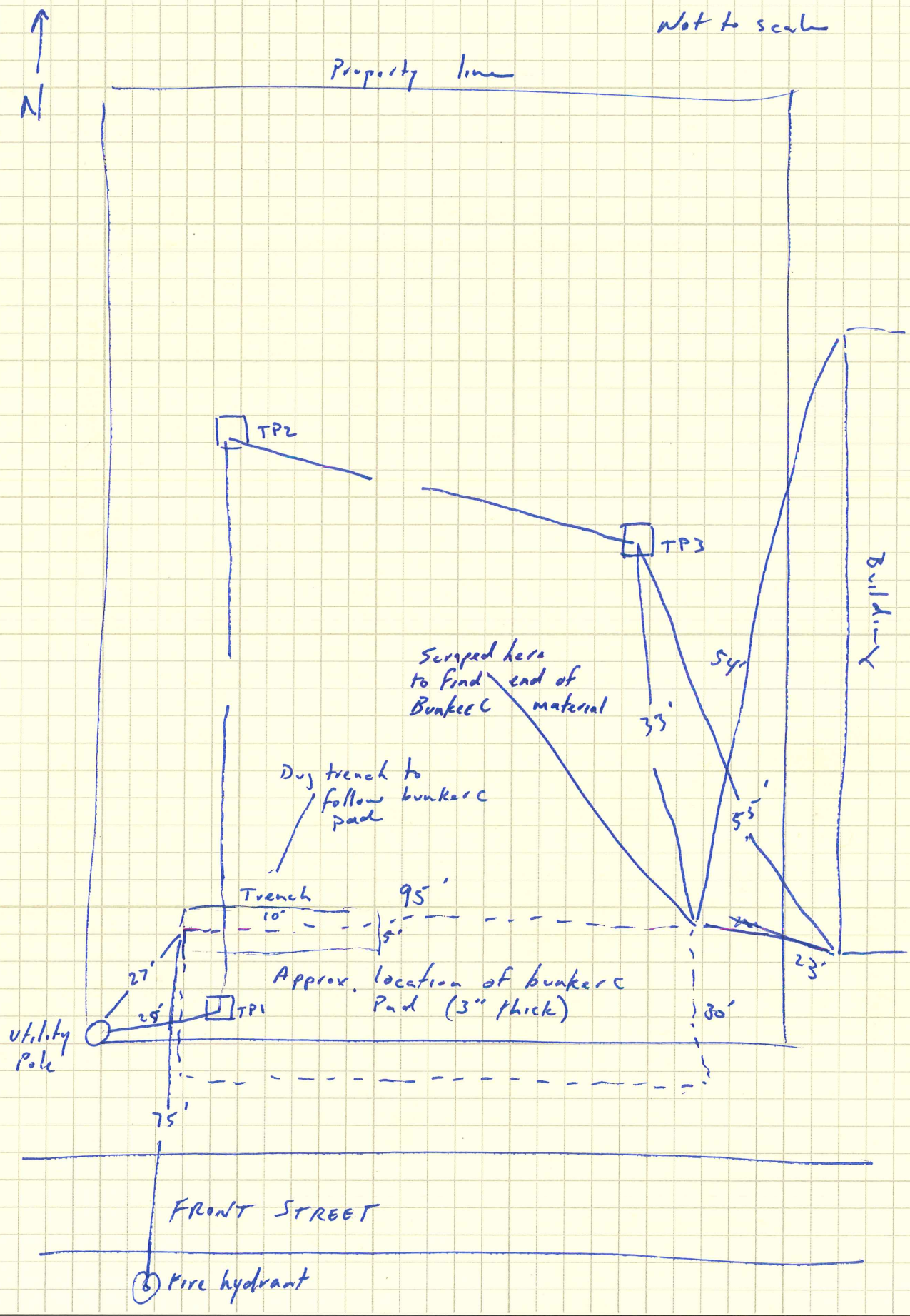
APPENDIX D

FIELD NOTES

- August 29, 2014 Limited Site Exploration, Jake Tracy
- September 30 and October 1, 2014 Community Interviews, Records Review and Site Reconnaissance, Kristen Freiburger

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

JOB NAME ~~11738-001~~ JOB NO. 11738-001
SUBJECT Tanana Community Hall DATE 8/27/14
BY Jake Tracy CHK'D SHEET of



FIELD SCREENING LOG (soil samples)

Project Number: ~~H699-101~~ Project Name: Tamarack

Date: 5/29/14

Sampler: Jake Tracy Calibration time, result: 1000, 101 ppm PID number:

FS Sample Number	Sample Time	PID Reading	Depth (ft)	FS Sample Location	Soil Description/Notes
TP151 *	1400	0.0	1'	Southwest property corner (See Figure)	Dk brn to black silty Sand to Sandy Silt moist, hydrocarbon odor. Tar/Bunker C 0.5' bgs. PID did not pick up any readings. Soil appears clean at ~ 1 to 1.5' bgs
TP152	1405	0.0	2'	↓	
TP153	1410	0.0	3'	↓	
TP154 *	1415	0.0	4'	↓	
TP251 *	1440	0.0	1'	Northwest Property corner (See Figure	Brown; Silty Sand to Sandy Silt; moist No odor No PID readings.
TP252	1443	0.0	2'	↓	
TP253	1446	0.0	3'	↓	
TS1	1515	0.0	0.5	Trench sample of the bunker C material	Bunker C strong odor
~~TS1~~	~~1546~~ 1555	0.0	0.5	Duplicate of TS1	"
TP351	1545	0.0	1	See Figure	Brown; Silty Sand to Sandy Silt; moist
TP352	1548	0.0	2	See Figure	
TS2	1600			Trench directly under bunker C	
TS12	~~1620~~			Dup of TS2	

SOIL SAMPLE COLLECTION LOG

Project Number: 11738-001 Project Name: Tanana PCP

Page 1 of

Date: 8/29/14

Sampler: Jake Tracy

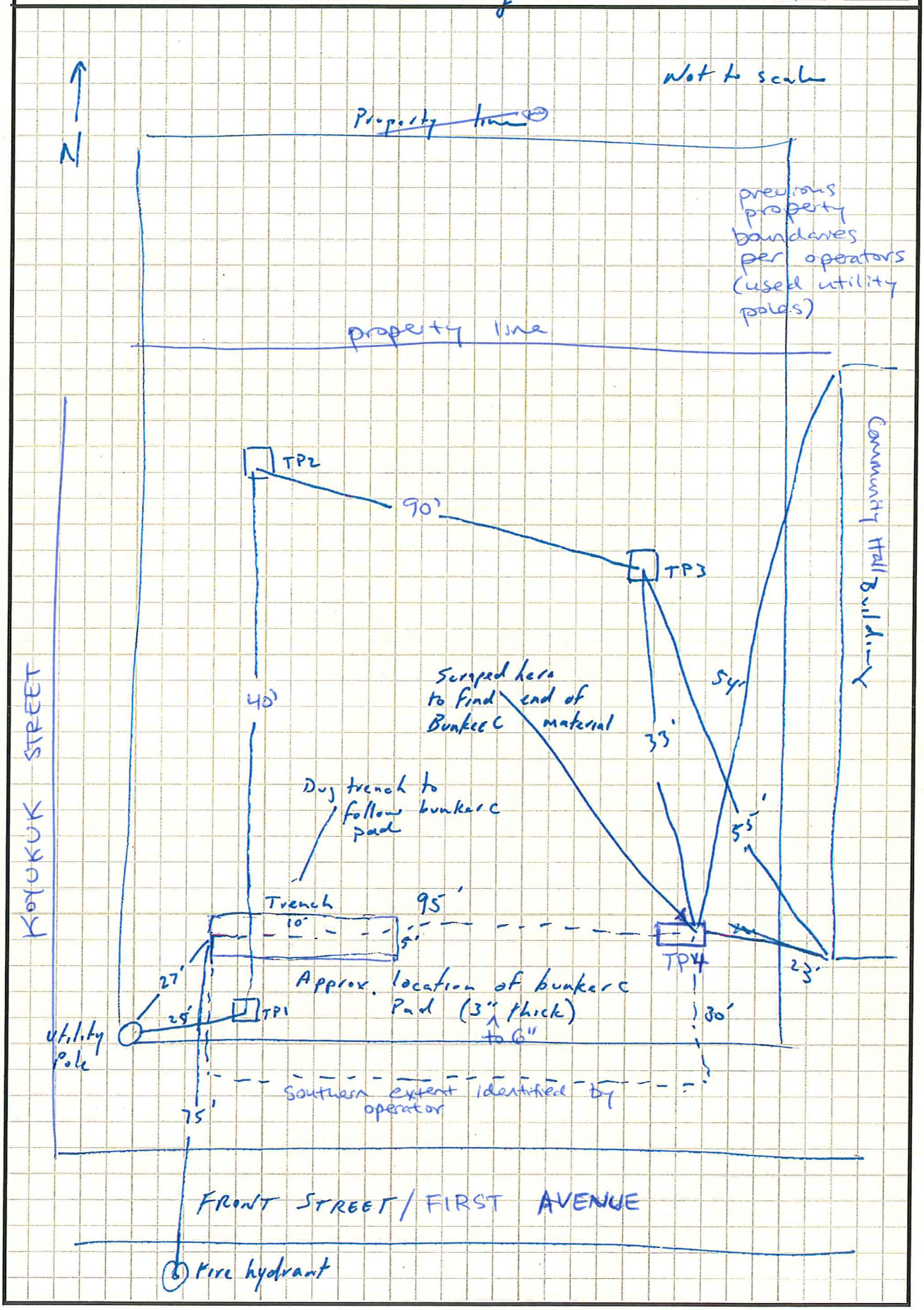
Sample Number	Location	Sample Time	Depth (ft)	Sample Type	PID Reading	Analyses
11738-TP151	Southwest corner of property. See Figure	1420	1'	ES	0.0	
TP154	↓	1425	4'	ES	0.0	
TP251	See Figure	1450	1'	ES	0.0	
TS1	Trench. See Figure	1520	0.5	ES	0.0	
TS2		1605	0.5	ES	0.0	
TS11	↓	1535	0.5	Dup	0.0	
TS12		1630	0.5	Dup	0.0	

Sample Type FS = Field screening measurement only ES = Environmental sample FD = Field duplicate TB = Trip blank

Update 8/29 Field Notes for Clarity:

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

JOB NAME ~~11738-001~~ JOB NO. 11738-001
SUBJECT Tanana Community Hall DATE 8/27/14
BY Jake Tracy CHK'D SHEET 1 of 3



FIELD SCREENING LOG (soil samples)

Project Number: ~~H699-101~~ Project Name: Tamara

Date: 8/29/14

Sampler: Jake Tracy Calibration time, result: 1000, 101 ppm PID number:

FS Sample Number	Sample Time	PID Reading	Depth (ft)	FS Sample Location	Soil Description/Notes
TP1S1 *	1400	0.0	1'	Southwest property corner (See Figure)	Dk brn to black silty Sand to Sandy Silt moist, hydrocarbon odor. Tar/Bunker C 0.5' bgs. PID did not pick up any readings. Soil appears clean at ~ 1 to 1.5' bgs
TP1S2	1405	0.0	2'	↓	
TP1S3	1410	0.0	3'	↓	
TP1S4 *	1415	0.0	4'	↓	
TP2S1 *	1440	0.0	1'	Northwest property corner (See Figure	Brown; Silty Sand to Sandy Silt; moist No odor No PID readings. (no hits)
TP2S2	1443	0.0	2'	↓	
TP2S3	1446	0.0	3'	↓	
TS1	1515	0.0	0.5	Trench sample of the bunker C material	Bunker C strong odor
~~TS1~~	~~1516~~ 1515	0.0	0.5	Duplicate of TS1	"
TP3S1	1545	0.0	1	See Figure	Brown; Silty Sand to Sandy Silt; moist
TP3S2	1548	0.0	2	See Figure	
TS2	1600	0.0	1	Trench directly under bunker C	Appears clean below tar-like material No staining or odor observed
TS12	~~1620~~	0.0	1	Dup of TS2	
TP4	N/A	———		N/A, no sample collected	Soil staining and tar-like material observed, similar thickness and depth to TS

Updated

SOIL SAMPLE COLLECTION LOG

Project Number: 11738-001 Project Name: Tanana PCP

Date: 8/29/14

Sampler: Jake Tracy

Updated

Sample Number	Location	Sample Time	Depth (ft)	Sample Type	PID Reading	Analyses
11738-TP151	Southwest corner of property. See Figure	1420	1'	ES	0.0	
TP154	↓	1425	4'	ES	0.0	
TP251	See Figure	1450	1'	ES	0.0	
TS1	Trench. See Figure. West portion.	1520	0.5	ES	0.0	
TS2	↓	1605	0.5	ES	0.0	
TS11		1535	0.5	Dup	0.0	
TS12		1630	0.5	Dup	0.0	

Sample Type FS = Field screening measurement only ES = Environmental sample FD = Field duplicate TB = Trip blank

Rite in the Rain®
ALL-WEATHER WRITING PAPER

Name Kristen Freiburger

Address 2355 Hill Road

Phone 907-458-3146

Project Tanana PACP
31-1-11738-003

Rite in the Rain — A patented, environmentally responsible, all-weather writing paper that sheds water and enables you to write anywhere, in any weather. Using a pencil or all-weather pen, *Rite in the Rain* ensures that your notes survive the rigors of the field, regardless of the conditions.

306-1155

RiteintheRain.com

CONTENTS

PAGE	REFERENCE	DATE

9/30/2014

*Warbelows rep in Tanana said Charlie Campbell may be able to help me with history of the site

~10:00 a.m - Arrive at B&B and check in and grab bite to eat

~11:00 - meet with Kathleen Zuray at tribal hall. She has set up 2 informal gatherings for me to meet with people at 1 p.m.

~Work Plan notes I should talk to:

- Kathleen Zuray - tribal council
- Pat Moore - City
- Shannon Ehret - tribal council - out of town
- Alfred Ketzler - "bear" in federal prison
- Dorothy Jordan - city
- Charlie Campbell - found ("ok Pat of Dorothy") per Warbelows recommendation
  - Did a historical review of Tanana in 80s to 90s

Rite in the Rain

9/30/2014

~11:25 - People in Kathleen's office but she is trying to set them out
- Gave me pictures to look at (made copies)
- Showed me a study they did of contaminated sites in Tanana "Ridolfi engineers"
PAG site not a focus because it was forgotten (or unknown really) but is "O-13" site in this report
- She will give me copy of report (made copies at lunch time)

- Handed me another report (took picture) Dec. 7th 1984, will get copy (made copy at lunch)

- I showed Kathleen the air photos and she told me about "NC creek" (Northern Commercial) which an elder was telling her was

9/30/2014

there across street from the hall that you can see in 1963 black and white photos.
- Remembers steamboats using wood boilers.

- Have been working with Air force, IHS and were given money to help them clean up some of the sites. Focus on asebestos, soil remediation, etc. Many USTs and tank farms to clean up. Not on site in question since wasn't agency owned.
- In spring time at hall you see these "tar places" come out of the ground of fuel on water runoff, at the site, so people know it's there
- Currently the site is owned by city of Tanana, probably private land but was owned by railroad before that, per Kathleen. will check city records

Rite in the Rain

9/30/2014

- Haven't focused much on this site cause it wasn't part of the agencies they were working with

12:00 - Made copies of reports I was given and made plans to meet Kathleen at 1:00 p.m. at counseling center for informal community meeting.

1:00 p.m. - no one came to the 1 p.m. gathering. Talked more with Kathleen about history of Tanana and she filled out Questionnaire.

2:30 - Spoke with city clerk to schedule time to look through historical ownership files. She mentioned they are "wacked" but we could try and there isn't anything on current ownership of Block 11, Lot 7

9/30/2014

even though Moe is for the surrounding Lots. The city had previously asked her to pull information on it and she couldn't find the current owner.

- Kathleen noted Lend Lease fueling station behind the Hall (north of Block 11, lot 5 - groundwater area is limited, no samples were collected I circled the area I was shown on the map in the work plan hard copy I brought ov

- 3:30 - Meet Dorothy at City of Tanana to go through ownership files

map shows all Block 11 properties except #7 were conveyed to Tribal council (see map from RFP

9/30/2014

1950s map hanging in their office - Alaska Railroad

Dorothy remembers the building that was there in 50s there were railroad ties and if you fell off of them you fell into the black, tar "junck" and it was so bad they would get into trouble for getting it on their feet.

-Dorothy had historical review completed by Charlie Campbell.

She mentioned I should try to talk to Lester Ehret too.

(6)

9/30/2014

Dorothy called Charlie Campbell and handed me phone * Said he knows of the steamboats storing bunker C fuel there at the site. And there was pump on the site and thinks Alaska Railroad owned it.

It was known to the kids in town as place to play in "tar".

Said bunker C would have been used in boilers for steamboats but wood was used before that. They would warm the oil before sending to boiler.

Said I should ask Pat Moore with very specific questions.

-about if they used bunker C in steamboats and where on site it was located.

Rite in the Rain

(7)

9/30/2014

~16:00 - 17:00 - Dorothy took me to meet Pat Moore, we set a time to talk at 11:00 a.m. tomorrow at the city building.

When we saw Pat he noted that in 70s the pipe by the site busted and he notified ADEC it was flowing down the road (Koyuk). He was not impressed with the paperwork he had to fill out (the amount). I promised to fill out questionnaire if he met with me.

Went to meet Lester Ehret who was a suggestion for me to talk to but found out he was medivac'd to Anchorage last night.

(8)

[redacted] - Crossed out for privacy
-Password at B&B

10/1/2014

9:00 - no one yet available, reviewing analytical results

10:30 - arrive at city and speak with Cheryl
Provide her with several questionnaires to give to people to fill out. She noted they have a board meeting on Saturday and will pass them out then and send them back to me.

Pat Moore interview
- Was a saw mill after talks from barges were

Barges switched from wood to bunker C for period of time, unknown on years
thinks 30s, 40s, 50s

(9)

Rite in the Rain

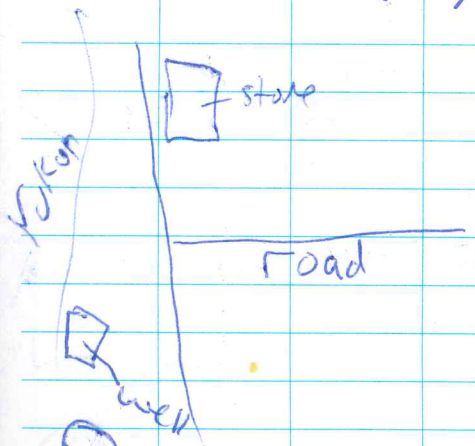
10/1/2014

Put in ditch along road, want to put in another along Koyukuk, but know they will encounter more contamination.

- Tanks used to sit on red wood platforms

-see questionnaire for more information

-Showed me where city water well is. (right across street from burrell site)



- Hospital had workers top but their tanks were by the hospital

10/1/2014

1:00 p.m. -Arrive at counseling center to see if anyone showed up to the community gathering today. No one came yesterday
1 person came and filled out a survey
-Mary (see survey)

- Many people in town say the pipe across the street from the site is what was used to control the flow of oil from the tanks to the barge. Mary, Pat, Kathleen

3:00 p.m. Headed to the site to map it.
Kathleen met up with me at the site. Showed me the pipe across the front street from the site

10/1/2014
-She mentioned it was used to turn on the bunkers fuel to go to the barges docked at the river.
-She showed me the back of the property where they were wanting to put a basketball court (between test pit 1 and overlapping test pit 2).

- Marti Starr stopped by while we were there and mentioned he remembered tanks and tar-like material used to be there on the site. He said saw mill went in Right after that.

-took photos, while taking photos, dog team went by and kid on the bike

10/1/2014
- Site appears to be heavily used.
- Also checked out new drainage ditch
~5:30 - headed to plane to go back to FBX.

-7:00 p.m. -Arrived in FBX

APPENDIX E

SITE PHOTOGRAPHS

Photo 1: Contaminated soil stockpiles excavated from the Property. Wood debris mixed with contaminated. Stockpile located at southern end of landfill. (September 30, 2014)

Photo 2: The drainage ditch where contamination was discovered along Front Street (foreground) and Koyukuk Avenue (background); facing northwest. (September 30, 2014)

Photo 3: An informal roadway runs northwest-southeast across the Property, Tanana Community Hall in the background; facing east. (September 30, 2014)

Photo 4: The roadway which transects the Property is used by the public; facing north. Community Hall, on adjacent Lot 8, is visible to the right. (September 30, 2014)

Photo 5: Metal pump and piping across Front Street from the Property. Pump likely associated with fuel distribution at the site; facing south. (September 30, 2014)

Photo 6: Interior of the Property, showing the locations of Test Pit 2 (foreground) and Test Pit 1 (background); facing south. (September 30, 2014)

Photo 7: Tar-like material is present on the soil surface, near Test Pit 1. Material is believed to be bunker C, also known as No. 6 fuel oil. (September 30, 2014)

Photo 8: The excavation of Test Pit 1. Front Street (left), Koyukuk Street (right), and the Yukon River are visible in the background; facing southwest. (August 29, 2014)

Photo 9: Tar-like material was observed in a discrete layer in Test Pit 1. (August 29, 2014)

Photo 10: Fuel-coated wooden debris was encountered adjacent to the Test Pit 1 and in Test Pit 4 on the Property. (August 29, 2014)

Photo 11: Excavating the Test Trench in the southern portion of the Property. Tanana Community Hall visible in background; facing east. (August 29, 2014)

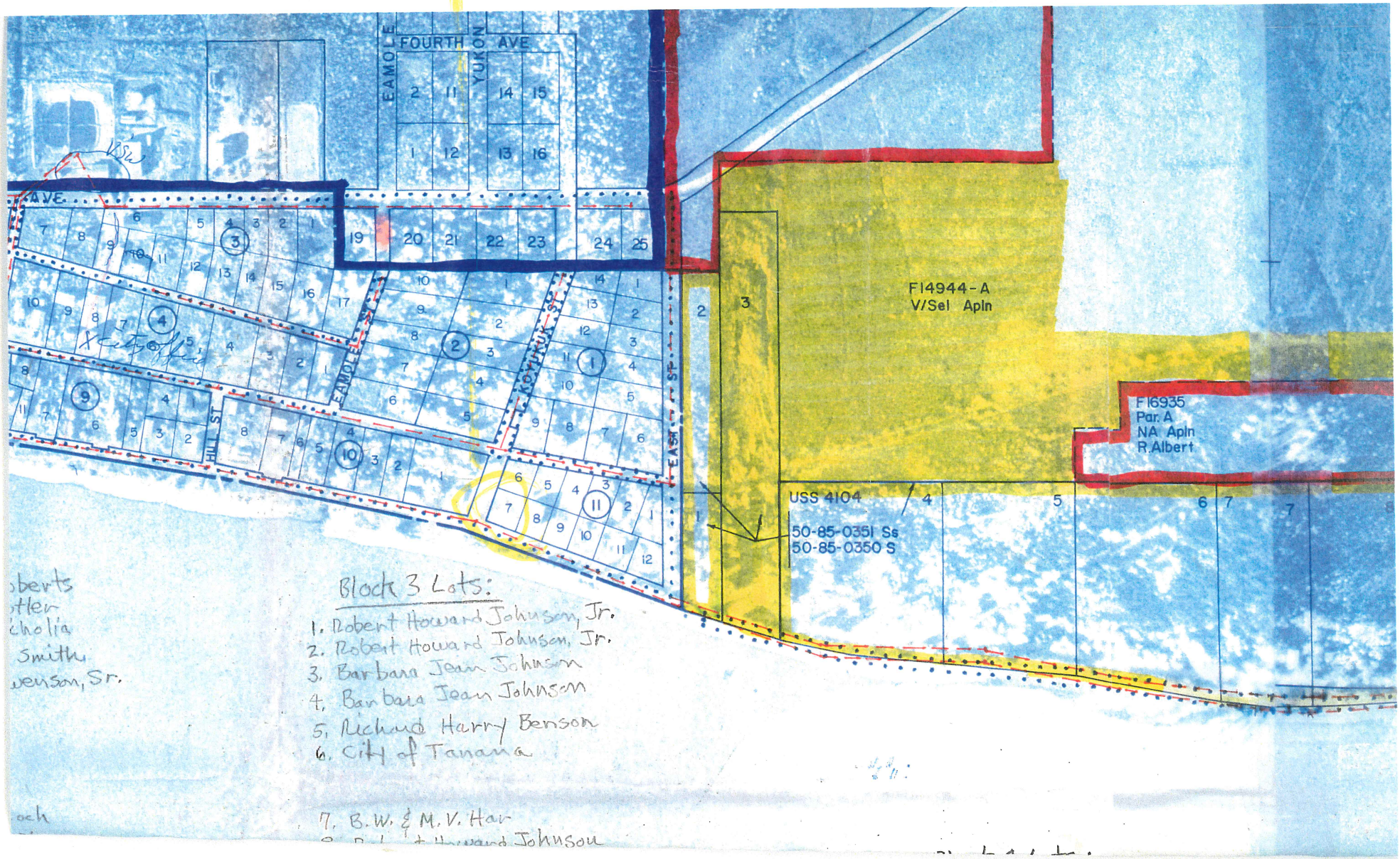
Photo 12: Excavation of Test Pit 2, in the northwestern quadrant of the Property. (August 29, 2014)

Photo 13: The excavation of Test Pit 4. Stained soil and wooden debris are visible; facing north. (August 29, 2014)

APPENDIX F

SUBJECT PROPERTY OWNERSHIP DOCUMENTS

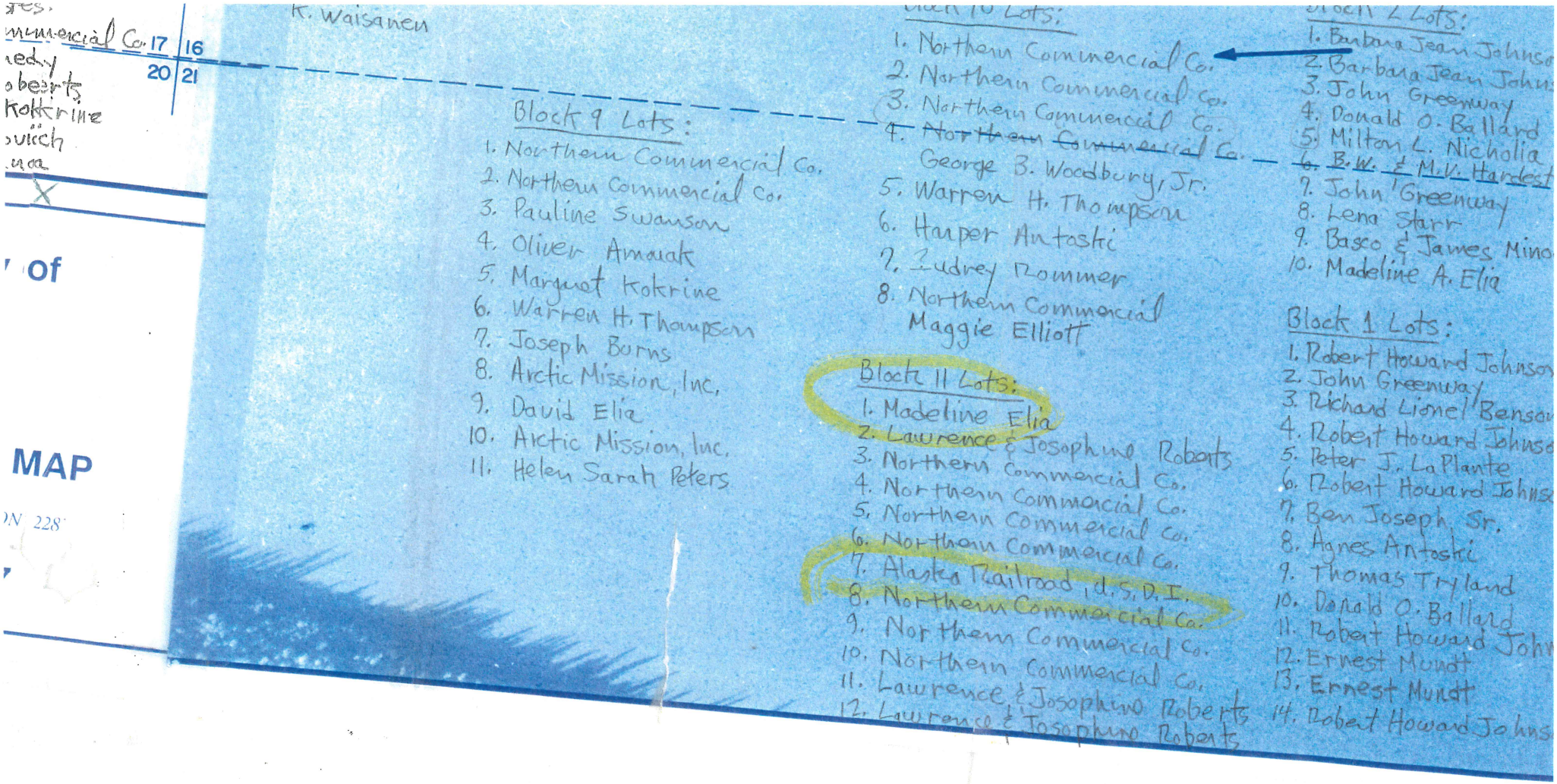
- City Ownership Map Circa 1954; provided by Mr. Gerald Nicholia, Realty Director, Tanana Tribal Council
- United States Department of Interior, Bureau of Land Management Plat Map dated March 20, 1957
- United States Department of Interior, Bureau of Land Management Notice dated December 7, 1983; provided by Ms. Kathleen Peters-Zuray, Tanana IGAP Coordinator
- United States Department of Interior, Bureau of Land Management Memorandum dated December 7, 1984; provided by Ms. Peters-Zuray
- United States Department of Interior, Bureau of Land Management, Letter to Mr. Mark Hickey, State Transfer Coordinator, Alaska Department of Transportation and Public Facilities dated December 13, 1984; provided by Ms. Peters-Zuray
- Exclusive License dated January 5, 1985
- United States of America Land Patent No. 50-85-0281 dated March 29, 1985 and recorded May 10, 1985
- United States of America Land Patent No. 50-85-0282 dated March 29, 1985 and recorded May 31, 1985
- Quitclaim Deed dated November 20, 1992
- Bureau of Land Management Interim Land Information System (LIS) Case Abstract and Map dated October 14 and October 10, 1994

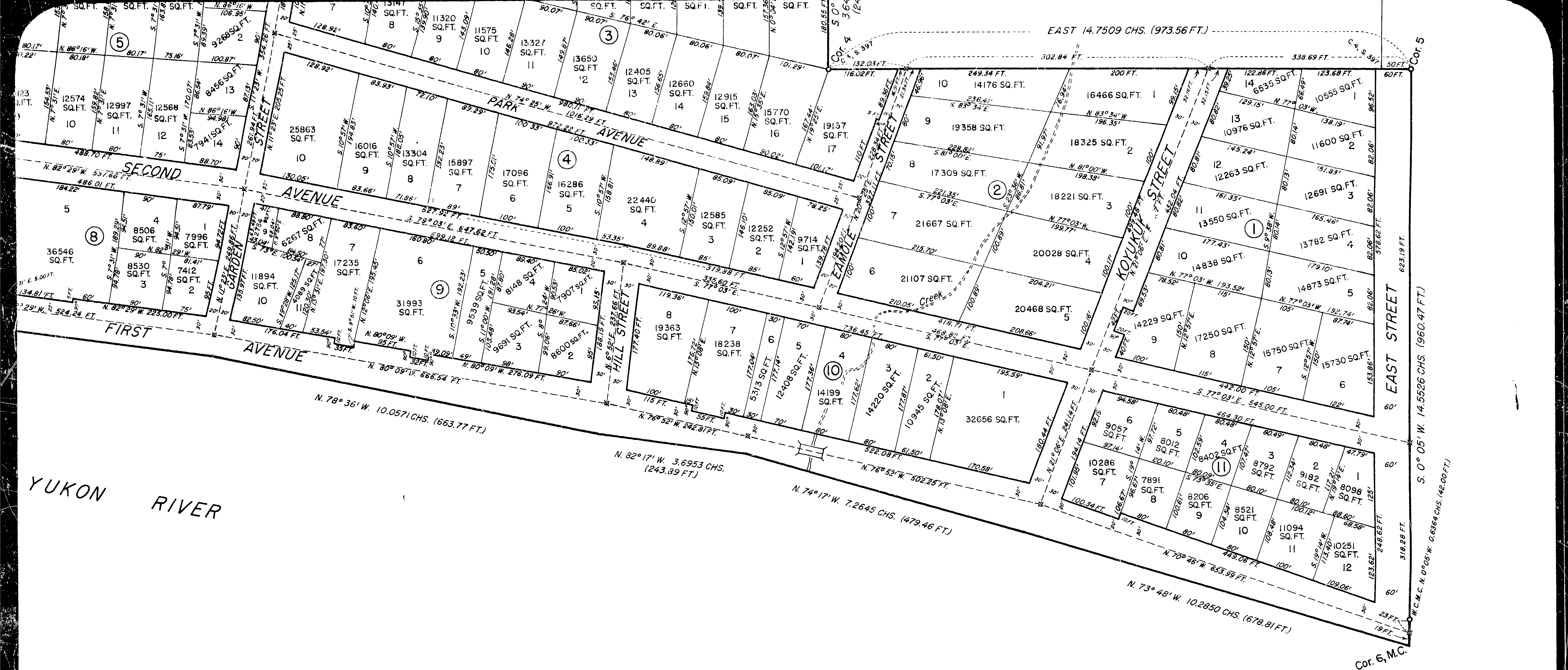


Block 3 Lots:

1. Robert Howard Johnson, Jr.
2. Robert Howard Johnson, Jr.
3. Barbara Jean Johnson
4. Barbara Jean Johnson
5. Richard Harry Benson
6. City of Tanana

7. B.W. & M.V. Har
8. Robert Howard Johnson


K. Waisanen
Block 9 Lots:
1. Northern Commercial Co.
2. Northern Commercial Co.
3. Pauline Swanson
4. Oliver Amaiak
5. Margaret Kokrine
6. Warren H. Thompson
7. Joseph Burns
8. Arctic Mission, Inc.
9. David Elia
10. Arctic Mission, Inc.
11. Helen Sarah Peters
Block 10 Lots:
1. Northern Commercial Co.
2. Northern Commercial Co.
3. Northern Commercial Co.
4. Northern Commercial Co.
George B. Woodbury, Jr.
5. Warren H. Thompson
6. Harper Antastic
7. Audrey Rommer
8. Northern Commercial
Maggie Elliott
Block 11 Lots:
1. Madeline Elia
2. Lawrence & Josephine Roberts
3. Northern Commercial Co.
4. Northern Commercial Co.
5. Northern Commercial Co.
6. Northern Commercial Co.
7. Alaska Railroad, U.S.D.I.
8. Northern Commercial Co.
9. Northern Commercial Co.
10. Northern Commercial Co.
11. Lawrence & Josephine Roberts
12. Lawrence & Josephine Roberts
Block 2 Lots:
1. Barbara Jean Johnson
2. Barbara Jean Johnson
3. John Greenway
4. Donald O. Ballard
5. Milton L. Nicholia
6. B.W. & M.V. Hardesty
7. John Greenway
8. Lena Starr
9. Basco & James Mino
10. Madeline A. Elia
Block 1 Lots:
1. Robert Howard Johnson
2. John Greenway
3. Richard Lionel Benson
4. Robert Howard Johnson
5. Peter J. LaPlante
6. Robert Howard Johnson
7. Ben Joseph, Sr.
8. Agnes Antastic
9. Thomas Tryland
10. Donald O. Ballard
11. Robert Howard John
12. Ernest Mundt
13. Ernest Mundt
14. Robert Howard Johns



300 400 500 1000

SCALE IN FEET

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

Washington, D. C., March 20, 1957

This plat is strictly conformable to the approved field notes and the survey, having been correctly executed in accordance with the requirements of law and regulations of this bureau, is hereby accepted.

For the Director

Earl G. Harrington

Cadastral Engineering Staff Officer

14537

United States Department of the Interior

IN REPLY REFER TO

BUREAU OF LAND MANAGEMENT

Alaska State Office
701 C Street, Box 13
Anchorage, Alaska 99513

F-82029 (2300.5)
F-14944-A (2651)
F-82028 (75.0)
1786 (960) ARR

Tanana

Received 12/16/83

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

DEC 07 1983

NOTICE

Alaska Railroad
Pouch 7-2111
Anchorage, Alaska 99510

: ANCSA Sec. 3(e)
: Application
:

Information Required for a
Section 3(e) Determination

The Alaska Railroad has received several notices in the past in which it was instructed to provide supporting information as justification for retaining lands it was claiming. This information is required under Sec. 3(e) of the Alaska Native Claims Settlement Act (ANCSA) for Federal lands which are selected by Native corporations. On October 26, 1981, the Bureau of Land Management (BLM) suspended action on the Sec. 3(e) determination because of impending legislation dealing with the possible conveyance of the rail properties claimed by the Alaska Railroad to the State of Alaska. Section 606(b)(2) of the Alaska Railroad Transfer Act of 1982 (ARTA) directs the Secretary of the Interior to adjudicate all unresolved claims of valid existing rights. Since claims by Native corporations are based on ANCSA, it will be necessary to conduct a formal Sec. 3(e) determination in order to ascertain what rights the corporations might have to public lands. Public lands are defined in Sec. 3(e) of ANCSA as, ". . . all Federal lands and interests therein located in Alaska except: (1) the smallest practicable tract, as determined by the Secretary, enclosing land actually used in connection with the administration of any Federal installation . . . ."

In accordance with the Alaska Railroad Transfer Act (ARTA), the determination process was delayed until November 14, 1983, in order that negotiations between the State of Alaska and Native village corporations might resolve said claims. ARTA provides for a report to Congress after mid-November that describes the

current status of the negotiations among the Secretary of the Interior, the State of Alaska, and various Native corporations.

This notice formally starts the Sec. 3(e) process. If negotiations which are now in progress concerning these parcels are successfully concluded, the Sec. 3(e) process will be discontinued. You will be notified of any termination of the Sec. 3(e) process concerning the site described in this notice.

The site described in this notice was withdrawn by Sec. 11(a)(1) of ANCSA and has been selected by Tozitna, Limited, for the Native village of Tanana. This site has been serialized as Sec. 3(e) application F-82029. Please refer to this number in your correspondence.

Departmental regulation 43 CFR 2655.2 states in pertinent part:

> Land [sic] subject to determination under section 3(e)(1) of the act will be subject to conveyance to Native corporations if they are determined to be public lands . . . . If the lands are determined not to be public lands, they will be retained by the holding agency . . . .

<u>You must provide the justification for retention of this site or the lands will be conveyed to the selecting Native corporation.</u>

The lands within this determination are described as follows:

<u>Ref. No.</u>

108 Tanana F-82029

T. 4 N., R. 22 W., Fairbanks Meridian
U.S. Survey No. 2754 A & B, Block 11, lot 7.

Containing .236 acre.

In order to make a Sec. 3(e) determination for this site, we need the following information (See 43 CFR 2655.3(b)).

1. Narrative explanation of the size and scope of the installation;

   a. When Federal use of each area began;

   b. What use was being made of the lands as of December 18, 1971; and

c. Whether any action has taken place between December 18, 1971, and December 18, 1974, that would reduce the area needed; description of the reduced area; and the date this action occurred.

2. A plottable legal description of the land used;

3. A site plan listing improvements, their function, and when they were constructed. Identify any alterations to the lands and the need for the alteration. This is especially true if the telephone/telegraph line is within the parcel but more than 75 feet from centerline of the track;

4. A description of the use and function of any unaltered lands;

5. A list of any rights, interests, or permitted uses you have granted to others, including other Federal agencies. Include copies of the documents;

6. Include photographs, drawings, or annotated aerial photographs of the installatisn. Photographs taken on or just prior to December 18, 1971, and on or after December 18, 1974, would be extremely beneficial.

Rights-of-way noted to BLM land records pursuant to 44 LD 513 are not protected as such in the conveyances to Native corporations. If you require rights-of-way protection, it will be necessary for you to request that an easement be reserved subject to Sec. 17(b) of ANCSA.

It is crucial that you identify any lands at this site which contain or have previously contained hazardous materials or conditions that would make them unsuitable for return to public domain. Hazardous materials are generally defined as solids or liquids which can be characterized as highly ignitable, corrosive, reactive, radioactive, or toxic, being further described as follows:

Ignitability - Having a low flash point, unstable solid capable of spontaneous combustion, and serves as an oxidizing agent;

Corrosivity - Causing an aqueous reaction, with pH below 2 or above 12.5, and being highly corrosive to steel;

Reactivity -	Unstable and capable of violent change, with or without water contact, can generate toxic gas, vapors, fumes, is capable of detonation, and is an unlawful explosive, or class A or B explosive;
Radioactivity -	Source materials, including containers or equipment using such material, emitting radiation at a level hazardous to public health;
Toxicity -	A chemical compound or element found to be toxic to humans or wildlife.

Examples of hazardous wastes frequently found in Alaska include PCB's, trichlorethylene, ethylene glycol, cyanide, petroleum fuels, and explosives. Responsibility for hazardous materials or conditions remains with the holding agency.

We encourage you to discuss your land identifications with the selecting Native corporation. Your response to us should indicate the results of any such discussions. Copies of your justification statement will be sent to the corporation for comment.

Regulations require that you furnish the above information to us, in triplicate, within 90 days from the receipt of this notice.

If you have questions, contact Sandy Thomas at (907) 271-3262. Please furnish the name, title, and telephone number of the individual in your office to contact concerning this parcel.

We have enclosed a copy of the Sec. 3(e) regulations.

/s/ Gary K. Seitz

Gary Seitz
Manager, Alaska Railroad
Project

Enclosures:
Status plat
Survey plat
Cy Sec. 3(e) regs.

Courtesy copy to:

Tozitna, Limited
P.O. Box 202
Tanana, Alaska 99777
(w/enclosures)

cc:

John Cikota
Railroad Administration Coordinator
Federal Railroad Administration
400 Seventh Avenue
Washington, D.C. 20590

Beau McClure
Chief, Alaska Program Staff

Branch of Lands (965)
Attn: Chief, Land Section
Branch of Conveyance Services (962)
Attn: Chief, Navigability Section
(w/status plat and Request for Navigability memo)

AM-NW (260)

960:P.Benson:sge:12/01/83:(0076i)

IN REPLY REFER TO

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Alaska State Office
701 C Street, Box 13
Anchorage, Alaska 99513

F-82029 (2300.5)
F-14944-A (2651)
F-14944-EE (75.4)
(963)

ARR Tanana Parcel

Memorandum

DEC 07 1984

To: Chief, Branch of ANCSA Adjudication (961)

From: Deputy State Director for Conveyance Management (960)

Subject: Section 3(e) Determination for the Alaska Railroad Parcel at Tanana

The Alaska Railroad acquired certain lands in the vicinity of Tanana by Trustee Deed dated August 25, 1958. These lands were selected by Tozitna, Limited for the Native village of Tanana under the Alaska Native Claims Settlement Act (ANCSA). The lands are subject to a Sec. 3(e) determination and were serialized as F-82029.

The lands are described as follows:

T. 4 N., R. 22 W., Fairbanks Meridian
U.S. Survey No. 2754 A&B, Block 11, lot 7

Containing .236 acres.

On December 7, 1983, the Bureau of Land Management (BLM) sent official Notice to the Alaska Railroad requesting information on which to base a Sec. 3(e) determination.

On May 7, 1984, the Alaska Railroad provided its justification, as well as leases and waybills, and stated Federal use began in 1952 and continued throughout the selection period.

On May 14, 1984, a copy of the justification submitted by the Alaska Railroad was forwarded to Tozitna, Limited, State of Alaska, and Doyon, Limited for comments.

Tozitna, Limited replied on August 24, 1984, and stated:

1. "The parcel U.S. Survey No. 2754 A&B, Block 11, Lot 7 had two (2) fuel tanks on it until the early sixties,

when these two tanks were removed. Since that time there has not been any use made of the land."

2. Tozitna, Limited also enclosed a copy of an aerial photo of the Tanana area taken in 1972 indicating "non-use" of the parcel.

On November 15, 1984, the State of Alaska furnished their comments stating they had made an agreement with Tozitna, Limited in which the State has relinquished its interest in this land.

The ARR stated in their justification:

1. "The two primary business functions of Railroad lands are to help produce revenues and/or to help reduce expenditures." (Paragraph 1, pg. 5 of justification.)

2. "Leased lands function (1) to generate lease revenues, (2) to generate rail traffic revenues, and (3) to develop Alaska. First, The Alaska Railroad, like the vast majority of railroads in the United States, uses some of its lands to generate rent revenues. As earlier mentioned, the Enabling Act permits lands to be used in this manner . . . ." (Paragraphs 4 & 5, pg. 17 of justification.)

3. "The function of the Tanana parcel is to support the Railroad's river barge operation. The Railroad's river barge operation was contracted out to Yutana Barge Lines from 1955 to 1975 . . . . In essence, instead of hiring employees to perform the government Railroad function of operating a river transportation system comprised of Railroad owned boats, barges, equipment, buildings, docks and other facilities, a contractor was hired after competitive bidding." (Sec. I, pg. 48 of justification.)

4. "According to page 6 and 7 of Exhibit "A" to the Yutana Barge Contract running from 1955 to 1975, Tanana had two fuel tanks each of 2500 bbl. capacity covered by a structure identified as "tank house," and a pump house on the property." (Sec. III, pg. 48 of justification.)

5. "River transportation facilities on this land were used by the Railroad's personnel prior to 1955. After 1955, the river transportation facilities owned by the Railroad were operated by the Railroad's contractor. In 1958, the Railroad received the Trustee Deed to land the Railroad had been using." (Sec. VII. D., pg. 49 of justification.)

6. "No action took place between December 18, 1971 and December 18, 1974, to reduce the area needed." (Sec. VII. C., pg. 49 of justification.)

The ARR stated the improvements on this parcel consisted of a tank house, containing two 2,500 bbl. fuel storage tanks, and a pump house. Both were used during the selection period to support the river barge operation. A BLM aerial photograph dated July 28, 1963, shows the remains of a building that seems to have been destroyed by fire. There was no visible evidence of any fuel storage tanks on this parcel. Another BLM aerial photograph dated July 2, 1974, does not indicate any improvements on or use of the parcel.

In view of the above, I hereby determine there was no Federal use, as claimed, of the ARR parcel (F-82029) at Tanana immediately prior to July 2, 1974. Since use must be continuous through the village selection period, December 18, 1971 through December 18, 1974, the following described lands are considered "public lands" under Sec. 3(e) of ANCSA.

T. 4 N., R. 22 W., Fairbanks Meridian

U.S. Survey No. 2754 A & B, Block 11, lot 7.

Containing .236 acres.

The following is my decision on major waterways and final easements for the lands remaining in F-82029.

MAJOR WATERWAYS:

No inland water bodies have been identified as being major within F-82029.

EASEMENTS TO BE RESERVED:

There are no easements to be reserved to the United States pursuant to Sec. 17(b) of ANCSA.

Robert H. Arndorfer

cc:
AM-NW (260)

AM-F (910)

IN REPLY REFER TO

2300.5 (963) 1/

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Alaska State Office
701 C Street, Box 13
Anchorage, Alaska 99513

12-18-84

DEC 13 1984

Mr. Mark Hickey
State Transfer Coordinator
Alaska Department of Transportation
and Public Facilities
Pouch Z
Juneau, Alaska 99811

Dear Mr. Hickey:

It is our intent to keep all parties of interest informed of any information received by the Bureau of Land Management concerning the lands claimed by the Alaska Railroad which are subject to Sec. 3(e) determinations. Therefore, enclosed are copies of this information dated: received 12/11/84 - correction of transcript of 11/30/84 predetermination Meeting.

Sincerely yours,

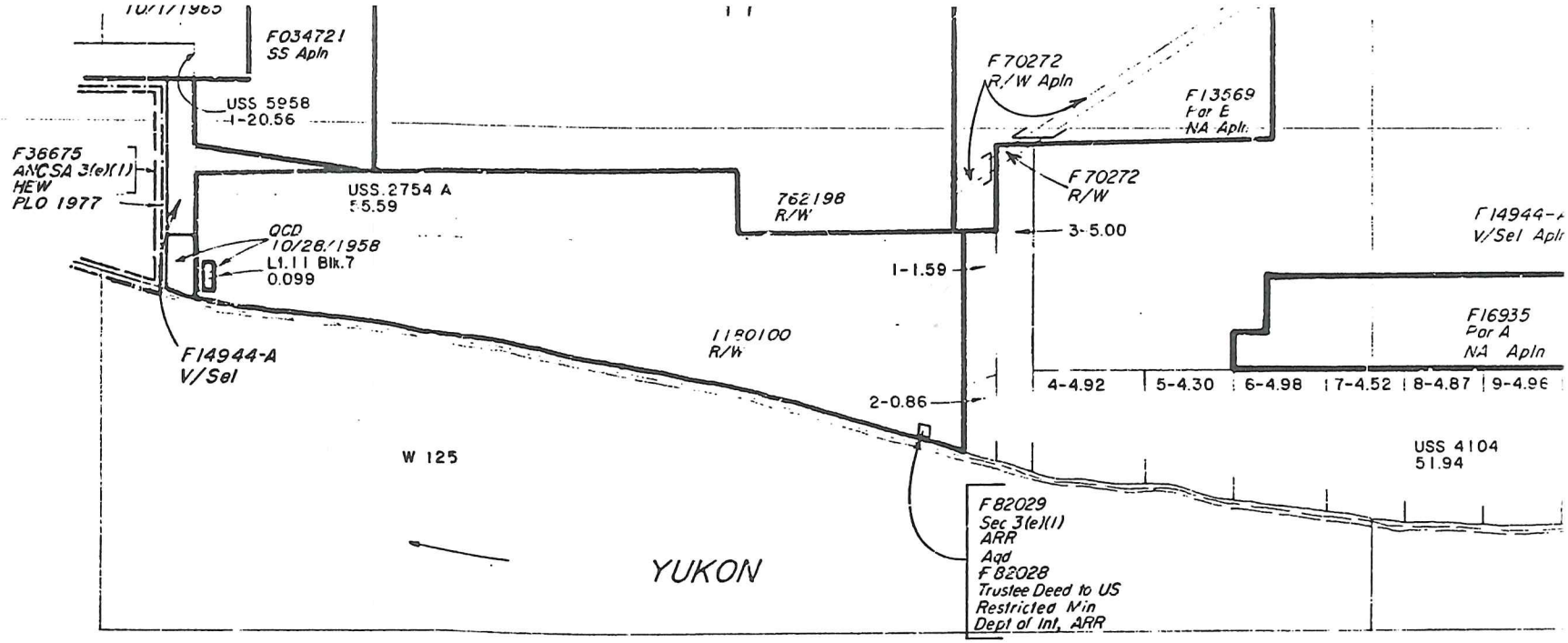
Maynard E. Nuss

Maynard E. Nuss
Chief, 3(e) Section

Enclosure

1/ All

AA-19306	AA-52319	AA-52320	AA-52321	AA-52324	AA-50560
AA-19343	AA-19308	AA-52318	AA-19307	AA-50557	AA-43393
F-82029	AA-25493	AA-50572	AA-52315	AA-43392	AA-52300
F-82033	F-82034	F-82035	F-82036	F-82037	F-82038
F-82039	F-82040	F-82041	F-82042		



SCALE

5 0 5 10

10 chains to the inch

Rec'd 12.11.84

U.S. BUREAU OF LAND MANAGEMENT

701 C. Street (Federal Building)

Anchorage, Alaska

IN THE MATTER OF 3 (e),
PRE-DETERMINATION HEARING
ON EAGLE RIVER WIDESPOT,
EKLUTNA ROCK QUARRY, MOHAWK
COMMAND POST, EKLUTNA GRAVEL
RESERVE, BIRCHWOOD,
MATANUSKA, MOOSE CREEK,
PITTMAN AND BROAD PASS

ALASK RAILROAD ISSUE

HEARING

Taken
November 30, 1984

BEFORE
ROBERT W. ARNDORFER

Office of the Regional Solicitor

CORRECTION SUBMITTED BY
EKLUTNA, INC.
FOR THE TRANSCRIPT OF
11/30/84 PRE-DETERMINATION HEARING

Railroad agency in their presentations have done as best they can to ignore that this is an ANSCA proceeding. We are dealing with the statutes speaking of the smallest practicable tract ~~and~~ enclosing lands actually used. I have spent hours in Westlaw and in Lexis looking for other statutes which make use of such terms. What did strike me as rather remarkable, however, was finding the phrase "smallest practicable" once being used as a court-furnished definition for another term. There is a federal wiretapping statute, for example, which says that the feds must do their very best to minimize their eavesdropping on telephone conversations, and when the court was asked to explain "what does minimize mean", they said the smallest practicable amount of eavesdropping.

But be that all as it may, I think as a practical matter we have to look at land. The photograph on the wall, for example, shows us some clearing done before the expiration of the selection period and some clearing done after the expiration of the selection period, and it also shows us acres and acres and acres of trees and marsh and lands which any person stepping on these lands being asked the question, "Are these lands being used?" would say no. I think under these circumstances there is a very heavy burden

Railroad has been relatively successful as a provider of transportation for people and property, and they have done so without making actual use of the bulk of the lands in question and they will continue to do so if they are shorn of the possession of the bulk of these lands.

Mr. LaReshe indeed did his job well. His job was to furnish to the United States the ~~bogs~~ views of the State of Alaska respecting the 3 (e) regulations which were being considered. Mr. LaReshe committed the State of Alaska to support the notion, among others, that the Alaska Railroad is not a single installation. The State of Alaska at that time was subjected to immense pressures by the native community and by the Railroad through the legislature and otherwise, and did communicate that position to the government, and that position came to be expressed in the regulations.

We should think about these regulations for a moment. These are regulations which congress and the Alaska Railroad Transfer Act has reached down in to discuss and announced a conclusion. In the transfer act the congress directs the secretary how to exercise the secretary's discretion under the easement-versus-fee discretion provisions of the regulations. Congress enacted the railroad transfer act with specific

regulations under that act which tell us to look for very specific physical activities and tell us, if we find those activities, to explore them for a relationship of the holding agency, and if we find that relationship then to determine the extent of the use by some very specific ~~tasks~~ tests.

These are the regulations which were written for the Alaska Railroad situation and they should be applied to that situation.

In short, we have reached the conclusion that the only piece of ground within the Eklutna ~~River~~ Village withdrawal area which we can find that the Railroad was using continuously through the selection period is the rock quarry. Virtually all other use we found on any of these lands was used by a lessee for business purposes of the lessee or by the State of Alaska Department of Highways for the purposes of the State of Alaska Department of Highways; we do not find activities by the Railroad documented. We do find unsubstantiated lists of numbers in one case, no indication of the source, no backup data, nothing to scrutinize, nothing to verify, bald assertions.

And even if one concedes all the bald assertions, I still do not find that actual use within the meaning of the statute and the regulations has been

used based upon objective facts. We wish to emphasize the well-defined nature of the task or objective of this proceeding and that to rely on strained interpretations of those very clear regulations is unnecessary to meet the objectives of native claims settlement act and Section 3 (e).

Thank you.

THE CHAIRMAN: Thank you.

Mr. Roderick, are you ready to begin on the Eagle River widespot?

MR. RODERICK: Mr. Arndorfer, do you want me to now pass around these various statutes that I have referred to in my opening presentation, or would you prefer to do it at the end?

THE CHAIRMAN: Suit yourself. We need to just get on with it.

MR. RODERICK: I understand.

THE CHAIRMAN: If you want to pass those out, pass them out right now.

MR. RODERICK: I will wait because I haven't got them organized the way it's necessary to have them organized.

THE CHAIRMAN: We'll have a break in about 45 minutes or so and you can do it then.

MR. RODERICK: Again, David Roderick for the

continue on down through the present day.

I think we must in passing note we do object to the characterization of 1500 acres as a "widespot" in a strip of land 200 feet wide. We do concur with the Bureau of Land Management's original identification of three, five tracts at this ~~of dis~~location.

Concerning gravel, a great deal has been said about gravel and what we do have is a considerable burden arising from undocumented assertions of use of gravel. I am not aware of very many business records of businesses which identify volumes of material taken from lands claimed by the natives being said to be a business record when stalwartly through the period of about 1976 the Railroad operating assumption was that it was exempt from native selection. This is obviously an exhibit that was created for the purposes of these disputes; it would have been good to have seen the documentation.

Concerning this discussion of the realities of sand and gravel, I think it underscores -- indeed it appears that Ms. Kavasharov has hit upon the perplexities of the situation, but I fear she attributes them to the wrong party. There are assumptions in the paper because there is no evidence to the contrary. There are no statements which turn on a conversion factor, volume to weight, respecting rock, because that

situation. There may have been an invitation for proposals; I'm not familiar under the materials act with an invitation for a proposals approach. There was an opportunity during the selection period to renegotiate this disadvantageous contract which was let go by. The waste materials in pit-run which Rogers and Babler removed included that crushed rock which was below the spec for riprap or for ballast, and happened to be D-1 aggregate used for subbase for highways; and it turned ought to be a very advantageous transaction, but we are more than happy to accept title to this property subject to the interest of Rogers and Babler and the usual formulation, comma, if valid, and we will approach it after that and may be appropriate given all the facts and circumstances at that time.

Turning to PLO 2672, this is a tract of land administered by the Bureau of Land Management. It lies downstream from PLO 755 -- or it used to lie downstream until the Railroad moved the stream, and is in the condition it was in when received from the Indians, or from the Russians as you care to construe the history of Alaska.

There is no indication that this property is properly classified as ~~real~~ rail property of the United States, and we deny that the State has any standing to

really have belonged to.

I think first I'd like to call the attention of the BLM to a photograph they supplied to us with the reference GAV1-9, which is a 1964 photograph which shows considerable storage at the Birchwood site between the tracks; to the 1974 photograph APGB-ER2 in the series that was number 10, which shows an extensive cleared area between the tracks and a little bit of storage at the far north end; to the 1979 series AKRR showing that the area between the tracks and all the area to the east of the tracks is growing over with grass and has grown over with grass, brush, and what little storage is occurring is at the far north end.

Additionally, in our own submittal we did have the photography from 1972 after ANSCA, in 1976 after the close of the selection period, which again indicates that the documented storage at this site was not to the east of the tracks but was between the tracks with the exception of a few sprinklings here and there which diminished over time, had been discontinued before the close of the selection period with the exception of this small piece of property at the north end which seems to have some shipping crates on it or something of this variety from time to time.

Concerning the documents that were submitted

where junctions established in the past can be reestablished where the transportation system for moving coal will be needed, and they represent an integral part of what the Railroad was in 1971 through '74. The Railroad had an integral part which was called assets and operational capabilities, and if you cause it to lose those assets you do change the Railroad and you do weaken it.

That's what I wanted to say on those parcels and I'd like to know how much time I've saved.

MR. NUSS: You have five minutes left.

MR. BURTON: Mr. Arndorfer, Matanuska presents, I think, the archetypical example of nothing more or less than the arguments we've been listening to all along. It is only that here it is more palpable.

We have a piece of ground on which there is absolutely nothing except the residence of one Nick Oscocof (ph), a surname found among the family of Eklutna shareholders. There is absolutely nothing there, there was nothing there in 1971, there is nothing there now. What's being said to us is if perhaps some day the department of natural resources peddles some coal and if, contrary to newspaper reports, it is not scarfed up by Matanuska Electric for mind-mouthed (sic) power generation, then possibly someone will want to

ladies and gentlement -- I mentioned you this time, Dennis.

THE CHAIRMAN: Yes, he's part of it; he's on the record.

MR. BURTON: I'm sure the solicitor can perhaps more adequately than we evaluate whether or not the State litigates against natives. It does seem that at least as as far as navigability they select the poorest villages to litigate against.

I have to say in summation that the presentation by the Railroad and by the State has been in terms of glittering generalities, in terms of words that are noble and sound wonderful and are all devoted to the betterment of the Alaska Railroad as an operating entity and have little or nothing to do with the tasks which the secretary of the interior has given us for determining what is that operating entity.

I recall, for example, that in the case of the hospital at Bethel we had a situation in which the corporation came into title even to a portion of the building because it was discreetly extended by the operator of the facility during the selection period.

I want to touch briefly, again point out that buffers can be dealt with as easements as well as by fee reservation, and dealing with them as easements is a

the every square inch of what they have claimed comes within the exception.

The point has allegedly been made that it was the intent of congress to preserve installations intact. That's hogwash. The intent of congress was to give to the native corporations all federal land and all federal interest in land -- very broad definition of public lands as you gentlemen both can recognize -- except for the smallest practicable tracts ~~and~~ en closing lands actually used in connection with the administration of a federal installation. One cannot conceive of any words that would more narrowly express an exception. I mean, you can sit -- you can literally sit down and say, okay, if I were going to try to cram this into a very small context how can I say it better than that? You can't.

We have not been shown where the Alaska Railroad found how much gravel of what character, meaning meeting what manufacturing specifications in order to fulfill what historical use; we have been not been given proof of who did what clearing on PLO-689 when and why; we have no proof except for an explosion on Pearl Harbor Day 1973 that there are explosives stored on PLO-689; we have been given evidence of a 5,000-foot radius on explosive storage when the maximum distance given in the table of standards is 2,000 feet based on a storage of

native village selections: "Secretary shall make his determination based on the standards set forth in the regulations implementing Section 3 (e) of ANSCA which he promulgated on October 22, 1980, 43 CFR 2655." I do not know how Congressman Seiberling can quote more precisely evidence the transfer act contemplates the application of these regulations exactly.

"It should be emphasized that the above-described procedures for settling claims about existing rights filed by village corporations apply only to the settlement of claims for lands which have been validly claimed by the Alaska Railroad prior to the date of enactment of ANSCA under a public land order, executive order statute, or similar color of law."

So much for PLO-2672.

"Similarly, it should be emphasized that nothing in this act is intended to enlarge, diminish or in any way alter the responsibility of the Federal Railroad Administration and after the date of transfer to the State to deposit the proceeds derived from lands selected by native corporations into escrow account established by Section 2 of public law 94 (204) as amended."

So much for railroad leases being exempt from native selection.

MR. RODERICK: I'm sorry; I didn't get that quote and I really need that quote.

MR. BURTON: I can let you read it in a minute rather than holding up the whole works here.

THE CHAIRMAN: Just be sure the citation is in the record.

MR. BURTON: That again is the House December 21, 1982. This is at H10695 and this continues to be Mr. Seiberling.

"The native corporations which receive conveyance of the lands are entitled to the proceeds which have been derived from those lands subsequent to the filing of the lands selection applications. Unfortunately, since 1976 the Federal Railroad Administration has failed to deposit any proceeds from lands subject to native corporation lands selection applications into the escrow ~~act~~ account."

We would submit that there is ample evidence of congressional intent, that the regulations you are charged with administering are indeed the regulations to be applied, that leased lands are not sacrosanct and, in short, that the entire arguments of the State and of the Alaska Railroad -- both of whom should be considered the holding agency for all purposes as of this time -- are completely irrelevant.

BOOK 7 PAGE 500
Ft. Gibbon Recording District

Exclusive License

Ft. Gibbon Recording District

WHEREAS, pursuant to Sec. 604(b)(1)(C) of the Alaska Railroad Transfer Act of 1982 (96 Stat. 2556 et seq.; hereinafter referred to as "ARTA"), the Alaska Railroad Corporation is entitled to an exclusive license for real property of the Alaska Railroad including both the right-of-way of the Alaska Railroad (railroad right-of-way) and other railroad lands (railroad parcels); this exclusive license is hereby issued for the real property described below:

Railroad Parcel:

U.S. Survey No. 2754B, Alaska
Block 11, lot 7.

Containing: 0.236 acre.

NOW KNOW YE that there is, therefore, granted by the United States of America, through the Secretary of Transportation, unto the Alaska Railroad Corporation, an exclusive license for, to and on the real property described above, which license affords the holder the exclusive right to use, occupy, and directly receive all benefits of the real property described above for the operation of the State-owned railroad in conformity with the attached Memorandum of Understanding among the Federal Railroad Administration, the State of Alaska, Eklutna Inc., Cook Inlet Region, Inc., and Toghotthele Corporation. This license is subject to the Reservations and Conditions set out below.

Reservations and Conditions

1. Pursuant to Sec. 604(b)(4) of ARTA, the exclusive license granted herein is subject to any valid leases, permits and other instruments issued before the date of transfer of the railroad to the state.

2. This license is subject to settlement or final adjudication of the unresolved claims of valid existing rights as defined in Sec. 603(3) of ARTA. A listing of these unresolved claims is set out below:

U.S. Survey No. 2754B - Village Selection (Tozitna, Ltd.) F-14944-A.

During the term of this license the exclusive rights granted by this license shall not be diminished by any unresolved claim of a valid existing right.

3. Pursuant to Sec. 604(b)(4) of ARTA, the exclusive license granted for any lands herein shall terminate upon the conveyance of such lands following the settlement or relinquishment of any of the unresolved claims of valid existing rights described in paragraph 2 above. This license shall terminate only to the extent of the claim or claims settled or adjudicated.

4. If the real property that is the subject of any unresolved claim listed in paragraph 2 above is located within the railroad's right-of-way and if the final adjudication of the claim is in favor of the claimant and against the Alaska Railroad, the license granted herein shall automatically terminate for such property upon conveyance of that property pursuant to Sec. 604(b)(4) of ARTA. If as the result of such a conveyance, any lands within the railroad's right-of-way or any interest in such lands are conveyed from federal ownership, the state shall, concurrently with the conveyance to the claimant, receive not less than an exclusive use easement in such lands pursuant to Sec. 606(b)(4)(B) of ARTA.

5. If the final adjudication of any unresolved claim listed in paragraph 2 is against the claimant and in favor of the Alaska Railroad, that land previously subject to the claim shall, pursuant to Sec. 604(b)(2) of ARTA, be conveyed to the state by an interim conveyance or patent. Upon such conveyance, the license granted herein for the property subject to the conveyance shall terminate pursuant to Sec. 604(b)(4).

6. At the time all or a portion of this license is terminated, the United States Department of Transportation shall issue to the state a notice of termination identifying the real property that is no longer subject to the license and each conveyance that has caused full or partial termination of the license.

7. Pursuant to Sec. 606(e) of ARTA, the State shall be liable to a party receiving a conveyance of land among the above-described properties subject to this license for damage resulting from use by the State of land under this license in a manner not authorized by this license.

Definitions

1. "Exclusive-use easement," as used herein, means as provided by Sec. 603(6) of ARTA an easement which affords to the easement holder the following:

   a. the exclusive right to use, possess, and enjoy the surface estate of the land subject to this easement for transportation, communication, and transmission purposes and for support functions associated with such purposes;

   b. the right to use so much of the subsurface estate of the lands subject to this easement as is necessary for the transportation, communication, and transmission purposes and associated support functions for which the surface of such lands is used;

   c. subjacent and lateral support of the lands subject to the easement; and

   d. the right (in the easement holder's discretion) to fence all or part of the lands subject to this easement and to affix track, fixtures, and structures to such lands and to exclude other persons from all or part of such lands;

2. "Right-of-way," as used herein, means as provided in Sec. 603(11) of ARTA:

   a. an area extending not less than one hundred feet on both sides of the center line of any main line or branch line of the Alaska Railroad; or

   b. an area extending on both sides of the center line of any main line or branch line of the Alaska Railroad appropriated or retained by or for the Alaska Railroad that, as a result of military jurisdiction over, or non-Federal ownership of, lands abutting the main line or branch line, is of a width less than that described in subparagraph (a) of this paragraph.

IN WITNESS WHEREOF, the undersigned authorized officer of the Department of Transportation has in the name of the United States, set his/her hand and caused the seal of the Department to be hereunto affixed on this 5th day of January, 1985, in Nenana, Alaska.

UNITED STATES OF AMERICA

Secretary of Transportation
by the Administrator of the
Federal Railroad Administration

Accepted:

ALASKA RAILROAD CORPORATION

By: _____
Its: Chairman of the Board
Dated January 5, 1985

Memorandum of Understanding

among

The Federal Railroad Administration

and

The State of Alaska

and

Eklutna, Inc.

and

Cook Inlet Region, Inc.

and

Toghotthele Corporation

Purpose: The purpose of this Memorandum of Understanding is to implement section 606(b)( ) of the Alaska Railroad Transfer Act of 1982 ("Act") by establishing the rights and obligations of the parties concerning the use of the Alaska Railroad land described in selections, including amendments thereto, filed in the offices of the Bureau of Land Management, United States Department of Interior by Alaska Native Village Corporations under the Alaska Native Claims Settlement Act, pending settlement or adjudication and conveyance of these selections.

Under the Act, rail properties which are the subject of Village selections would be administered as provided herein to preserve the interests of the Native Corporations and the Alaska Railroad ("Railroad") according to the terms of this Memorandum. The Memorandum of Understanding is an agreement intended to apply to the operation of the Railroad by the Federal Railroad Administration prior to the transfer of the Railroad to the State of Alaska and to the operation of the Railroad by the State or the State-owned Railroad after the transfer but prior to the settlement or adjudication and conveyance of Village selections.

Period of Agreement: This Memorandum of Understanding shall be in effect commencing on the date of enactment of the Alaska Railroad Transfer Act of 1982 ("Act") until the status of the lands subject to this agreement has been settled or adjudicated and the land has been conveyed to the State or the Village Corporation pursuant to the Act or the Alaska Native Claims Settlement Act, or in the event that the Railroad is not transferred to the State, until three years after enactment of the Act.

Lands Subject to Agreement: This Memorandum of Understanding applies to those rail properties of the Alaska Railroad which were described in selections, including amendments thereto, timely filed in the offices of the Bureau of Land Management,

United States Department of Interior by Village Corporations under the Alaska Native Claims Settlement Act. (Affected Lands).

Administration of Agreement: The Administrator of the Federal Railroad Administration shall be responsible for ensuring that the Railroad is being administered in accordance with the terms of the Agreement until transfer of the Railroad to the State. After transfer, responsibility shall be assumed by the Governor of the State of Alaska or his designee.

Uses of Affected Lands: During the term of this Memorandum of Understanding, the Affected Lands shall be administered in accordance with the following conditions:

1. Leases

(a) Leases, contracts, construction contracts, permits, licenses or other agreements, or extensions thereof, or any other direct or indirect use by the Railroad, which would permit the alteration of the physical condition or degradation of the Affected Lands shall not be entered into or undertaken without the prior written consent of the affected Native Corporations, which consent shall not be unreasonably withheld;

(b) Leases, contracts, construction contracts, permits, licenses or other agreements, or extensions thereof, may not be entered into for a term of more than two years without the consent of the affected Native Corporations which consent shall not be unreasonably withheld.

2. Gravel and Rock Areas

(a) There shall be no extractions of gravel and rock from any new gravel pit or rock quarry not in existence on the date of enactment or from new pits on sites with current extraction activities, except with the written consent of the affected Native Corporation.

(b) Mining or extraction of gravel at the Eagle River gravel site shall be restricted to an annual amount not to exceed 80,000 cubic yards of extracted material; provided that: the existing cleared and grubbed areas shall not be expanded unless necessary to enable the railroad to extract the amounts agreed to in this sentence. Should additional clearing or grubbing be required, the Railroad shall first consult with the Governor of the State of Alaska and Eklutna, Inc.

Existing Land; Existing Agreements: The purpose of this Memorandum of Understanding is to facilitate the transfer of the Railroad to the State of Alaska and to expedite the settlement or adjudication of Village Corporation selections pursuant to the Alaska Native Claims Settlement Act. Nothing in this Memorandum of Understanding shall be construed to validate or invalidate any third party interest claimed to be in existence prior to the date of the Act; nothing in this Memorandum of Understanding shall be construed to deny, enlarge, impair or otherwise affect any valid existing right or claim of a valid existing right or the applicability or effect of any existing law or regulation respecting any such right of claim.

Assignment: The provisions of this Memorandum of Understanding shall bind the agents and assigns of the State, the Administrator and the affected Native Corporations.

Enforcement: The provisions of this Memorandum of Understanding shall be enforceable in the United States District Court for Alaska.

Other Affected Village Corporations: Non-execution of this Memorandum of Understanding by other Village Corporations which filed selections (or their successors in interest) shall not preclude such Village Corporations from enforcing the terms of this agreement with respect to their selections.

BOOK 7 PAGE 509
Ft. Gibbon Recording District

Amendments: This Memorandum of Understanding may be amended by agreement of the affected parties in writing.

Date: [illegible]

FEDERAL RAILROAD ADMINISTRATION

By: [illegible]

Its: Deputy Administrator

Date: December 31, 1982

TOGHOTTHELE CORPORATION

By: [illegible]

Its: Chief Executive Officer

Date: Jan. 31, 1983

EKLUTNA, INC.

By: [illegible]

Its: President

Date: January 28, 1983

STATE OF ALASKA

By: Larry D. Crawford

Its: Chief of Staff

Office of the Governor

Date: 2/4/83

COOK INLET REGION, INC.

By: [illegible]

Its: President

ALASKA RAILROAD CORPORATION

Pouch 7-2111
Anchorage, Alaska 99510-7069

BOOK 7 PAGE 510
Ft. Gibbon Recording District

January 9, 1985

Dear District Recorder,

After recording please return the attached documents to:

Alaska Railroad Corporation

Pouch 7-2111

Anchorage, Alaska 99510-7069

Attention: James O. Campbell, Chairman

Board of Directors

Thank you.

85-1

RECORDED - FILED NC
FT. GIBBON REC. DIST.
DATE 1-9, 1985
TIME 11:55 A M
Requested by AK.
Address Railroad
Corporation

Form 1860-9
(June 1984)
F-14944-A

BOOK 7 PAGE 539
Ft. Gibbon Recording District

The United States of America

To all to whom these presents shall come, Greeting:

WHEREAS

Doyon, Limited

DOYON, LIMITED
[illegible]
Fairbanks [illegible]

is entitled to a patent pursuant to Sec. 14(f) of the Alaska Native Claims Settlement Act of December 18, 1971, 43 U.S.C. 1601, 1613(f), of the subsurface estate reserved to the United States in the hereinbelow identified patent for the surface estate in the following described lands:

Patent No. 50-85-0281

Lot 7, Block 11, U.S. Survey No. 2754A and B, Townsite of Tanana, Alaska, situated on the north bank of the Yukon River opposite the mouth of the Tanana River.

Containing 0.236 acre, as shown on the plat of survey accepted March 20, 1957.

NOW KNOW YE, that there is, therefore, granted by the UNITED STATES OF AMERICA, unto the above-named corporation the subsurface estate in the lands above described; TO HAVE AND TO HOLD the said estate with all the rights, privileges, immunities, and appurtenances, of whatsoever nature, thereunto belonging, unto the said corporation, its successors and assigns, forever.

THE GRANT OF THE ABOVE-DESCRIBED LANDS IS SUBJECT TO:

1. All the easements and rights-of-way referenced in the aforementioned conveyance of the surface estate, and to valid existing rights therein, if any, in the said subsurface estate, including but not limited to those created by any lease (including a lease issued under Sec. 6(g) of the Alaska

Patent Number 50-85-0282

Form 1860-10
(June 1984)

F-14944-A

BOOK 7 PAGE 540
Ft. Gibbon Recording District

Statehood Act of July 7, 1958, 48 U.S.C. Ch. 2, Sec. 6(g)), contract, permit, right-of-way, or easement, and the right of the lessee, contractee, permittee, or grantee to the complete enjoyment of all rights, privileges, and benefits thereby granted to him; and

2. The requirements of Sec. 14(f) of the Alaska Native Claims Settlement Act of December 18, 1971, 43 U.S.C. 1601, 1613(f), that the right to explore, develop, or remove minerals from the subsurface estate in the lands herein conveyed which are within the boundaries of the Native village of Tanana shall be subject to the consent of Tozitna, Limited.

IN TESTIMONY WHEREOF, the undersigned authorized officer of the Bureau of Land Management, in accordance with the provisions of the Act of June 17, 1948 (62 Stat. 476), has, in the name of the United States, caused these letters to be made Patent, and the Seal of the Bureau to be hereunto affixed.

GIVEN under my hand, in ANCHORAGE, ALASKA the 29TH day of MARCH in the year of our Lord one thousand nine hundred and EIGHTY-FIVE and of the Independence of the United States the two hundred and NINTH

Ann Johnson

By Ann Johnson
Chief, Branch of ANCSA Adjudication

Patent Number 50-85-0282

85-17

RECORDED ~~FILED~~ 11—
FT. GIBBON ~~ALASKA~~
DATE 5-10 1985
TIME 1:00 P.M.
Recorded by Doyon Ltd.
Address 201 1st Ave
Fbks 99701
#373602

Form 1860-9
(June 1984)

F-14944-A

Tozitna, Limited
P.O. Box 129
Tanana, Alaska 99777

The United States of America

To all to whom these presents shall come, Greeting:

WHEREAS

Tozitna, Limited

is entitled to a land patent pursuant to Sec. 14(a) of the Alaska Native Claims Settlement Act of December 18, 1971, 43 U.S.C. 1601, 1613(a), of the surface estate in the following described lands:

Lot 7, Block 11, U.S. Survey No. 2754A and B, Townsite of Tanana, Alaska, situated on the north bank of the Yukon River opposite the mouth of the Tanana River.

Containing 0.236 acre, as shown on the plat of survey accepted March 20, 1957.

NOW KNOW YE, that there is, therefore, granted by the UNITED STATES OF AMERICA, unto the above-named corporation the surface estate in the lands above described; TO HAVE AND TO HOLD the said estate with all the rights, privileges, immunities, and appurtenances, of whatsoever nature, thereunto belonging, unto the said corporation, its successors and assigns, forever:

EXCEPTING AND RESERVING TO THE UNITED STATES from the lands so granted:

The subsurface estate therein, and all rights, privileges, immunities, and appurtenances, of whatsoever nature, accruing unto said estate pursuant to the Alaska Native Claims Settlement Act of December 18, 1971, 43 U.S.C. 1601, 1613(f).

Patent Number 50-86-0281

Form 1860-10
(June 1984)
F-14944-A

THE GRANT OF THE ABOVE-DESCRIBED LANDS IS SUBJECT TO:

1. Valid existing rights therein, if any, including but not limited to those created by any lease (including a lease issued under Sec. 6(g) of the Alaska Statehood Act of July 7, 1958, 48 U.S.C. Ch. 2, Sec. 6(g)), contract, permit, right-of-way, or easement, and the right of the lessee, contractee, permittee, or grantee to the complete enjoyment of all rights, privileges, and benefits thereby granted to him. Further, pursuant to Sec. 17(b)(2) of the Alaska Native Claims Settlement Act of December 18, 1971, 43 U.S.C. 1601, 1616(b)(2) (ANCSA), any valid existing right recognized by ANCSA shall continue to have whatever right of access as is now provided for under existing law; and

2. Requirements of Sec. 14(c) of the Alaska Native Claims Settlement Act of December 18, 1971, 43 U.S.C. 1601, 1613(c), as amended, that the grantee hereunder convey those portions, if any, of the lands hereinabove granted, as are prescribed in said section.

IN TESTIMONY WHEREOF, the undersigned authorized officer of the Bureau of Land Management, in accordance with the provisions of the Act of June 17, 1948 (62 Stat. 476), has, in the name of the United States, caused these letters to be made Patent, and the Seal of the Bureau to be hereunto affixed.

GIVEN under my hand, in ANCHORAGE, ALASKA the 29TH day of MARCH in the year of our Lord one thousand nine hundred and EIGHTY-FIVE and of the Independence of the United States the two hundred and NINTH.

Ann Johnson

By Ann Johnson
Chief, Branch of ANCSA Adjudication

Patent Number 50-85-0281

85-24

RECORDED ~~FILED~~ 11.00
FT. G; BRO # REC. DIST.
DATE 5-31 19 85
TIME 1:33 P M
REQUESTED BY TOZITNA LIMITED
ADDRESS P.O. BOX 129
TANANA ALASKA
99777 # 374148

BOOK 8 PAGE 702
Ft. Gibbon Recording District

QUIT CLAIM DEED

THE GRANTOR, Alaska Rural Investments, Inc. an Alaska Corporation, 1577 "C" Street, Suite 101, Anchorage, AK 99501, for and in consideration of the sum of $10.00 and for other good and valuable consideration, conveys and quit claims to the Howard Rock Foundation, an Alaska Corporation, 1577 "C" Street, Suite 304, Anchorage, AK 99501, the following described real property and improvements situated in the State of Alaska, including any interest therein which grantor may hereafter acquire:

Lots Three (3), Four (4), Five (5), Six (6), Seven (7), Eight (8), Nine (9), and Ten (10), Block Eleven (11), TOWNSITE OF TANANA, U.S. Survey 2754 A and B, according to the official plat thereof filed in the General Land Office, situated in the Fort Gibson Recording District, Fourth Judicial District, State of Alaska.

IN WITNESS WHEREOF, said corporation has caused this instrument to be executed by its proper officers and its corporate seal to be hereunto affixed.

Dated this 20th, day of November, 1992.

Perry Eaton, Acting President/CEO

CORPORATE SEAL

Stuart Ketzler, Secretary/Treasurer

STATE OF ALASKA)
) ss.
THIRD JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this 20TH day of NOVEMBER, 1992, before me the undersigned, a Notary Public in and for the State of Alaska, personally appeared Perry Eaton and Stuart Ketzler, to me known to be the Acting President/CEO and Secretary/Treasurer respectively of Alaska Rural Investments, Inc., the corporation that executed the foregoing instrument, and they acknowledged to me that they had, in their official capacity aforesaid, executed the foregoing instrument as the free and voluntary act and deed of the said corporation for the uses and purposes therein stated, and that the seal affixed is the corporate seal of said corporation.

WITNESSED my hand and official seal the day and year in this certificate first above written.

Notary Public in and for Alaska
My Commission Expires: 5/6/96

92-66

RECORDED - FILED
FTGIBBON REC. DIST.
DATE DEC 11, 1992
TIME 11:45 AM
Requested by
Address 319198

After recording return to:
Community Enterprise Development
Corporation of Alaska
1577 C Street Suite 304
Anchorage, Alaska 99501
Attn: Carrie Tadema

CASE SERIAL NUMBER: AKFF 014944
CASE STATUS: INACTIVE
CASE TYPE: 231131 WDL-ALASKA VILLAGE
DISTRICT: KOBUK DISTRICT OFFICE
BOROUGH:
TERM OF LEASE QTY: 0

CUSTOMER

CUSTID: 000018829 INT REL: PCT INT: .00000
CUST NAME: TANANA
CUST ADDRESS: GENERAL DELIVERY
TANANA AK 99777

CUSTID: 000024269 INT REL: PCT INT: .00000
CUST NAME: TOZITNA LIMITED
CUST ADDRESS: PO BOX 202
TANANA AK 99777

ACTION DATA

NUM	DATE	P	CODE/DESC	RMKS	OFC	EMPL
DOC TYPE	NUM	REC NO	VOL	ID BOOK	PAGE	MONEY AMT ACCT ADV
001	18-DEC-1971		806 LAND SEGREGATED		AJA	SM
002	18-DEC-1971		264 LEGISLATION ENACTED		AJA	SM
PL	00092203					
003	18-DEC-1971		830 WITHDRAWN		AJA	SM
PL	00092203					
004	27-AUG-1992		996 CONVERTED TO PRIME			
006	31-AUG-1992	A	980 SPECIAL INSTR APPV-SRVY	U010816		
007	31-AUG-1992		980 SPECIAL INSTR APPV-SRVY	U010816		
008	02-JUN-1994	A	159 SURVEY APPROVED	U010816		
009	02-JUN-1994		159 SURVEY APPROVED	U010816		
010	14-JUL-1994		409 SURVEY NOTED TO MTP		973C	SAH
011	28-JUL-1994		409 SURVEY NOTED TO MTP		973C	SAH
012	05-OCT-1994		409 SURVEY NOTED TO MTP		973C	BJP

GENERAL REMARKS

No Data Found

FINANCIAL DATA

ACTN CODE	DESCRIPTION	MONEY TOTAL
No Data Found		

CASE SERIAL NUMBER: AKFF 014944

PARCEL OCCUPANCY DATA

PARCEL CODE	OCC DATE	LAST ACTN CODE	LAST ACTN DATE	LAST ACTN DESC	2nd DATE	TYPE
No Data Found						

FRC DATA

FRC CODE: SEA ACCESSION NUM: BOX NUM: BOX QTY:

GEOGRAPHIC NAMES

TANANA

LAND DESCRIPTION

NUM	P	CASLND/ STATUS/DOCID	MER	TWP	RNG	SEC	ALIQUOT	SURVEY TYPE/NUM	ACRES
00012		WNPL00092203	13	02N	20W	999			.000
ANCSA: 0									
00003		WNPL00092203	13	02N	21W	999			.000
ANCSA: 0									
00019		WNPL00092203	13	02N	22W	999			.000
ANCSA: 0									
00013		WNPL00092203	13	02N	23W	999			.000
ANCSA: 0									
00021		WNPL00092203	13	02N	24W	999			.000
ANCSA: 0									
00016		WNPL00092203	13	03N	20W	999			.000
ANCSA: 0									
00010		WNPL00092203	13	03N	21W	999			.000
ANCSA: 0									
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ANCSA: 0									
00014		WNPL00092203	13	03N	23W	999			.000
ANCSA: 0									
00022		WNPL00092203	13	03N	24W	999			.000
ANCSA: 0									
00001		WNPL00092203	13	04N	20W	999			.000
00007		WNPL00092203	13	04N	21W	999			.000
ANCSA: 0									
00017		WNPL00092203	13	04N	22W	999			.000
ANCSA: 0									
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ANCSA: 0									
00005		WNPL00092203	13	05N	21W	999			.000
ANCSA: 0									
00004		WNPL00092203	13	05N	22W	999			.000

CASE SERIAL NUMBER: AKFF 014944

LAND DESCRIPTION

NUM	P	CASLND/ STATUS/DOCID	MER	TWP	RNG	SEC	ALIQUOT	SURVEY TYPE/NUM	ACRES
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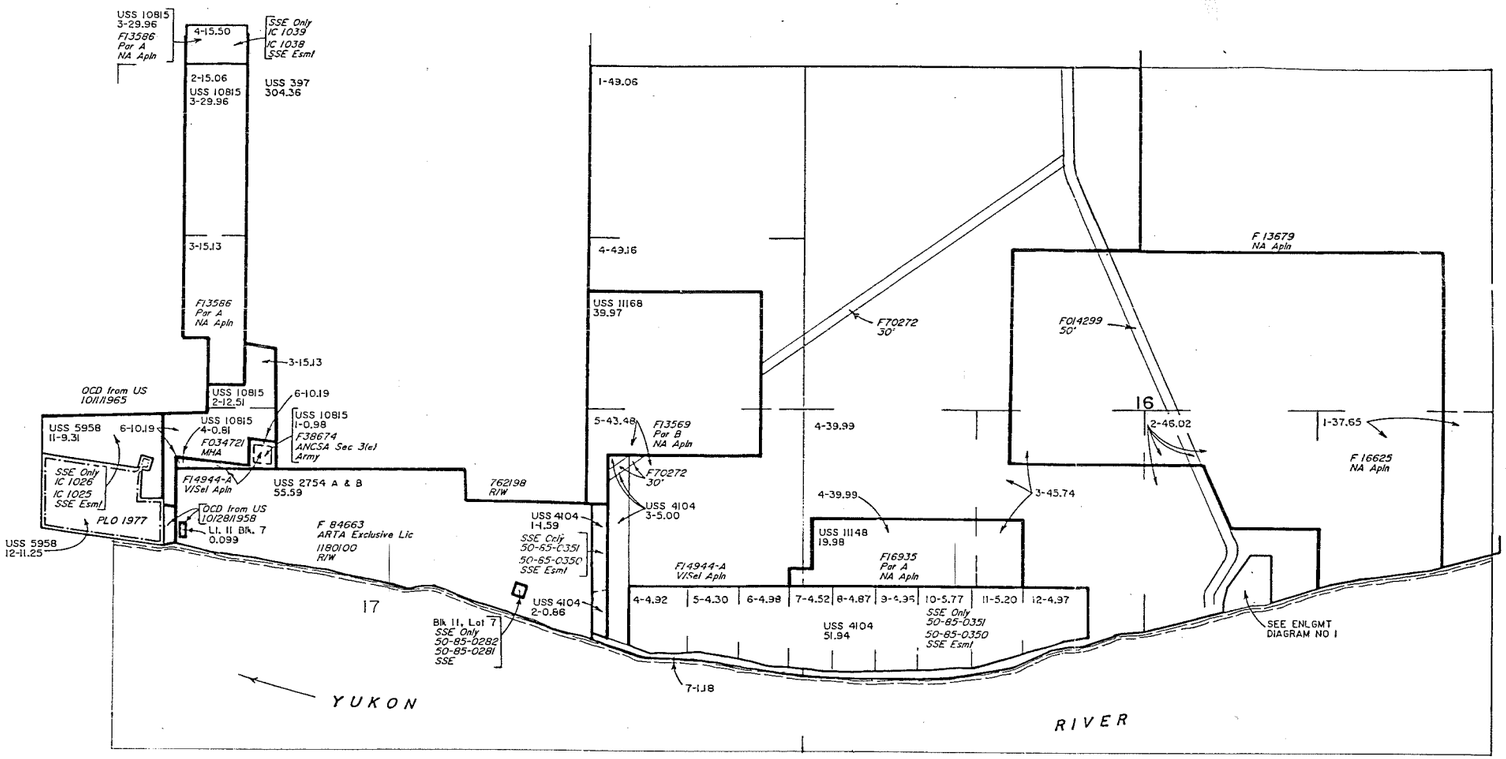
00011		WNPL00092203	13	05N	23W	999			.000
ANCSA: 0									
00006		WNPL00092203	13	06N	20W	999			.000
ANCSA: 0									
00009		WNPL00092203	13	06N	21W	999			.000
ANCSA: 0									
00020		WNPL00092203	13	06N	22W	999			.000
ANCSA: 0									
00015		WNPL00092203	13	06N	23W	999			.000
ANCSA: 0									

TOTAL CASE ACRES BALANCE: .0000

END OF CASE FILE: AKFF 014944

SURVEYED TOWNSHIP 4 NORTH, RANGE 22 WEST OF THE FAIRBANKS MERIDIAN, ALASKA 2-4-1943



SCALE
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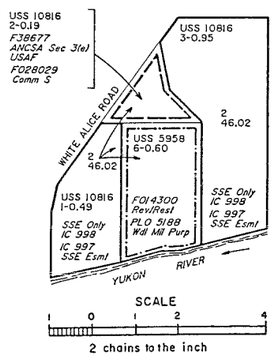
10 chains to the inch

ENLARGEMENT DIAGRAM NO 1



SCALE
1 0 1 2 4
2 chains to the inch

WARNING STATEMENT

This plat is the Bureau's Record of Title, and should be used only as a graphic display of the township survey data. Records hereon do not reflect title changes which may have been effected by lateral movements of rivers or other bodies of water. Refer to the cadastral surveys for official survey information

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

SUPPL SECS 16 & 17

NO 1

INDEX TO SEGREGATED TRACTS

RESURVEY	ORIGINAL SURVEY			
TRACT NO	T	R	SEC	SUBDIVISON

FOR ORDERS EFFECTING DISPOSAL OR USE OF UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION, MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES, REFER TO INDEX OF MISCELLANEOUS DOCUMENTS.

PL 92-203 12/18/1971 Wdl F14944

PLO 5184 3/16/1972 Wdl Cl entire Tp

F89444 SS Amdl PL 96-487 12/2/1980 Sec 906(e)
Top Filed

NO 1

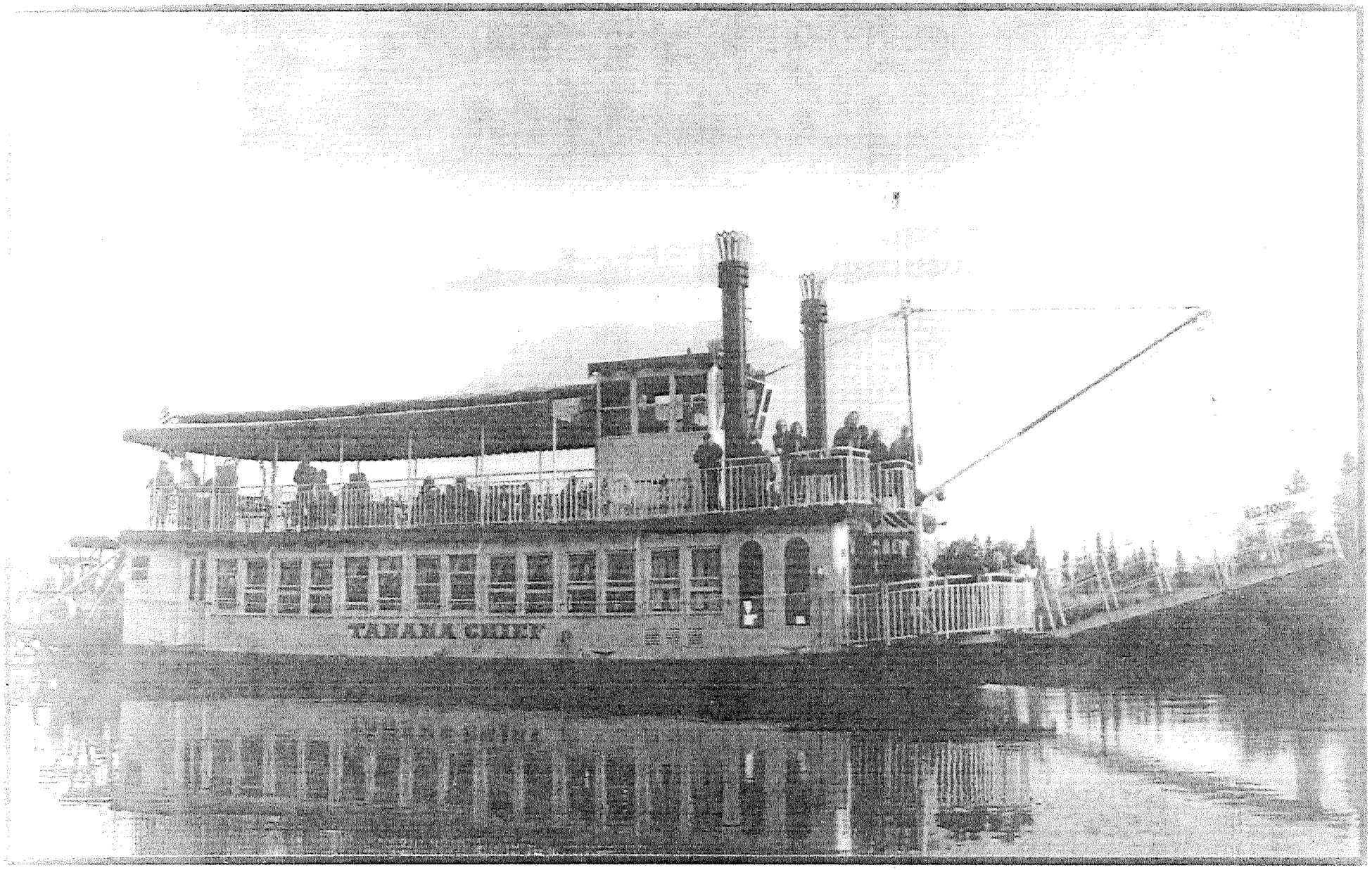
CURRENT TO	TF7
10/11/1994 JC	

Fbx Mer
T 4 N
R 22 W

APPENDIX G

HISTORICAL RECORDS

- Photographs and Documents Provided by Ms. Kathleen Peters-Zuray, IGAP Coordinator
- Compilation of Environmental Information for Sites of Concern In and Around Tanana, Alaska, 2002, Ridolfi Engineers, Inc.
- Site Characterization Report, 2009, Amundsen Environmental Services; Figures 3, 7 & 8
- Environmental Management Plan for the Tanana Airport Facility and Community, 2009, SLR International Corp; Report, Appendices A & B



June

Sgnaal Nogha'

Koyukon Athabascan)

King Salmon Eye

Sternwheeler "Tanana Chief" first entered the waters of the Tanana and Chena River in July 1898. Operated between Chena City and Ft. Gibbons until early 1940's. Her namesake has returned to the Chena River in 2000 once again carrying passengers.

Photo by Bob Benjamin

TANK FARMS

1972

now behind

JAN 72


UNION OIL
U.O.C.X. 10305

The other WAMCATS trunk line, pushed through in remarkable time by Mitchell's crew, connected Fort Gibbon at Tanana with Fort Egbert via Kechumstuk. This line followed the flow of the Goodpaster River to the Salcha and down the Tanana to the Yukon, serving Fairbanks, Chena, and Nenana.

Between Eagle and Tanana Crossing (Tanacross), line stations were built at five points: Champion Creek, North Fork, Gold Creek, Kechumstuk, and Dennison Fork. Between Kechumstuk and Fort Gibbon, ten line stations were located at Cosna, Baker, Tolovana, Nenana, Chena, Fairbanks, Salcha, Goodpaster, Central, and Summit. The men who maintained these lonely line and repair cabins had to work under miserable conditions and often spoke derisively of "Uncle Sam's North Pole telegraph line." The troops patrolled the line by mule, horse, on foot, and even by bicycle during the summer, and by dog sled during the winter.(30)

When finally completed, the WAMCATS line--including a submarine cable--totaled 3,728 miles. As with mail delivery, telegraphic communication was tremendously expensive. The estimated cost of the land line was $617 per mile and for the submarine cable $481 for a total of $1,144,907. The system, however, served both military and civilian traffic, with the latter in a proportion of four to one. Receipts averaged between $170,000 and $190,000 per year.(31)

Lieutenant Mitchell announced grandly that "Alaska was now open to civilization," and that the portal which "the God of everlasting snow and frost," had sealed tight was now open. Some credence to this was dramatically demonstrated in December 1905 when arctic explorer Roald Amundsen telegraphed his successful negotiation of the Northwest Passage to the world from Eagle.(32)

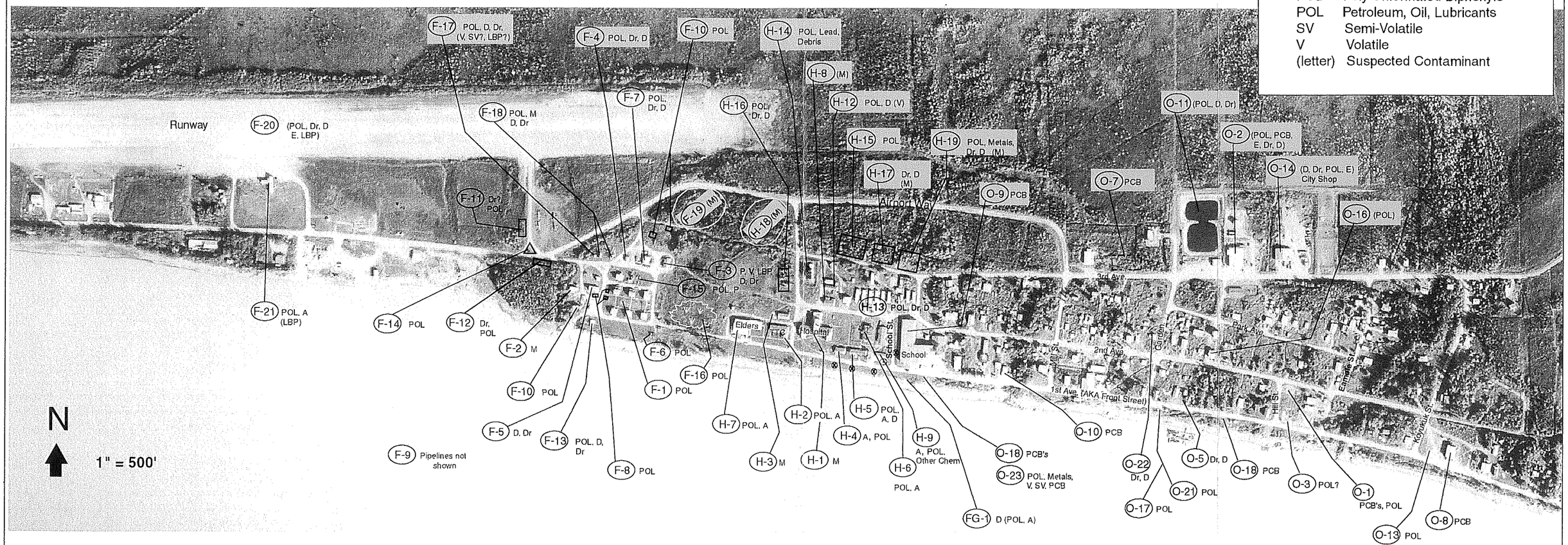
With the advent of the telegraph and the Eagle-Valdez road, the interior was brought in closer contact with the rest of Alaska and the outside world. Development schemes abounded during the first decade of the 20th century, including a proposed extension of the Copper River and Northwestern Railroad from Cordova to Eagle.(33) This project never materialized, but the improved communication and transportation, coupled with the opening up of the great Tanana Valley by the Fairbanks gold rush, insured that the early days of the upper Yukon and Fortymile mining frontier would give way to a new, more settled, and more stable era of development.

Again, during the gold rush the Army came into prominence in the fields of exploration, geographic mapping, and scientific investigation. The services, however, competed for a place in congressional appropriations. The Navy and the RMS each claimed that it could best exercise authority over the Yukon and its tributaries, arguing correctly that the vast interior was a riverine empire between May and mid-October of each year.

Captain Ray in his 1897 report to the War Department urged the construction of an overland route from Cook Inlet or Prince William Sound to the mouth of the Tanana, thus avoiding dependence "on a British railroad to the Yukon basin."(35) This recommendation won Congressional favor, representing a shift in interest in Alaska since the great gold strikes of 1896. Three separate expeditions were organized to explore the great Alaskan interior. One was to map the route across country from the Yukon to the Tanana rivers, utilizing the reindeer brought over the year before for the abortive relief expedition. Captain William R. Abercrombie, 2d Infantry, was ordered to investigate the Copper River Valley north from Valdez; while Captain Edwin F. Glenn, 25th Infantry, was to explore north from Prince William Sound to the Susitna and Copper rivers, before moving

LEGEND

⊗	Inactive Well
⊙	Active Well
A	ACM
D	Debris
Dr	Drums
E	Electrical Equipment
M	Multiple Contaminants
LBP	Lead-Based Paint
PCB	Poly Chlorinated Biphenyls
POL	Petroleum, Oil, Lubricants
SV	Semi-Volatile
V	Volatile
(letter)	Suspected Contaminant



RIDOLFI ENGINEERS Inc.

Tribal Village of Tanana
Tanana Tribal Council

Figure 2

Village Sites of Concern

Compilation of Environmental Information for Sites of Concern In and Around Tanana, Alaska

Site No.	Name	Involved Agency or Other Party(ies)	Site Description	General Site History	Known or Potential Contaminants of Concern	Site Hazards	Impacted Media / Resources	Data / References
FAA Facility Sites								
Living Quarters Area								
	Living Quarters Area	FAA	The FAA Living Quarters are located about 0.25 miles west of the Village of Tanana, and south of the current runway. The FAA Facility presently includes 40 of the original 1650 acres and about 18 structures.	The FAA involvement in Tanana began in 1941, when Fort Gibbon was turned over to the then Civil Aeronautics Administration. The Living Quarters has 18 buildings, of which FAA currently owns 10, the State owns three, and the USDOI, BLM owns 2. USTs, and ASTs were remediated in 1997; petroleum contaminated soils have been stockpiled onsite for further action. A recent Release Investigation determined a southwesterly trending ground water plume with DRO and Benzene beneath a majority of the living quarters area. The report concluded that it was likely that hydrocarbon contamination from this area was reaching the Yukon River.	Known: DRO, Benzene, BTEX, LBP, ACM, PAH	Wide spread debris, electrical and generator equipment, drums, barrels and tanks	Soils, ground water, surface water, vegetation stressed and "spotty"	8,9,10
	Ground water	FAA	As a part of (10), 22 groundwater probes were installed in the Living Quarters area; Six probes encountered free product; DRO, Benzene and Xylene were encountered in all probes with valid results; exceedences of ADEC standards for Benzene and DRO were clustered around the area between Building 205 (shop area) and the State Garage; and the "pipe tee-zone" near the old tank farm (near the current soil piles). The plume extends to about 25 to 30 feet bgs, covers most of the site & flows generally southwest towards the River; the report concludes that a pathway to the River is likely.		Known: DRO, BTEX	No visible seeps	ground water, surface water	10
F-1	Living Quarters Bldgs 100 - 105 (FAA site Nos: 15-B-4, 15-B-5, 15-B-6, 15-B-017, 15-018, 15-B-8)	FAA	Six-Single family residences located on the southeast corner of the Compound.	These home-heating fuel tanks were originally installed in 1961, and were decommissioned in 1997. *Bldg 100* - VS above ADEC for DRO; 5 CY soils stockpiled NE of 100 / *Bldg 101* - VS above ADEC for DRO, west floor;15 CY soils stockpiled NE of 101; Lead-based paint sample taken, results not reported / *Bldg 102* - VS above ADEC for DRO; ~55 CY soils stockpiled S of 102/ *Bldg 103* - ~20 CY soils stockpiled W of 103 VS below ADEC / *Bldg 104* - VS above ADEC for DRO; ~80 CY soils stockpiled S of 104/ *Bldg 105* - VS above ADEC for DRO; 25 CY soils stockpiled SW of 105. Some sample QA issues noted. (10) indicated DRO, BTEX>ADEC for Bldg 102 to 25 ft bgs,	Known: DRO, BTEX	Widespread debris, electrical and other equipment, barrels and tanks, potential ACM, LBP	ground water, soils, surface water, vegetation	8,9, 10

Compilation of Environmental Information for Sites of Concern In and Around Tanana, Alaska

Site No.	Name	Involved Agency or Other Party(ies)	Site Description	General Site History	Known or Potential Contaminants of Concern	Site Hazards	Impacted Media / Resources	Data / References
F-2	Engine Generator Building (600) (FAA Site Nos 15-B-09 and 15-B-10)	FAA	This is a small bright red building located at the west end of the compound. The door is open; equipment remains in place, oil present on floor, slight diesel odor; paint peeling, and soil staining noted on south and west sides of building. Mapping in (9) indicates drum storage on northwest side of building, and stressed vegetation on west side of building.	The tanks at this structure were originally installed in 1961. The two AST's were decommissioned in 1997; about 20 CY of contaminated soil was stockpiled north of Building 300 for future remediation. Additional soil staining noted to be addressed under actions related to fuel tank farm and distribution pipeline. (9) indicated drum storage area north of building sampled for lead; low levels of lead indicated in soil; other soil analyses may be warranted to determine impacts of drum content. Spill area west of 600 indicated DRO & BTEX to 7 Ft bgs; (10) indicated DRO and BTEX >ADEC to 25 ft bgs.	DRO, BTEX (highest DRO concentrations id'ed in LQ area)	Widespread debris, electrical and other equipment, barrels and tanks, potential ACM, LBP	ground water, surface water, soils, spotted vegetation present	8,9,10
F-3	Shop Building 205 (FAA Site 15-B-1 & 15-B-2)	FAA	The Shop Building is located at the eastern end of the Living Quarters area, it is a metal building surrounded by debris, equipment, tanks, and drums. Strong petroleum smell near northwest corner of site. Stressed vegetation noted on west side of structure. There is a small old log cabin located north of Building 205 with associated debris.	The tanks were originally installed in 1961. Two UST's were decommissioned in 1997; one near building (15-B-2) had 40 CY contaminated materials stockpiled next to Building 205 (8); not all contaminated soils removed due to building foundation; another tank by gas pump(15-B-1) had approximately 60 CY removed and stockpiled between Bldgs 100 and 105; not all soil removed due to power pole near east side of excavation. ~20 CY contaminated soils were later removed from this site and relocated to"long-term stockpile north of Building 204(9). Data QA Problems noted for soil samples. Red paint chips sampled from this structure indicated 233,000 ppm lead; chips were collected and removed from soil in 1997. Work in (10) indicated both DRO & BTEX cleanup standards exceeded to depths of 20 feet bgs. August field effort indicated several drums, some marked as "transformer oil".	Known: Cleanup verification sampling indicated low DRO, BTEX in UST pit 1(gas pump); pit 2 had DRO levels > ADEC clean-up; backfilled with clean fill; no known sampling of stockpiles; later sampling indicated DRO & BTEX in excess of ADEC cleanup standards; VOC's also detected. Potential: PCB's ?	Debris, Drums, Tanks, stained soils, LBP	ground water, soils, adjacent wetlands resources; active well noted within 4,000 feet	8,9, 10
F-4	Cold Storage Building (204) (FAA Site No.15-B-3)	FAA	The Cold Storage Building is located north of the Living Quarters area, and west of the State of Alaska Garage.	Text missing from resources - One page indicated DRO; (10) indicated fuel odors during drilling, but ND for DRO & BTEX	Known: DRO; Potential: BTEX? (Conflicting/missing data)	tanks, drums, debris	groundwater, surface water, soils, vegetation	8,9,10
F-5	Community Service Facility (COMSERFAC) (300) (FAA Site No 15-B-7)	FAA	The COMSERFAC is located in the center of the site between the Engine generator building, and the living quarters	This tank was originally installed inside the building in 1961 and was decommissioned in 1997; about 20 CY of contaminated soil was stockpiled north of Building 300 for future remediation.	Known: verification sampling indicated DRO below ADEC clean-up; backfilled with clean fill; no known sampling of stockpile	tanks, drums, debris	groundwater, surface water, soils, vegetation	8,9

Compilation of Environmental Information for Sites of Concern In and Around Tanana, Alaska

Site No.	Name	Involved Agency or Other Party(ies)	Site Description	General Site History	Known or Potential Contaminants of Concern	Site Hazards	Impacted Media / Resources	Data / References
F-6	Water treatment and pumphouse building site(602) (FAA Site No 15-B-12)	FAA	This building was located south and east of the living quarters buildings along the river bank. The building has been demolished, and the AST decommissioned in 1997	This tank was originally installed in 1961 and was decommissioned in 1997; no verification sampling; about 5 CY soils removed and stockpiled at an undisclosed location; to be addressed with pipeline.	Known: DRO, BTEX,no known sampling of stockpile	No visible debris remaining	ground water, surface water, soils, vegetation	8,9
F-7	State Garage	ADEC/ ADOTPF	The State Garage is located due west of the Shop Building 205. This is a metal structure, with plentiful debris, drums, and stained soils. There is no other mention of this site in available literature and no site history or related sampling data. Based upon data from adjacent properties with similar uses additional characterization may be warranted.	The Fuel Pipeline was not removed from this site during 1997 FAA Decommissioning project due to access issues, and amount of metal debris onsite; additional sampling in (10) indicated that the soil was contaminated with DRO in excess of ADEC cleanup standards to 25 feet bgs; Some of the highest DRO concentrations found were located between this site and the 205 bldg.	Known: DRO, BTEX, POL	debris, potential drums, ACM	ground water, surface water, soils, vegetation	8,9, 10
F-8	AST Tank Farm (FAA Site Nos, 15-B-014, 15-B-013, 15-B-016)	FAA	The Tank Farm consisted of three diesel ASTs: 15-B-014:15,000 gallon capacity; 15-B-015: 20,000 gallon capacity; 15-B-014:15,000 gallon capacity. These three tanks were originally located so that the westernmost tank was about 81 feet south of the generator building 600.	These tanks were decommissioned in 1997. One sample was obtained from the bottom of the center of each excavation; the sample from the center tank had DRO concentrations in excess of ADEC cleanup standards; no soils were removed. (10) indicated slight heavy fuel odors during drilling to 25 ft, but soil DRO concentrations >ADEC cleanup only to 10 feet.	Known:DRO; Potential: BTEX?	No visible stains remaining, although vegetation appears stressed	ground water, surface water, soils, vegetation	8,9, 10
F-9	Fuel Pipelines (FAA Site Nos: SQ, east pipeline, North pipeline and North 1&2 Pipeline)	FAA	Approximately 1,535 LF of 1- and 2-inch diameter fuel pipeline was used to connect the UST's and ASTs in the Living Quarters with the Tank Farm	This pipe line was decommissioned in 1997 with many of the USTs and ASTs. Approximately 600 CY of contaminated soil was reportedly excavated and stockpiled for future remediation; however, the location of the stockpiles was not provided. Sample QA Problems noted. (10) indicates DRO>ADEC cleanup to depths of 10 feet bgs for pipeline S. of bldgs 103, 104 & 105 and north of bldg 100 to depth of 25 feet bgs; DRO >ADEC cleanup for pipelines north of state garage and Shop Building 205 to depths of 25 ft bgs; T-area east of tank farm exceeded ADEC cleanup concentrations for both DRO and BTEX to 30 ft bgs.	Known: DRO, BTEX	Not observed	ground water, soils, vegetation	8,9, 10

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Site No.	Name	Involved Agency or Other Party(ies)	Site Description	General Site History	Known or Potential Contaminants of Concern	Site Hazards	Impacted Media / Resources	Data / References
F-10	Soil Stockpiles	FAA	In 1997, contaminated soil from AST & UST Decommission operations was consolidated into several covered stockpiles near the center of the Living Quarters buildings. There are three stockpiles with several hundred CY of petroleum contaminated soils placed between them. This soil was to be remediated by landfarming in 1998; to date, this has not been accomplished. Higher concentrations of DRO and Benzene are located in proximity of these piles (10); it is not known whether this is due to prior landuses before stockpiling, or from the stockpiles themselves. There is a sheen present in puddles along toe of piles; stressed (spotty) vegetation is prevalent in the areas around the piles.		Known: DRO, BTEX	physical access hazard	groundwater, surface water, soils, vegetation	8, 9, 10
F-11	Drum Storage Site #1	FAA	Site mapping in the UST Decommissioning Assessment (8) indicates the Drum Storage #1 site located north of Airport Way on the west side of the access road to the runway. There is no other mention in FAA literature concerning this site, and no known site history or related sampling data. Characterization may be warranted based on prior site use for drum storage.		Potential: DRO? BTEX? POL?	drums, debris remain at this site	groundwater, surface water, soils, vegetation	8
F-12	Drum Storage Site #2	FAA	Site mapping in the UST Decommissioning Assessment (8) indicates the Drum Storage #2 site located south of Airport Way, just south of the intersection of Airport Way and Tanana Road. There is no other mention in FAA literature concerning this site, and no known site history or related sampling data. Characterization may be warranted based on prior site use for drum storage. This site is shown draining to surface water.		Potential: DRO? BTEX? POL?	drums, debris remain at this site	groundwater, surface water, soils, vegetation	8
F-13	Recreation/Storage Building 030 (FAA Site No 15-B-11)	FAA	This building was located due south of the living quarters buildings. Subsequent to 1997 Decommissioning Assessment, this building has been demolished, and the UST decommissioned however, drums and debris remain present at this site	The UST was decommissioned in 1997; verification sampling indicated DRO and BTEX below ADEC cleanup levels; clean backfill; ~45 CY of contaminated soil and 15 CY of clean soil were removed and stockpiled west of building 030; this soil is no longer present at this location. (10) indicated soil contamination with DRO>ADEC cleanup to depths of 25 ft bgs.	Known: DRO, BTEX	drums, debris remain at this site	ground water, surface water, vegetation	8,9, 10
F-14	State of Alaska (SOA) Vehicle Fueling Station	FAA/ ADEC/ ADOTPF	The State of Alaska Vehicle fueling station was located north of Airport Way in a triangle-shaped island at the juncture of the runway access road with Airport Way and the road to Tanana.	It is not known how long this facility has been there; the gasoline AST was installed in 1943 and decommissioned by the FAA in 1997; however verification sampling indicated DRO above ADEC cleanup levels; clean backfill; 8 CY were taken to soil stockpile north east of Building 100.	Known: DRO, BTEX	Not observed	ground water, soils, stressed vegetation	8,9
F-15	Greenhouse (FAA Site No 15-B-13)	FAA	This building was located due north of the living quarters. Prior to being the greenhouse site; another structure (Building 107) was located on the same site. It is assumed that the greenhouse was used for horticulture; no information concerning former site use was available.	Both the greenhouse, and the preceeding Building 107 have been demolished, and the UST decommissioned in 1997; however verification sampling indicated DRO in excess ADEC cleanup levels; clean backfill; ~35 CY of contaminated soil was stockpiled east of Greenhouse.(10) indicates DRO >ADEC cleanup to depths of 25 ft bgs at this location.	Known:DRO; Potential: fertilizers? Pesticides?	Not observed	ground water, soils, vegetation	8,9, 10

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F-16	Southeast Wetlands	FAA/HIS	Site mapping in the UST Decommissioning Assessment (8) indicates a small wetlands located at the southeast end of the Living Quarters area, with a portion of the surface water flow directed to this location. There is no other mention in FAA or IHS literature concerning this site, and no known site history or related sampling data. Characterization may be warranted based on similar site usage.		Potential DRO? RRO? BTEX? POL?	Potential debris, drums, ACM, or electrical equipment	ground water, surface water, wetlands vegetation	8
F-17	Paint House	ADEC/ ADOTPF	The paint house is located due west of the BLM Storage building 202. This is a smaller composite structure, with plentiful debris, drums, and stained soils. There is no other mention of this site in available literature and no site history or related sampling data. Based upon data from adjacent properties with similar uses additional characterization may be warranted.		Potential: VOC's? SVOC's? POL? LBP?	debris, potential drums, ACM	ground water, surface water, soils, vegetation	8,9
F-18	BLM Building (s) (FAA Site Nos 15-B-006 & Quarters, Building 207t)	FAA/ DOI-BLM	The BLM building 106 is located north of the Living Quarters, and west of the former greenhouse site. Building 207 is located due west and across the drive from 106.	The original UST for 106 was decommissioned in 1997; about 60 CY of contaminated soil was stockpiled south of the building. Confirmation sampling indicated DRO in excess of ADEC cleanup standards, and BTEX at 14 feet bgs. (10) also indicated DRO concentrations> ADEC in SW corner of this building to depths of 25 feet.	Known: DRO, BTEX	Potential debris, ACM, LBP	Groundwater, surface water, soils, vegetation	8,9, 10
F-19	Former Landfill Site	Shown on FAA mapping; Geophysical done as part of IHS study	There is a former landfill site indicated at the northeast corner of the FAA Living Quarters area. The history of this facilty is not known. There is no other mention in FAA literature concerning this dump; In (14) geophysical work was performed on a dump due west of the IHS Property; strong anomalies indicated the likely presence of a volume of metallic debris at this site; however as it was not part of the IHS study; no further characterization work was performed.		Potential SVOC, VOC, DRO, RRO, GRO, BTEX, Oils, Hazardous constituents	snowmobiles, drums, boats, misc debris, potential ACM	Groundwater, surface water, soils, vegetation	8, 14, (26)
Airport Area								
F-20	Airport Runway	FAA/ADOTPF	Site mapping in the UST Decommissioning Assessment (8) indicates the airport runway site located at approximately 1.0 mile north and west of the living quarters area. There is no other mention in FAA literature concerning this site, and no available site history or related sampling data. Characterization may be warranted based on similar site usage as well as current uses related to fuel unloading.		Potential DRO? GRO? BTEX? POL? Pesticides?	Potential LBP, debris, ACM, Electrical equipment	groundwater, surface water, soils, vegetation	8,31
F-21	FAA Flight Service Station (FSS Building 400) (FAA Site 15-C-1)	FAA	The Flight Service Station is located at the end of the runway which is about 1/2 mile west of Living Quarters area.	It is not known how long this facility has been there; the UST was constructed in 1961 and decommissioned in 1997; however verification sampling indicated DRO and BTEX above ADEC cleanup levels along the south wall; ~ 60 CY were removed and stockpiled east of the structure for future remediation.	Known: DRO, BTEX	Potential debris, drums, ACM, electrical equipment, and or lead based paint	groundwater, soils, vegetation	8,9, 10
F-22	Airport Landfill Site (s)	Shown on FAA mapping of airport facilities	History of this site is not known. Site mapping of the airport included in the 1994 Geotechnical Report for the Airport shows a landfill site located at the corner of R24W Sections 11, 12, 13 and 14, about a mile west of the runway, possibly coincident with the VORTAC Facility. There is no other mention in FAA literature concerning this dump. Mapping on an aerial photograph included in (32) indicates this landfill, and the location of a "probable former dump." Characterization may be warranted based upon similar site usage.		Potential: SVOC? VOC? DRO? RRO? GRO? BTEX? Pesticides? Oils? Hazardous constituents?	Potential drums, debris, lubricants, de-icing materials	Groundwater, surface water, soils, vegetation	(26) 31, 32

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Site No.	Name	Involved Agency or Other Party(ies)	Site Description	General Site History	Known or Potential Contaminants of Concern	Site Hazards	Impacted Media / Resources	Data / References
F-23	Very-high Frequency Omnidirectional-Range Tactical Air Navigation (VORTAC) (FAA Site 15-A-1)	FAA	The VORTAC is located approximately one mile west of the end of the runway. The facility includes a building, and VORTAC equipment, and new fuel tank.	The original UST was decommissioned in 1997; about 2 CY of contaminated soil was stockpiled south of the building and then transported to the soil stockpile between Buildings 100 and 105. This facility remains active, and is the site proposed for "landfarming" contaminated soils.	Known: verification sampling indicated low levels of DRO, BTEX in UST pit (below clean-up levels); no known sampling of stockpile location;	Potential LBP, debris, ACM, Electrical equipment	ground water, soils	8,9, 10
F-24	DF Facility	FAA	Site mapping in the UST Decommissioning Assessment (8) indicates the DF Facility site located south of the Runway, approximately2.0 miles west of the living quarters area. There is no other mention in FAA literature concerning this site, and no known site history or related sampling data. Characterization may be warranted based on similar site usage.		Potential: DRO?BTEX? POL?LBP?	Potential LBP, debris, ACM, Electrical equipment	groundwater, surface water, soils, vegetation	8
F-25	Non-Directional Beacon Facility (NDB) Facility	FAA	Site mapping in the UST Decommissioning Assessment (8) indicates the DF Facility site located south of the Runway, approximately 1.0 mile west of the living quarters area. There is no other mention in FAA literature concerning this site, and no known site history or related sampling data. Characterization may be warranted based on similar site usage.		Potential: DRO?BTEX? POL?LBP?	Potential LBP, debris, ACM, Electrical equipment	groundwater, surface water, soils, vegetation	8
F-26	VASI Facility	FAA	Site mapping in the UST Decommissioning Assessment (8) indicates the VASI Facility site located at the west end of the runway, approximately 1.0 mile north and west of the living quarters area. There is no other mention in FAA literature concerning this site, and no known site history or related sampling data. Characterization may be warranted.		Potential: DRO? BTEX? POL?	Potential LBP, debris, ACM, Electrical equipment	groundwater, surface water, soils, vegetation	8
Fort Gibbon Sites								
FG-1	Old Fort Gibbon (FUDS Site No. F10AK0105)	U.S.Army (FUDS) / IHS/ (DoD NAETS includes FAA and AK Dept of Transportation and Public Facilities)	An original 22 acre site located along the bank of the Yukon River; Current debris includes large steel tank with manufacturers plates from 1940, rifles, and other assorted debris, concrete foundations within River Bank	Fort Gibbon was originally constructed by the Army in 1899 and served as a telegraph station from 1901 to 1925, and later as a U.S. Army Signal Corps Station through 1941. The Fort was transferred to the Civil Aeronautics Administration (Pre-FAA) in 1941. The current surface facilities for IHS are located on top of the old fort.	Potential: POL? Solvents? Asbestos?	Debris; old fuel lines, tanks with/without product	Soils, ground water, potentially surface water in the river itself	20, 23
FG-2	WAM CATS Telegraph Wire (FUDS Site No. F10AK0105, TCC Site N0. TAL FY99-008)	U.S. Army/ FUDS	Telegraph wire surrounding Tanana on North bank of River, 1 mi outside of town, both east & west	Installed as part of WAMCATS communication system prior to World War II. Portions of the wire remain, some has fallen. Reports of people, vehicles getting caught in downed wire	NA	physical hazard, debris	Humans & wildlife	20, 23
IHS Facility Sites (AKA Old Hospital Site/ Public Hospital Site/AANHS Hospital Site)								

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Site No.	Name	Involved Agency or Other Party(ies)	Site Description	General Site History	Known or Potential Contaminants of Concern	Site Hazards	Impacted Media / Resources	Data / References
H-1	Hospital (Bldg 301))	PHS, IHS	The Hospital is a large tee-shaped structure located in the middle of the 11 acre public health service site. The hospital is located between First and Second avenues, due east of the Tribal offices. It is a yellow , two story wooden structure that presently is boarded up to prevent public access. There is a platform at the rear of the structure that contains several labeled drums, and compressed gas cylinders. Friable asbestos has been identified within the structure, and flooring; LBP on the walls	St. James Hospital was constructed as part of the St. James Mission sometime between 1887 and 1900. The Hospital property was incorporated into the Fort Gibbon compound by the U.S. Army in 1899. In 1923, the Hospital was transferred to the BIA. The present hospital structure was constructed in 1949, and administration was transferred to the U.S. Public Health Service in the 1950's who operated a regional health facility. The hospital closed in 1982. In 1985, management of the site was turned over to the TCC.	Known: ACM, LBP,GRO, DRO, BTEX, TRPH	drums, gas cylinders, physical hazards to those who enter structure	Soils, groundwater,	12, 15, 29
H-2	Tribal Offices (Bldg 302)	PHS/IHS/TTC	The Tribal offices are located west of the Old Hospital Building and north of First Avenue in a one-story structure that was one part of the hospital complex. DRO in the vicinity of the tank has been identified; ACM has been identified in the flooring materials, the crawl space and boiler room for this facility.		Known: ACM, DRO, TRPH	drums	soils, groundwater	12, 14, 29
H-3	Generator Building (Bldg 303)	PHS/IHS	The Generator Building is located north of the Tribal Offices. Several tanks, and drums are located north of this building, with soil staining. Diesel spillage has been noted within the structure beneath the generator. (12) Transformers north of this facility may have PCB's. ACM has been identified within the cement asbestos board, and used as pipe insulation.		Known: ACM, PCB's, DRO, GRO, BTEX, PAH, lead	drums, debris, AST	ground water, surface water, soils	12, 29
H-4	Building 305 (clinic housing)	PHS/IHS/TTC	Building 305 is located west of the Clinic office and north of First Avenue in a one-story structure that was once part of the hospital complex. DRO in the vicinity of the tank has been identified; ACM has been identified on flooring, and on piping in the crawl space for this facility. Radon sampling in 1999 indicated a radon concentration just over the action level; re-testing was recommended.		Known: ACM, Radon, DRO	minor debris	ground water, soils	12, 15, 17, 30
H-5	Clinic Housing/Office (Building 311)	PHS/IHS/TTC	Building 311 is located due west of the water plant, and north of First Avenue in a one-story structure that was once part of the hospital complex. It presently serves as clinic offices. (14) Surface and subsurface samples near underground fuel lines near this structure had mixed DRO and GRO >ADEC cleanup standards to depths of 5 ft bgs. (29) ACM was identified in pipe insulation and on the heat exchanger.		Known: ACM, GRO, DRO, BTEX, TRPH	Potential woodstave sewer pipe	ground water, soils	12, 29, 30
H-6	Building 312 (residential)	PHS/IHS/TTC	Building 312 is located due west of the clinic and south of Second Avenue in a one-story structure that was once part of the hospital complex. (14) Surface and subsurface samples near this structure had mixed DRO >ADEC cleanup standards to depths of 5 ft bgs . (29) ACM was identified on the pipe insulation, the flooring and on the heat exchanger.		Known: ACM, GRO, DRO, BTEX, TRPH	drums, minor debris	ground water, soils	12, 14, 29
H-7	Elders Residence (Bldg 313)	PHS/IHS/TTC	The Elders Residence is located east of the Tribal Offices and north of First Avenue in a one-story structure that was once part of the hospital complex. DRO in the vicinity of the tank has been identified; ACM has been identified in flooring for this facility.		Known: DRO, ACM	NA	likely stable unless disturbed	12, 29
H-8	Maintenance Building (Bldg 314)	PHS/IHS	The Maintenance building is located north of the hospital, north of Second Avenue. The building serves as a vehicle storage and maintenance area and has five floor drains which may have allowed the release of diesel, gasoline, lubricants, solvents, or metals. (14) Floor drain samples indicated elevated concentrations of DRO,RRO, BTEX iron, lead and arsenic. (29) ACM was identified in asbestos cement board in this building.		Known: ACM, BTEX, GRO, DRO, TPRH, lubricants, solvents, metals: lead, iron, arsenic	debris, tanks, drums, floor drains!	ground water surface water, soils vegetation	12, 14, 29

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H-9	Water Plant (Building 315)	PHS/IHS/TTC/Too'gha, Inc	This building is located at the southeast corner of the IHS complex, across from the School, and north of First Avenue. The well is located south of the structure; the structure houses three - 20,000 gallon water tanks; water is chlorinated, but not fluoridated, nor softened to reduce calcium.	The building was part of the original hospital complex, however the well is fairly new. The old well was abandoned in 1960 due to contamination. (14) Surface and subsurface samples>ADEC cleanup standards for DRO to depths of 5 ft bgs. (29) ACM was identified in cement asbestos board in this building.	Known: ACM, trace amounts of DRO,GRO, Benzene; Potential: other water treatment chemicals?	woodstave pipe	ground water surface water, soils vegetation	14, 29, 30
H-10	Public Health Clinic (Building 316)	PHS/IHS/TTC	The Public Health Clinic is located on north of the Water Plant and across from the School, just south of Second Avenue. The clinic was once part of the Hospital Complex, but was initiated for a community Health Facility in 1985. In the 1960s, an onsite petroleum tank ruptured, spilling about 50,000 gallons of fuel and contaminating a nearby well. In addition, waste oil from various sources was stockpiled in a mobile tank behind this facility and used for dust abatement on the village roads. There is conflicting information concerning the potential for PCB's in this oil mixture. This practice was ceased in near 1980. (14) Surface and subsurface samples>ADEC cleanup standards for DRO to depths of 5 ft bgs. (29) ACM has been identified on the fire door to the boiler room for this facility.		Known: BTEX, GRO, DRO; Potential: PCBs?	ACM, drums, debris	groundwater soils, surface water, vegetation	14
H-11	Incinerator Building (Bldg 321)	PHS/IHS	The Incinerator is located east of the Garage, and north of Second Avenue in a large metal structure that was once part of the hospital complex. There are numerous drums, dog sleds, tanks, fittings containing ACM, two BIA boats, and other debris located behind this building. There is also concern related to potential constituents of the sludge in the incinerator. (14) Surface and subsurface samples near underground fuel lines near this structure had mixed DRO and GRO >ADEC cleanup standards to depths of 5 ft bgs. (29) ACM was identified in pipe insulation and on the heat exchanger.		Known: DRO; Potential: other toxic burn products?	drums, debris, ACM	groundwater soils, surface water, vegetation	12, 14
H-12	Building 323 (Paint Storage)	PHS/IHS	The Paint Storage is located south of Stockpile No. 1, and south of Third Ave in a small metal structure that was once part of the hospital complex. There are a few drums, and other debris located behind this building. Due to prior building use, Characterization may be warranted.		Known: DRO; Potential: BTEX? VOC?	Debris	groundwater soils, surface water, vegetation	12
H-13	BLM Trailers	IHS, BLM	The BLM trailers are located due east of School street, and north of Second Avenue. There is one trailer inside the current northeast edge of the IHS Property, and additional 5 trailers (residences) located just west of this trailer that are all located due east of the incinerator building. These trailers are currently used by BLM. Many of these trailers have AST's that have leaked at some time in the past, as evidenced by soil contamination and staining beneath some of them.	It is not known when the trailers were installed. While these residences are mostly located outside of the current PHS property, they are within the Pre-1985 IHS site boundary. The fuel distribution lines and several AST's were removed from this area in fall, 1994. (14) Surface and subsurface samples>ADEC cleanup standards for DRO to depths of 5 ft bgs for trailer east of Building 321.	Known: DRO, BTEX	Debris, drums	ground water surface water, soils vegetation	4, 12

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H-14	Tank Farm and Pipeline (TA01)	PHS/IHS	The tank farm consists of nine steel AST's with a total capacity of 180,000 gallons . Tanks sit on a concrete foundation surrounded by a 4-foot earth berm lined with a hyperlon liner. (15) indicates that the liner may have been damaged. An underground steel pipeline leads from this facility to a fill-port on the river. Fuel from this system was piped to the facilities within the hospital compound.	It is not known when the tank farm was initially constructed. However, there are reports of a fuel leak that occurred in the 1980' s when the tanks were being filled. Much of the diesel was released from the berm and not recovered. Since 1992, most fuel to the island is transported to Tanana via air, and trucks to the various onsite AST's and USTs; the steel tanks within the tank farm are used to store excess fuel, and are largely empty. With the exception of the fuel fill pipeline to the river, the fuel distribution pipeline was removed in fall, 1994. (14) Surface and subsurface samples>ADEC cleanup standards for DRO to depths of 15 ft bgs.	Known: Lead, BTEX, GRO, DRO, TRPH	Debris	ground water surface water, soils vegetation	12, 14, 15
H-15	North Contaminated Soil Stockpile (Stockpile No.1)	PHS/IHS	The North Contaminated Stockpile is located in a chain-link fenced enclosure between Third Avenue and Airport Road. Mapping in (4) indicates that the area currently occupied by Stockpile No. 1 was formerly used for drum storage. It is not known whether this site has been characterized for impacts from this use. During 1994-1995, the IHS contracted with the USACE to decommission several UST's and AST's within the hospital complex. During this action, about 900 CY of fuel contaminated soils were removed; 470 CY of the more heavily contaminated materials placed in Stockpile No. 1		Known: BTEX, GRO, DRO	pre-existing drums, or debris	ground water surface water, soils, vegetation	12, 15, 17, 30
H-16	West Contaminated Soil Stockpile (Stockpile No. 2)	PHS/IHS	The West Contaminated Stockpile is located in an open lot due west of the Tank Farm, between Second and Third Avenue. Mapping in (4) indicates that the area currently occupied by Stockpile No. 2 was formerly used for compressed gas storage. It is not known whether this site has been characterized for impacts from this use. During 1994-1995, the IHS contracted with the USACE to decommission several UST's and AST's within the hospital complex. During this action, about 332 CY of the less heavily contaminated materials were placed in Stockpile No. 2		Known: BTEX, GRO, DRO	Physical access, debris, pre-existing gas cylinders	ground water surface water, soils vegetation	12, 15, 30
H-17	Unfenced Soil Stockpile	PHS/IHS	Another smaller unfenced soil stockpile was identified during field efforts of August 2002. This pile is located in an open lot due east of Stockpile No. 1. Data concerning this stockpile were not available, but it may be addressed in closure documents concerning the tank removals. As documentation indicates that 900 CY were removed, and SPACE documents for Stockpile 1 & 2 indicate a total of 730 CY; the remaining 170 CY may have been placed in this pile. The site also includes an AST, an old vehicle, and substantial debris.		Potential BTEX? DRO? GRO?	physical access, drums, AST, debris	ground water surface water, soils vegetation	REI Field
H-18	Former Solid Waste Dump	PHS/IHS	The former solid waste dump is located at the northwestern portion of the IHS site, north of Third Avenue; it is largely vegetated with grasses and alder, and there is little surface debris to indicate former use. The center of this area is mounded and lightly vegetated with grasses and some alder. Some roofing shingles were identified at this location. The history of this dump is not well-documented; however, numerous local reports indicate its use by the hospital to dispose of solid waste. (Note, the eastern edges of this dump are also noted on FAA documents.)		Potential: VOC? SVOC? ACM? POL? BTEX? Metals?	drums, debris	ground water surface water, soils vegetation	14, 17

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H-19	Former Hospital Hazmat Dump	PHS/IHS	The hazardous materials dump is located at the northeastern portion of the IHS site, north of Third Avenue; it is largely vegetated with grasses and alder, and there is little surface debris to indicate former use. The history of this dump is not well-documented; however, numerous local reports indicate its use by the hospital to dispose of hazardous materials including drums of hazardous chemicals, and potential sharps and other medical waste. (17) Two soil samples were obtained from the southern edge of this site in 2001 (one at surface and one at 5 feet bgs); results indicated pesticides, SVOC's, DRO, RRO and metals including arsenic, barium, aluminum, iron, manganesium, mercury (0.078 mg/kg) and antimony; VOC was not analyzed. PCB's and organochloride pesticides were identified in sample results but not discussed.		Known: RRO, DRO, PCB's, SVOC, pesticides, metals(arsenic, antimony, mercury (tr)); Potential VOC? other hazardous materials?	tank, surface metal debris	ground water surface water, soils vegetation	17
H-20	Ground Water	Too'hga, Inc, IHS, ADEC, USEPA	There are 5 drinking wells located in the hospital complex; 3 are inactive, 1 is permanently abandoned, and one serves as the current water supply. A total of 14 monitor wells have been installed to support groundwater characterization efforts. (14) Free product in MW 6, 13, and 14; MW-1,3,6,9, 13,14 exceeded cleanup guidance for GRO, DRO, BTEX, VOC's and PAH.(20) indicated low levels of same contaminants in all monitor wells except 2; (14) estimated 5 foot thick zone of contamination, with about 183,500 gallons. (14) Wells A&C lead > guidance; however, based on unfiltered samples (12) Well C - GRO, Toluene, lead; *PHS supply well* : (14) Well D - no petroleum 1992 (Hazcon); 1997 - Well D exceeds guidance for manganese; also detected DRO and trichlorofluoromethane and metals, but at low concentrations. (17) (2001)Antimony detected above EPA MCL. (4) indicates Benzene above MCLs		DRO, BTEX, GRO, PAH, lead, VOC's (MW6, 13, 14), PAH's (MW3,13,14),toluene (well C),Trichloro-fluoromethane, antimony, Benzene	NA - abandoned wells	ground water surface water, soils vegetation	1, 2, 4, 14, 15, 17, 18, 20, 27
Rampart Dam								
R-1	Texas Creek Camp (FUDS No. F10AK0991; TCC Site No. TAL-FY99-001)	USACE	The Texas Creek Camp site is located on the south bank of the Yukon River about 35 miles upstream of Tanana, at the mouth of Texas Creek	This is a traditional fish camp site; and was used for the Rampart Dam geophysical investigation performed from 1961 to 1963; numerous field support equipment, and facilities were abandoned in place.	Potential ACM? DRO? RRO? BTEX?	4-1000 gal tanks, 24 drums, bldg debris	soils, ground water, surface water	20, 23
R-2	North Camp (FUDS No. F10AK0991; TCC Site No. TAL-FY99-003)	USACE	The North Camp site is located on the north bank of the Yukon River about 35 miles upstream of Tanana.	This is a traditional fish camp site; and was used for the Rampart Dam geophysical investigation performed from 1961 to 1963; numerous field support equipment, and facilities were abandoned in place.	Potential ACM? DRO? RRO? BTEX?	potential for drums, debris	soils, ground water, surface water	20, 23
R-3	Jordan Creek Camp (FUDS No. F10AK0991; TCC Site No. TAL-FY99-002)	USACE	The Jordan Creek Camp site is located at the mouth of Jordan Creek at the confluence with the Yukon River about 30 miles upstream of Tanana.	This is a traditional fish camp site; and was used for the Rampart Dam geophysical investigation performed from 1961 to 1963; numerous field support equipment, and facilities were abandoned in place.	Potential ACM? DRO? RRO? BTEX?	potential for drums, debris	soils, ground water, surface water	20, 23
R-4	Old Heliport (FUDS No. F10AK0991; TCC Site No. TAL-FY99-001)	USACE	The Old Heliport site is located on the south bank of the Yukon River about 30 miles upstream of Tanana.	This is a traditional fish camp site; and was used for the Rampart Dam geophysical investigation performed from 1961 to 1963; a gravel helicopter pad, and fueling station was located here.	Potential ACM? DRO? RRO? BTEX?	potential for drums, debris	soils, ground water, surface water	20, 23
U.S. Airforce Sites (Includes Bear Creek Radio Relay Site)								

Compilation of Environmental Information for Sites of Concern In and Around Tanana, Alaska

Site No.	Name	Involved Agency or Other Party(ies)	Site Description	General Site History	Known or Potential Contaminants of Concern	Site Hazards	Impacted Media / Resources	Data / References
AF-1	Bear Creek Containment (FUDS Property ID No. F10AK0059; TCC Site No. TAL-FY99-007	USAF 611th CES	The Bear Creek Radio Relay Station (RRS) is located about 6 to 7 miles north east of the Village of Tanana on the White Alice Road. The 116 acre facility is presently undergoing remediation by the USAF under the Clean-Sweep Program. While some vegetation has developed on the cap, portions of the site remain without vegetation. Several piles of very poorly graded silty soil have been brought on-site; no vegetation is present on the new soil.	The Bear Creek Radio Relay Station (RRS) was constructed in 1956-1957 as a part of the original White Alice Communication Sites (WACS) network. This system was phased out in the 1970's. In 1997(check date), the USAF began remediation under the Clean-Sweep Program. All structures, equipment and soils have reportedly been removed, and placed in a central containment; there is differential settlement noted, and portions of the containment have eroded exposing metal debris; there is no monitoring of ground or surface water from this facility. There is no monitoring of ground or surface water from this facility.	Known: PCB's, DRO, GRO, RRO, BTEX, ACM, Metals	eroding cover, metal debris; no monitoring wells	soils, ground water, surface water, air (from wind-blown dust from unvegetated portions of site & uncovered soil stockpiles)	20, 21,23, 28
AF-2	Bear Creek RRS - Fuel storage area (Part of FUDS Property ID No. F10AK0059; TCC Site No. TAL-FY99-007)	USAF 611th CES	The Former fuel storage area is located north of the site access road into the RRS site, along the northeast edge of the site; this area has not revegetated and corner stakes remain. The area was formerly used for fuel storage and contained two large tanks that were removed with the Clean Sweep operation.		Potential DRO? RRO? BTEX? POL?	no vegetation; no monitoring wells	soils, ground water, surface water	RI Field
AF-3	Bear Creek borrow pit (Part of FUDS Property ID No. F10AK0059)	USAF 611th CES	The borrow pit is located about 1,800 feet south and west of the main portion of the RRS site. It is a relatively small area. The pit area has not revegetated; there are buried drums and other debris around the perimeter of the site.	The borrow pit was used to support 1985 site clean-up activities; however; USAF documents indicate that backfill back into the borrow area may have been conducted using PCB-contaminated soils; the site may have also been used as a staging area for drums from past investigations; misc. were also dumped.	Potential DRO? POL? PCBs? DDT?	semi-buried metal debris, drums	groundwater, surface water, soils; Note: alders in vicinity of drums had blistered leaves.	RI Field
AF-4	Quarry (Part of FUDS Property ID No. F10AK0059)	USAF 611th CES	The Quarry is located east of the Village of Tanana on the north bank of the Yukon River	The Quarry was used by the USAF to provide earth and rock materials for fills, roads and other earthworks necessary for the construction & maintenance of the Bear Creek RRS	Potential DRO? BTEX? DDT?	metal debris, drums	ground water, surface water, soils	26, 28
AF-5	POL site (Part of FUDS Property ID No. F10AK0059; TCC Site No. TAL-FY99-007)	USAF 611th CES	The Petroleum, Oils and Lubricant (POL) Site is located at the eastern edge of the Village of Tanana at the corner of First Avenue and the White Alice Road. This site was used by the USAF to unload fuels from barges and store them for transport to the Bear Creek RRS.	It is not known when this facility was originally constructed. The POL site originally contained a 16,500 gal gasoline AST, and a 3,000 BBL Fuel Oil AST within bermed enclosure. The tanks were removed, and site was remediated in 1996. There are monitor wells within the contaminated area; no data thus far provided to assess effectiveness of clean-up. Limited vegetation observed.	Potential DRO? RRO? BTEX? POL?	potential for drums, debris, portions of fuel line may still be in riverbank	ground water, surface water, soils, vegetation; human health exposure (near residential area)	20, 21, 23, 28
AF-6	Barrel Storage Area (Part of FUDS Property ID No. F10AK0059)	USAF 611th CES	The Barrel Storage area was located on the north side of the access road to the Bear Creek Site, northeast of the Equipment Building.	The site may have been used for flammable liquid storage, or barrel dumps. Vegetation is currently limited in this area	Potential: DRO? RRO? BTEX? Pesticides? Solvents? VOC? SVOC?	potential for drums, debris, portions of fuel line may still be in riverbank	ground water, surface water, soils, vegetation limited	28
AF-7	Trash Dump	USAF 611th CES	Within the Bear Creek Site, a small Trash Dump was located on the east side of the access road, south and east of the Equipment Building and about 50 feet east of the shop.	The site was observed during 1985 clean-up activities to have contained waste metal, discarded 55-gallon drums, cans and metal debris. This site has been covered with vegetation.	Potential: DRO? RRO? BTEX? Metals? Pesticides? Solvents? VOC? SVOC?	potential for drums, debris, portions of fuel line may still be in riverbank	ground water, surface water, soils, vegetation limited	28

Compilation of Environmental Information for Sites of Concern In and Around Tanana, Alaska

Site No.	Name	Involved Agency or Other Party(ies)	Site Description	General Site History	Known or Potential Contaminants of Concern	Site Hazards	Impacted Media / Resources	Data / References
AF-8	Thompson Yard (AKA Carlson Yard) (Part of FUDS Property ID No. F10AK0059; TCC Site No. TAL-FY99-006)	USAF 611th CES	This residence is located about 2.5 miles north and east of Tanana on the east side of White Alice Road. This facility is listed on the Bear Creek, TCC, and DoD data bases incorrectly as "Carlson Yard".	This abandoned residence was the home of the deceased Chief of Maintenance for the White Alice site; drums and containers with military markings are present throughout the yard. There have been 100-150 drums, cases of 5-gal & 1 gal petroleum and pesticides, and at least 2 bunkers that formerly held dynamite identified at this property. It is not known if the ordnance has been removed; there are also misc vehicles & debris.	Potential: ACM? DRO? RRO? BTEX? Pesticides? SVOC?	Drums, petroleum and pesticides containers, ordnance; misc vehicles & debris	Potential impacts to soils, ground water, surface water	20, 21, 23
AF-9	Charley Allotment (Part of FUDS Property ID No. F10AK0059; TCC Site No. TAL-FY99-005)	USAF 611th CES	This residence is located about 2.5 miles north and east of Tanana on the west side of White Alice Road	There are about 20 drums in this yard bearing military markings.	Potential DRO? GRO? RRO? BTEX?	20 drums, misc debris	Potential impacts to soils, ground water, surface water	20, 21, 23
Other Sites								
O-1	Old Power Plant, Lot 10, Block 8	Tanana Power Company, Tozitna Limited	The Old Power Plant is located east of Hill Street between First and Second Avenues. This site was listed in a compilation of sites identified by ADEC that should be included in an area-wide assessment related to Benzene contamination of groundwater.	The history of this site is not well documented. The original Power Plant was located on this site. The Power Plant was relocated to it's present location north of Third Avenue within the last five years. The old power plant structure has been removed. The site is largely unvegetated, there is some debris including drums and concrete foundations. There is some soil staining, and (13) indicated PCB's in three separate samples.	Known: DRO, GRO, BTEX, PCB's	drums, debris	Soils, ground water, vegetation	4, 13.25
O-2	Power Generation Facility North of Third Ave	Tanana Power Company, Tozitna Limited	The new power plant is located north of Third Avenue, and east of Garden Avenue. This site was listed in a compilation of sites identified by ADEC that should be included in an area-wide assessment related to Benzene contamination of groundwater.		Potential: DRO? GRO? BTEX? PCB's?	drums, debris, electrical	Soils, ground water, vegetation	4, 25
O-3	Oil Transfer Line	Tanana Power Company, Tozitna Limited	It is not certain where this site is located, nor is the site history documented; it is thought to extend from the riverbank to the Old Power Plant site. This site was listed in a compilation of sites identified by ADEC that should be included in a area-wide assessment related to Benzene contamination of groundwater.		Potential: DRO? GRO? BTEX?		Soils, ground water, vegetation	4
O-5	Burns Property	Private Property owner	This site is located north of First Avenue, and three lots east of Garden StreeL The site appears to contain a wooden structure with a circa 1900's-type store front that has collapsed into a pit. Inside the pit along with the wood debris are numerous rusted drums (many with distended ends), and other metal debris.		Potential: DRO? RRO? BTEX? POL?	at least 20 drums, Misc debris	soils, ground water, surface water	25, RI Field
O-6	Nicolia Property (TCC Site No. TAL FY-00-009	USAF 611th	This native allotment is located along the north bank of the Yukon River near Sixteen mile Island	Drums bearing labeling Eilson AFB 1958 appear to have been transported to this site via river floodwaters	Known: glycol	drums, debris	soils, ground water, surface water	23
O-7	City Laundromat	Too'gha, Inc	The new laundramat is located north of Third Avenue, and east of Garden Avenue. This location is being used by the community as a source of clean drinking water. However (13) indicated potential PCB contamination in front of this building and this site was also listed in a compilation of sites identified by ADEC that should be included in an area-wide assessment related to Benzene contamination of groundwater.		Known: PCB; Potential DRO? BTEX?	minor debris	soils, ground water	4,19

Compilation of Environmental Information for Sites of Concern In and Around Tanana, Alaska

Site No.	Name	Involved Agency or Other Party(ies)	Site Description	General Site History	Known or Potential Contaminants of Concern	Site Hazards	Impacted Media / Resources	Data / References
O-8	Village Community Center		This site is located north of First Avenue, and east of Koyukuk Street. It is a fairly large wooden one-to two story structure with a large parking lot due west. (13) Soil sampling in the vicinity of this structure indicated PCB's.		Known: PCB's		soils, ground water	13
O-9	School		The School is a fairly new facility that has been constructed east of School Street (and the IHS compound), between First and Second Avenues. Sampling by (13) indicated PCB's in the soils in front of the structure; this was confirmed by sampling of the soils by the culvert below the school in (17) that also indicated low levels of mercury. (17) also indicated the presence of DRO & GRO in these soils.		Known: PCB's, DRO, RRO, mercury (See O-23)	minor debris	soils, ground water, human health exposure	13, 17
O-10	Front Street in front of Terry's Store	Private Property owner	This site is located north of First Avenue (also locally referred to as "Front Street), and a couple of lots west of Mill Street. It is a one story structure with a parking area in front of the store. Sampling by (13) indicated PCB's in the soils in front of the structure. This site was also listed in a compilation of sites identified by ADEC that should be included in an area-wide assessment related to Benzene contamination of groundwater.		Known: PCB's; Potential: DRO? BTEX?	minor drums and debris	Soils, ground water, surface water, vegetation	13
O-11	Wastewater Treatment Lagoon	Too'gha	The Wastewater treatment lagoon is located north of Third Avenue, and east of Garden Avenue. This site was identified by staff in the Draft area plan as having potential contamination. The site was also listed in a compilation of sites identified by ADEC that should be included in an area-wide assessment related to Benzene contamination of groundwater.		Potential: DRO? GRO? BTEX? POL?	debris, drums, Potential electrical equipment	soils, ground water, surface water	4,25
O-12	Coghill Yard	Unknown	The Coghill Yard is located east of East Street. Historically this yard contained large tanks for fuel transfer to/from barges, and is thought to be one of two sites used by the AK Railroad. Very little documentation is available concerning this site. Field reconnaissance indicated a few drums and debris, some degree of soil staining, and some strange, light weight (almost volcanic-like) structural blocks. Characterization may be warranted based upon prior land use.		Potential: DRO? GRO? BTEX?	drums, debris	soils, ground water, surface water, vegetation	4, 25, 26
O-13	Alaska Railroad Tank site	Disputed; AK RR, Yutana Bargelines, AK	The Alaska Railroad Tank site is located in Block 11, Lot 7, just north of First Avenue, and east of Koukuk Street. Until the 1960's, this site held a pump house and two large wood stave tanks with capacity of 2,500 barrels each. The tanks were used in support of barge operations. Current ownership is debated; from 1955-1975, Alaska Railroad contractacted with Yutana Bargelines; however, there are also several letters to the file indicating a fire, and property transfer back to the state that occurred in the early 1960's. Presently the site holds some debris, and light vegetation. Characterization may be warranted based upon prior land use.		Potential DRO? GRO? BTEX?	debris	soils, groundwater, surface water	5,6,11, 25
O-14	City Shop North of Third Avenue	City of Tanana	The City Shop is located north of Third Avenue, and east of Garden Avenue, next to the wastewater lagoon. This site was identified by staff in the Draft area plan as having potential contamination. The site was also listed in a compilation of sites identified by ADEC that should be included in an area-wide assessment related to Benzene contamination of groundwater.		Potential:DRO? GRO? POL? BTEX?	debris, drums, Potential electrical equipment	soils, ground water, surface water	4, 25
O-15	BLM - Lot 3, USS 4104	BLM/IHS	This site location is unknown as the property reference provided does not agree with area plat information. The site was also listed in a compilation of sites identified by ADEC that should be included in an area-wide assessment related to Benzene contamination of groundwater.		Potential DRO? GRO? BTEX?	not known	soils, ground water, surface water	4

Compilation of Environmental Information for Sites of Concern In and Around Tanana, Alaska

Site No.	Name	Involved Agency or Other Party(ies)	Site Description	General Site History	Known or Potential Contaminants of Concern	Site Hazards	Impacted Media / Resources	Data / References
O-16	City Fire Station	City of Tanana	The City Fire Station is located north of Second Avenue, and east of Garden Avenue. Site history is not well-documented. The site was listed in a compilation of sites identified by ADEC that should be included in an area-wide assessment related to Benzene contamination of groundwater.		Potential DRO? GRO? BTEX?	not known	Soils, ground water, vegetation	4
O-17	Water Well	Too'gha	There is a red well-house and well located south of First Avenue, west of Mill Street. The well is signed as if it were active. There is a containment for an AST due west of this well-house, that has no tank, but may have contaminated soils. This well is across the street from the Tozitna Tank Farm and fuel pump facility. If this well is currently used as a water source, characterization may be warranted based upon proximity of fuel sources.		Potential DRO? GRO? BTEX? LBP?		ground water, surface water	RI Field
O-18	PCB's on roadways	USAF 611th CES	There is conflicting documentation concerning the use of and presence of PCB's on the local roadways. Several local sources indicate the historic use of waste oil, possibly containing PCB's on the roadways for dust abatement. Apparently, during the 1950's and 1960s, mixed waste oil was obtained from the USAF, was stockpiled in a tank behind the health center, and was spread on the roadways for dust abatement. This practice was ceased in 1980. In 1984, the USAF provided the Mayor with verbal information indicating the presence of PCB's in the waste oil tank and equipment, and near the laundramat; however, no data was provided. In 1994, a field assessment was made of several locations within the village using a 1 ppm screening threshold. Based upon the results of this screening effort, many later studies have indicated that there are no PCB's. The field analyses indicated PCB's in the roadways in front of Terry's Store, at the Old Power Plant, near the village community center, and in front of the school; however this study did not include testing behind the health center where the material was stored. Laboratory results co		PCB's		human health impacts, potential for soils, groundwater impacts; conflicting information provided on nature and extent of contamination	12, 13, 16, 17, 20, 24, 25
O-19	Alaska-Siberian Airbase (Lend-lease facility)	U.S. Army/ FUDS	This site is located along the north bank of the river east of the Village; Use was discontinued in the 1940's, but the runway still appears in aerial photographs of the area.	The airbase was used as part of a series of refueling points used to ferry aircraft to Russia, within the Army's Aircraft Lend-Lease program; the unpaved airstrip was used during World War II.	Potential: DRO? RRO? BTEX? POL?, Pesticides? de-icing fluids?	potential for drums, debris	potential for impacts to soils, groundwater	23, 25
O-20	Sunshine Subdivision - Lake Oscar	Multiple private property owners	This lake is located in the center of a residential subdivision located due east of Tanana on the White Alice Road; It was originally part of a localized wet area	The lake was filled in after subdivision constructed due to mosquitoes and other concerns;	Potential: household hazardous waste within lake sediments	potential for drums, debris	potential for impacts to soils, ground water, surface water	25
O-21	Tozitna Fuel Tank Farm	Tozitna	There is an underground fuel tank farm located north of First Avenue, west of Mill Street. There is venting, but no apparent ground water monitoring.		Potential DRO? GRO? BTEX?		potential for impacts to soils, groundwater, surface water	RI field
O-22	Gas Canister storage area	Not Known	There is a fenced compressed gas canister storage area located north of First Avenue, on the west side of Mill Street. All canisters appear to be appropriately secured and tagged and are on wood pallets. There are several drums located along the outside of the north fence at this location. Characterization may be warranted based upon landuse.		Potential: DRO? GRO? other materials?	drums	potential for impacts to soils, groundwater, surface water	RI Field

Compilation of Environmental Information for Sites of Concern In and Around Tanana, Alaska

Site No.	Name	Involved Agency or Other Party(ies)	Site Description	General Site History	Known or Potential Contaminants of Concern	Site Hazards	Impacted Media / Resources	Data / References
O-23	Fuel Port South of School	Not Known	There is a fuel port located on the south side of First Avenue, near the center of the school. This port is signed, and there is a heavy petroleum smell at this location. Below this port, there is a basin, apparently placed to catch spillage; there is a mix of water and product in this basin. Recent sampling conducted for EPA at this location in (17) indicated: mercury (0.14 mg/kg), 2-Methylnaphthalene, pyrene, benzo(a) anthracene, and bis(2-Ethylhexl)Phthalate, DRO, RRO, potential PCB's & Organochloride pesticides*		Known: mercury, DRO, RRO, PCB's & Organo- chloride pesticides*	NA	human health impacts, potential for soils, groundwater surface water;	17, RI field
	Yukon River surface water and sediments		During 1997 effort, 7 surface water samples from the River were analyzed for GRO, DRO, and VOCs. (14) Samples indicated metals (antimony) at concentrations up to 57 ug/L; however these results are thought to be attributed to blank contamination. Note that most of the results were qualified as having been estimated with unknown bias by the lab. During 1997 effort, 7 riverbank samples were analyzed for GRO, RRO, DRO, VOC's and BNA. (14) Samples indicated metals (arsenic and barium) above cleanup standards, and traces of GRO, DRO, RRO, acetone, and diethylphlalate below cleanup levels. Note that most of the results were qualified as having been estimated with unknown bias by the lab.		metals: arsenic, barium, antimony	NA	surface water and aquatic life	14

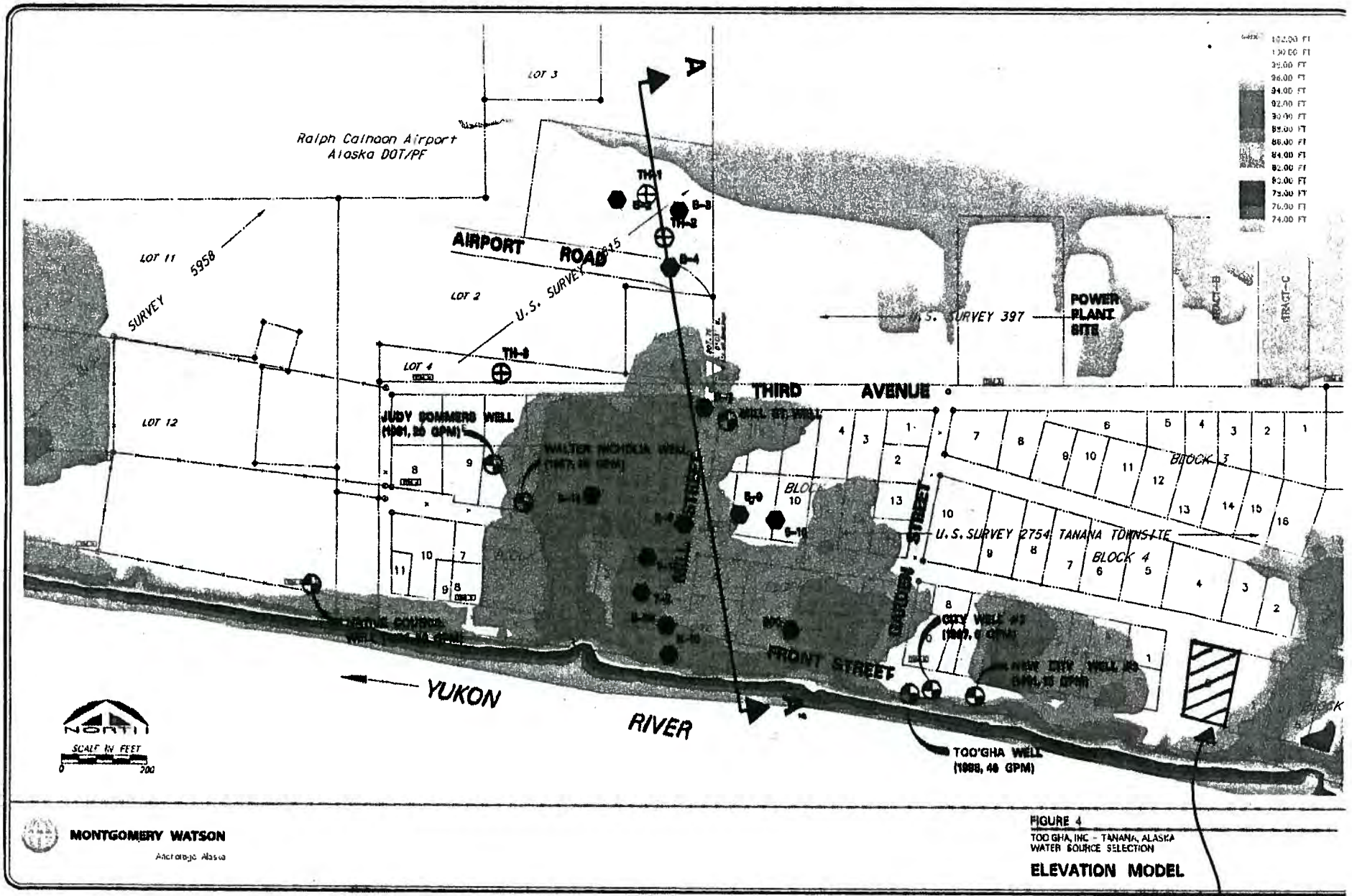

Figure 3. Old Tanana Power Plant property

Lot 8, Block 10

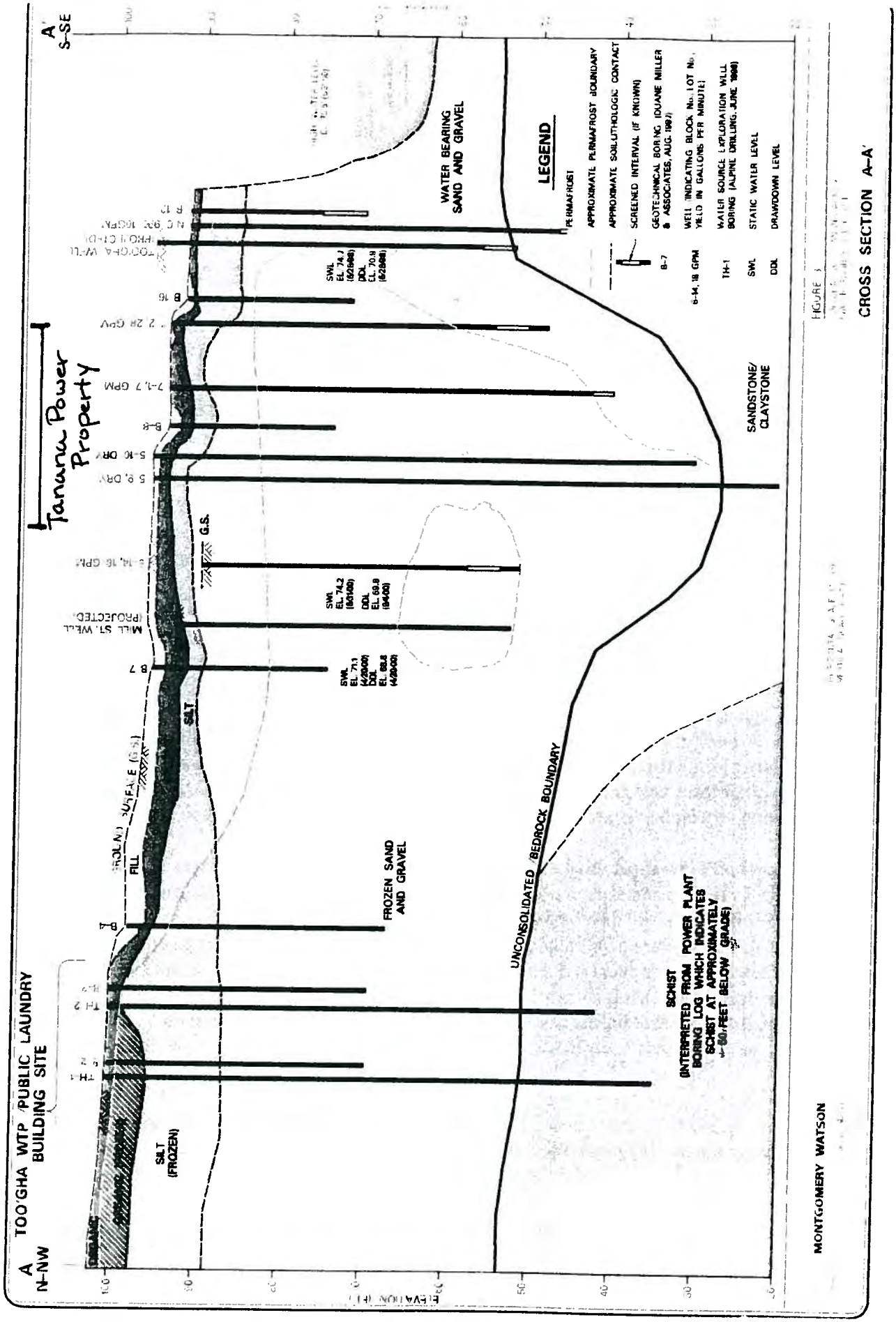

Figure 8. Too'gha, Inc. Water Source Selection geological cross-section, Tanana

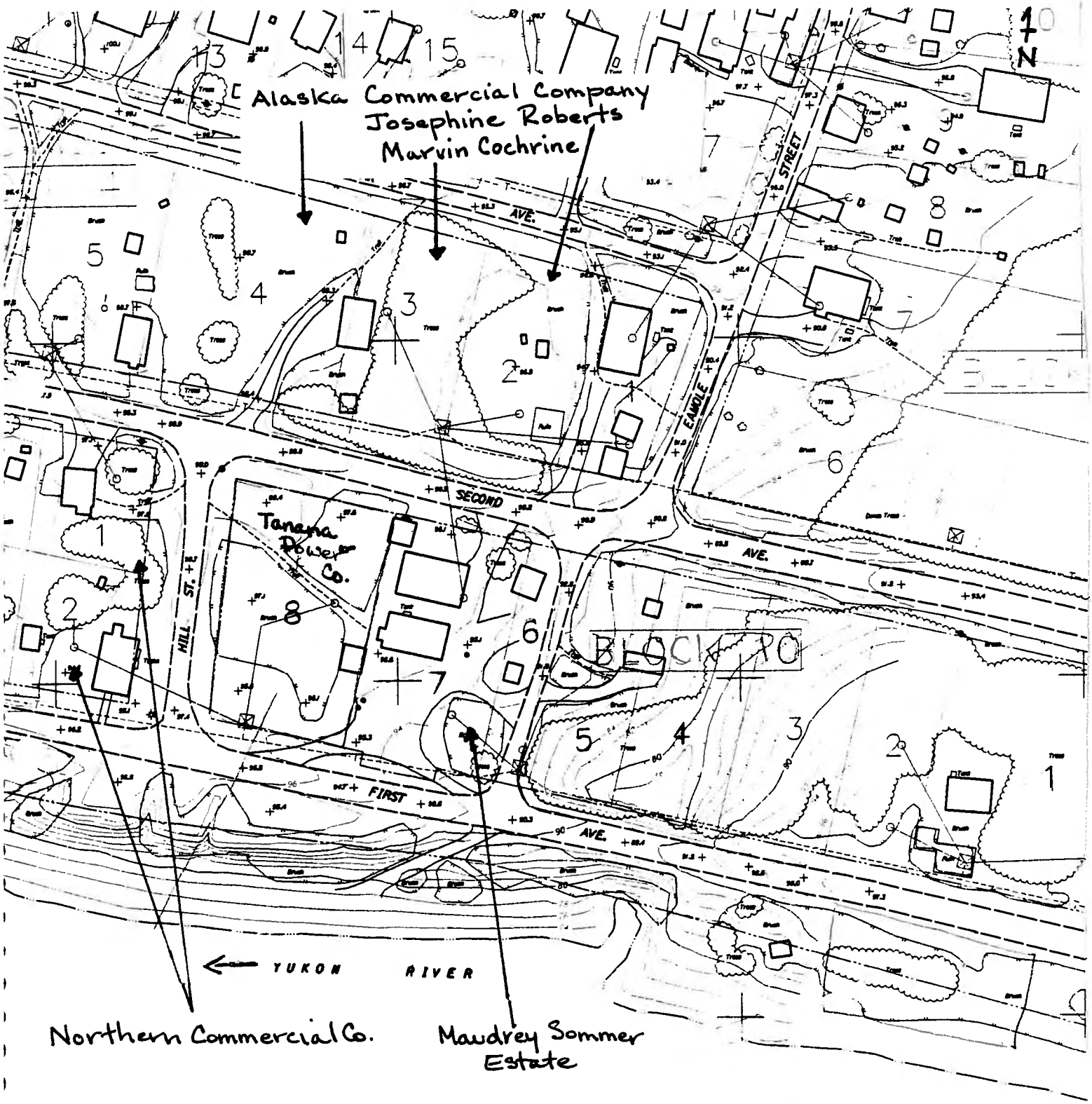

Figure 7. Neighborhood Land Use and ownership (base map DCED, 1984)

Alaska Department of Environmental Conservation

Reuse & Redevelopment Initiative

Brownfield Assessment

ENVIRONMENTAL MANAGEMENT PLAN

Tanana Airport Facility and Community

Tanana, Alaska

Submitted to:
Department of Environmental Conservation
Brownfield Program

SLR

By:
SLR International Corp
June 2009
(rev. April 2010)

ENVIRONMENTAL MANAGEMENT PLAN
TANANA AIRPORT FACILITY AND COMMUNITY
TANANA, ALASKA

Prepared for

Alaska Department of Environmental Conservation
Contaminated Sites Program
Division of Spill Prevention and Response
610 University Avenue
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June 2009

(with minor revisions by DEC April 2010)

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SLR Project Number
005.0065.09006

ENVIRONMENTAL MANAGEMENT PLAN
TANANA AIRPORT FACILITY AND COMMUNITY
TANANA, ALASKA

This document has been prepared by SLR International Corp. The material and data in this report were prepared under the supervision and direction of the undersigned.

Elizabeth Vickerman
Project Engineer

Carl Benson
Project Manager

Minor revisions made by DEC
April 2010.
Remainder of document is
identified as Rev. 1, 4/21/2010.

CONTENTS

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FIGURES

APPENDICES

ACRONYMS

°F	degrees Fahrenheit
%	percent
AAC	Alaska Administrative Code
ADOT&PF	Alaska Department of Transportation & Public Facilities
ASTM	American Society for Testing and Materials
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
DEC	Alaska Department of Environmental Conservation
DOT	U.S. Department of Transportation
EMP	Environmental Management Plan
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
IGAP	Indian General Assistance Program
IHS	Indian Health Service
HAZWOPER	Hazardous Waste Operations and Emergency Response
LUST	Leaking Underground Storage Tank
OSHA	Occupational Safety and Health Administration
SLR	SLR International Corp
STRP	State & Tribal Response Program

EXECUTIVE SUMMARY

SLR International Corp (SLR) is pleased to submit this Environmental Management Plan (EMP) to the Alaska Department of Environmental Conservation (DEC) for Tanana, Alaska. This EMP encompasses a review and evaluation of state-owned, federally managed, and privately-owned properties, with known and potential impact, in order to identify known and suspect environmental hindrances that could be a threat to human health or the environment, and pose an obstacle to the safe reuse or redevelopment of property in and around the community.

Eleven contaminated sites located in the vicinity of the Village of Tanana town site included in the DEC contaminated sites and leaking underground storage tank databases were reviewed for this EMP. Summaries of each of these sites, including past actions, current site condition, and remedial recommendations were compiled through record review and interviews with members of the Tanana community.

Fourteen additional potential sites of contamination were identified during a site visit of the Tanana town site using visual observations and information provided during interviews with persons knowledgeable in current and historical environmental conditions in Tanana. SLR recommends conducting Phase I Environmental Site Assessments at each of these locations using American Society for Testing and Materials E1527-05 Standard Practice for Environmental Site Assessments to further evaluate the potential of contamination at these sites. In addition, SLR recommends that actions be taken at two drum sites identified to prevent an imminent release of contaminants to the environment. SLR further recommends that a search for the owner of the buried rail tank cars at the airport be conducted for the purpose of requesting the rail cars, which are configured as underground storage tanks, be decommissioned in accordance with DEC regulations as required by 18 Alaska Administrative Code 78. Landfarming has been identified as the preferred remedial alternative for sites with confirmed contamination that have been sufficiently characterized.

1. INTRODUCTION

In the spring of 2008, based on the number of projects, agencies, perceived environmental concerns, and impact potentially affecting future economic development at the community, the Alaska Department of Environmental Conservation (DEC) determined that the development of an Environmental Management Plan (EMP) for the Tanana Airport Facility and Community would be a project that would benefit the community of Tanana, as well as many of the responsible parties doing work in the community. The purpose of this EMP is to summarize information about known issues and previously unknown or un-characterized sites to allow better communication and understanding between the community and various project managers and responsible parties working in the Village of Tanana. The resulting EMP can serve as a basis for communication between all parties, including the Village, Tribal, and City governments, and various agencies.

The primary State of Alaska properties in question are the Alaska Department of Transportation and Public Facilities (ADOT&PF) lease lots associated with the Tanana airport; however, it was determined appropriate for DEC to evaluate all environmental concerns in the community to help establish a coordinated manner in which to effectively oversee and manage environmental actions at multiple sites in Tanana. Ground water impacts have been historically detected in the water supply well in the community, and the source of this contamination has not been clearly identified. Multiple sources of contamination are known to exist, including state, federal, and private site contamination. There are currently 20 sites identified in the Tanana area from review of the DEC Contaminated Sites and Leaking Underground Storage Tank (LUST) on-line database, of which two are conditionally closed. Seven of the sites identified are not located within, or in close proximity to, the town site, and these sites are not addressed in this EMP. The focus of this EMP is open sites located within the town site or in relative close proximity to it.

This EMP was written on behalf of DEC in response to DEC's request, and encompasses a review and evaluation of state-owned, federally-managed, and privately-owned properties (known and potential) in order to identify known and suspect environmental hindrances that could be a threat to human health or the environment, and pose an obstacle to the safe reuse or redevelopment of property in and around the community.

Funding for this work was provided by DEC's State & Tribal Response Program (STRP) through a grant from the U.S. Environmental Protection Agency (EPA) Brownfield Program.

1.1 PURPOSE OF PROJECT

The purpose of this EMP is to summarize information appropriate for advancing sites through the Brownfields process: promoting better communication between stakeholders, reducing environmental impacts, and providing beneficial reuse of multiple sites.

1.2 SCOPE OF SERVICES SUMMARY

SLR International Corp (SLR) completed the following tasks to develop this EMP.

1.2.1 Task 1 – Records Stakeholder Scoping and Planning Meeting

It was necessary to delay holding a formal stakeholder meeting following development of this EMP because of time constraints. A project kickoff meeting was conducted via teleconference between DEC and SLR prior to the site visit, and interviews were conducted between DEC, the village Indian General Assistance Program (IGAP) environmental coordinator, and local residents.

1.2.2 Task 2 – Site Visit

On June 15 through June 17, 2009, an SLR representative traveled to Tanana to conduct a site visit to assess site conditions, interview individuals, photo-document the visit, and collect sufficient information as necessary to support the completion of an EMP for the community. During the site visit, SLR conducted interviews with individuals from the community to determine, to the extent possible, all known and potential sources of contamination in and around the community. SLR visually assessed the extent of soil staining associated with the properties as identified during the interviews. This information was used to document potential impacts to previously undocumented sites. Site documentation included field notes (Appendix A), site photographs (Appendix B), and copies of any historical records, including documentation of known contamination not included in the DEC contaminated sites or LUST databases that may be available to the community (Appendix C).

1.2.3 Task 3 – Draft and Final EMP Preparation

This EMP is a comprehensive summary based on the inventory of existing background documents, and interviews with members of the Tanana community. SLR provided at least two updates to the DEC project manager as to the status of findings that as research for this EMP progressed, helped identify sections in the report that may be both strong and weak, and better determined where to focus limited resources. The intent of this EMP is to supply all interested stakeholders with a summary document of sites with known or potential environmental impact in the Village of Tanana.

1.3 OBJECTIVES

The following objectives were used to guide the preparation of this EMP:

- Documenting historical property use of open sites identified in the DEC Contaminated Sites and LUST records;
- Preparing a summary of environmental work that has been completed to date in and around the community and identify existing proposed remedial actions;
- Developing recommendations for assessment or cleanup action at sites that are not currently being evaluated; and

- Compiling demographic information about the City of Tanana and community-specific information to provide a complete understanding of issues, concerns, and economic development interests for which environmental hindrances may complicate.

2. COMMUNITY OVERVIEW

2.1 COMMUNITY GENERAL INFORMATION

This section provides information about the community of Tanana, home of the federally-recognized tribe, the Native Village of Tanana.

Tanana was originally developed as a traditional native Alaskan trading settlement. Its location near the junction of the Tanana and Yukon Rivers made it an ideal location for trading between Koyukon and Tanana Athabascans. The City of Tanana was incorporated in 1961, and then in 1982 Tanana was incorporated as a first class city.

The City of Tanana maintains 32 miles of local roads. The City operates a dock on the river; barged goods can be offloaded at a staging and storage area. The State owns and operates the Ralph M. Calhoun Memorial Airport with a gravel runway. Float planes land on the Yukon River. Cars, trucks, snow machines, all-terrain vehicles, and riverboats are used for local transportation. Electricity is provided by Tanana Power Company, Inc.

According to the 2000 US Census, few homes in Tanana are outfitted with complete plumbing systems. A piped water and sewer system serves some facilities and residences in Tanana. A significant amount of community water distribution improvement has been made by the Village Safe Water program since 2000. As of the writing of this EMP, there are 40 households connected to the public water system in Tanana. Most homes use outhouses or honey buckets and nearly all community residents haul water.

Drinking water in Tanana originates from one well located near the Yukon River. During times when water is not accessible from this well, typically from March to April, water is collected from the river (photograph 3 of Appendix B) at a location approximately 250 feet from the drinking water well. All drinking water sourced from either the well or the river is treated at a water treatment plant, operated by Too'gha, Inc., a non-profit utility board that maintains all city water and sewer utilities (DEC Community Database Online). One watering point, located at the water treatment plant (photograph 4 of Appendix B), is available for residential water hauling. A drilling log describing the lithology and completion of the city drinking water well is included in Appendix D.

The well is currently being monitored under the Drinking Water Program of DEC's Division of Environmental Health. Detectable concentrations of benzene have been measured in the drinking water supply wells beginning in 1992; however, concentrations are presently below maximum allowable contamination limits. The drinking water well is included in DEC's contaminated sites database and is further discussed in Table 1.

2.1.1 LOCATION

Tanana is situated on the north bank of the Yukon River (Figure 1), approximately two miles west of the Tanana and Yukon Rivers confluence in Interior Alaska. The community is accessible by air and river transportation and is located 130 air miles west of Fairbanks, at approximately 65.171940° North Latitude and -152.078890° West Longitude (Sec. 17, T004N, R022W, Fairbanks Meridian). Tanana encompasses 11.6 square miles of land and 4.0 square miles of water (DEC Community Database Online).

2.1.2 CLIMATE

Tanana receives approximately 13 inches of precipitation per year and is subject to flooding of the Yukon River. Tanana experiences extreme seasonal temperature differentials, with daily minimum temperatures ranging from between minus 48 degrees Fahrenheit (°F) and minus 14°F in January, and daily maximum temperatures between 64°F and 70°F in July. Historical temperature extremes in Tanana were 71°F below zero in winter and 94°F above zero in summer. The river is ice-free from mid-May through mid-October (DEC Community Database Online).

2.1.3 POLITICAL ORGANIZATIONAL STRUCTURE

In 1982, Tanana was incorporated as a first class city within Alaska. The local Tanana government has a seven-member city council and a separately elected mayor. City council members work together to perform the duties of a Planning Commission. Additional elected or appointed officials include four school board members. The city council oversees the administration and operation of municipal services and utilities including the landfill; airport; dock; police; volunteer fire department, emergency medical service, and ambulance; fire hall; school; gravel sales; roads and streetlights; equipment rental; teachers housing; beverage control; incarceration facility, and public safety housing (DEC Community Database Online).

2.1.4 COMMUNITY DEMOGRAPHICS

The traditional Athabascan way of life is still prevalent in Tanana today, and in 2000, 81.5% of the Tanana population was of Alaska Native or part Native background. A federally-recognized tribe, the Native Village of Tanana, resides in Tanana. Subsistence, potlatches, dances, and foot races are predominant in the community culture of Tanana. Subsistence foods include salmon, whitefish, moose, bear, ptarmigan, waterfowl, and berries.

The 2000 U.S. Census data indicates 308 people reside in Tanana, yielding a population density of 26.6 people per square mile of land. Likewise, 166 housing units occupy Tanana, yielding a housing density of 14.3 housing units per square mile of land. There are 121 households in Tanana, including 69 family households, and 45 vacant housing units, 42 of which are unoccupied due to seasonal use.

TABLE 1
DEC KNOWN CONTAMINATED SITES IN TANANA

DEC File Number	Site Owner	Site Name	History	Recommendations	Reference
780.38.004	City of Tanana	Tanana City Drinking Water Well	*Spill Date: 10/31/1996 Spill ID: 2648* Increasing concentrations of benzene have been measured in drinking water supply wells beginning in 1992. Benzene concentrations are presently below MCL, however, the extent and source of contamination is unknown. Antimony is also present near the MCL, and RRO was detected in one water sample collected from Tanana Tribal Council municipal drinking water well in August 2001 by the EPA. The Alaska Drinking Water Protection Program conducted a source water assessment of the drinking water system in Tanana in June 2004, and identified potential and current sources of contaminants for the public drinking water sources. These include: gasoline stations, wastewater treatment facilities, large-capacity septic systems, fuel tanks, and ADEC-recognized contaminated sites. A detailed inventory can be found in Appendix H. These identified potential and existing sources of contamination are considered sources of bacteria and viruses, nitrates and/or nitrites, volatile organic chemicals, heavy metals, cyanide and other inorganic chemicals, synthetic organic chemicals, and other organic chemicals contaminant categories. The Tanana City Drinking Water Well site is shown in photograph 1 in Appendix B.		ADEC Contaminated Sites Database, http://www.dec.state.ak.us/SPAR/CSP/db_search.htm. June 2009. Alaska Division of Environmental Health, Drinking Water Program. *Source Water Assessment A Hydrogeologic Susceptibility and Vulnerability Assessment for the Tanana Safewater Facility Drinking Water System, Tanana, Alaska PWSID # 360109.001*. June 2004.
780.38.012	City of Tanana	Tanana School	*Spill Date: 7/26/2006 Spill ID :4357* Petroleum contamination was discovered during removal of two 15,000-gallon USTs used to heat the school building. The tanks were installed in 1971 and were taken out of service approximately five years prior to removal. Sampling results indicate virtually all contaminated soil was removed, however, 800 cubic yards of contaminated soil was stockpiled on a 10-mil liner at the City of Tanana old dumpsite on the west end of town. Landfarming was the approved method for remediating the stockpiled soil and reportedly in 2007, city workers spread the top 1-foot of the stockpile to get an even layer of soil and added approximately a 1/2 ton of fertilizer to the entire pile surface. The City has scheduled testing of this pile for sometime in 2009.	ADEC recommends turning the pile as soon as the ground is thawed and weather permits to further promote degradation of the contaminants. ADEC also recommends discussing with the project manager the sampling plan for the stockpile to ensure that enough representative samples are collected to determine the remaining contaminant concentrations within the stockpile.	ADEC. Letter RE: Contaminated stockpile from two 15,000 gallon buried heating oil tanks removal, Tanana School. January 5, 2009. ADEC Contaminated Sites Database, http://www.dec.state.ak.us/SPAR/CSP/db_search.htm, June 2009. Independent Consultant Associated. Letter RE: Update on Contaminated Stockpile from Two 15,000-Gallon Buried Heating Oil Tanks Removal Summer 2006, Tanana School, Tanana Alaska. December 1, 2008.
780.38.003	IHS U.S. Department of Health & Human Services	IHS Tanana Health Center	*Spill Date: 12/29/1982 Spill ID: 116* The IHS hospital compound is in the former location of Fort Gibbon. The site is a 7.5 acre property developed with a number of buildings, including the Tanana Health Center clinic and offices, the Tanana Tribal Council offices, an elder's home, seven residences, a drinking water plant, an abandoned military hospital, and a tank farm. An area historically used as an unpermitted hazardous materials dump is located in the northeastern portion of the property. Major petroleum spills from the tank farm have been reported, as well as an unknown amount of fuel spilled at the pumphouse at the site. Multiple environmental investigations have been conducted starting in 1989 to delineate the location and extent of contaminated soil at the site. Soil contamination above ADEC cleanup levels has been identified at 13 individual areas at the site. Ground water monitoring indicated DRO is present above ADEC cleanup levels. Petroleum contaminated soil, reportedly generated from UST removal, is stockpiled at the site northwest of the former hospital. Appendix E includes a summary of all environmental assessment findings for the site and includes recommendations for each condition sited. The site CERCLIS ID number is AKN001002276. The site is shown in photographs 15, 16, 17, and 18 in Appendix B.	A 2007 Project Summary document prepared by the IHS Department of Human Services proposed a four-phase remediation effort over a period of eight years at a projected cost of $4,184,000. The proposed goal is to demolish underutilized and deteriorated structures at the IHS hospital compound, cleanup petroleum-contaminated soil to meet state and federal requirements and excess mission non-essential property through the General Services Administration or transfer the property to the Tanana Indian Reorganization Act Tribe under the authority of Public Law 93-638 in accordance with their master planning and health care needs. Phase 1 includes the development of an abatement/demolition plan and the abatement/demolition of three vacant structures including the excess of eight small outbuildings. Phase 2 includes the design of a full-scale remediation treatment area, the construction of a small scale pilot remediation treatment area for landfarming petroleum-contaminated soils at the City of Tanana landfill, and the construction of the full-scale remediation treatment area at the landfill. Phase 3 includes excavating and transporting petroleum-contaminated soil from the hospital compound to the remediation treatment area and landfarming the contaminated soils over several years. Excavations at the hospital compound will be replaced with clean borrow material. Abandoned fuel fill pipe and asbestos-wrapped steam pipe (tunnel heating system) will be excavated and disposed of in Phase 3. Phase 4 is contingent upon the status of replacement facilities and new community water and sewer in accordance with the Tribe's master planning efforts. It includes the proposed abatement/demolition of the remaining seven structures. The drinking	ADEC Contaminated Sites Database, http://www.dec.state.ak.us/SPAR/CSP/db_search.htm. June 2009. Indian Health Service Department of Human Services. *Project Summary Document Tanana Environmental Remediation, Indian Health Service Former Indian Health Service Hospital. March 2009.* *Indian Health Service Division of Engineering Services. 2006 Groundwater Monitoring Report, Former Indian Health Service Hospital, Tanana, Alaska. January 2007.*

TABLE 1 (CONTINUED)
DEC KNOWN CONTAMINATED SITES IN TANANA

DEC File Number	Site Owner	Site Name	History	Recommendations	Reference
				water well and sewage lift station will be decommissioned. Water storage tanks and water and sewer pipes will be abandoned in place. Finally, the IHS will seek conditional closure of the site from ADEC and excess or transfer the property.	
780.26.004	IHS U.S. Department of Health & Human Services	IHS Tanana Building. 303	*Spill Date: 5/15/1992 Spill ID: 24328* Water level gauging data and ground water sample analytical data were obtained during ground water monitoring activities at the former IHS Hospital in Tanana, Alaska during July and August 2006. Activities included measuring distances to ground water from the top of each well casing and sampling 14 existing ground water monitoring wells. ADEC established an alternative cleanup level for DRO that was exceeded in samples collected at wells MW-1, MW-6, MW-13, and MW-14. The cleanup level for GRO was exceeded at well MW-6. None of the wells exceeded established cleanup levels for benzene, toluene, ethylbenzene, or total xylenes. Free-product (petroleum that is present as a non-aqueous-phase liquid) in the form of thinly dispersed globules or droplets was observed in the bail water at wells MW-6, MW-13, and MW-14. It should be noted that free-product was not detected by the interface probe at those wells and was not of sufficient quantity to be measured in the bail water, therefore, sampling and analysis of ground water was performed at those wells where free-product was observed. The site is shown in photograph 27 in Appendix B.	Free-product recovery from ground water is not recommended at this time. The regulations require that free-product be recovered to the maximum extent practical. The term "practical" is defined as means capable of being designed, constructed, and implemented in a reliable and cost-effective manner, taking into consideration existing technology, site location, and logistics. Cost-effective recovery of mobile product from recovery wells generally requires a measurable product thickness accumulation of at least 1 inch. Recovery trenches and drain systems are also not practical given the thickness of the Vadose zone and extreme fluctuations in the water table at this site (19 feet). Removal of contaminated surface soil for subsequent aboveground treatment, natural attenuation of contaminated subsurface soil, continued ground water monitoring, and the implementation of institutional controls restricting land use is the recommended approach for this site. If subsequent ground water monitoring indicates free-product has mobilized to the point that it can be recovered in a reliable and cost-effective manner, then free-product recovery in conjunction with the removal of Vadose zone soil or shallow smear zone soil for subsequent aboveground treatment and disposal is recommended in accordance with ADEC guidelines. Finally, it is recommended that the monitoring of wells MW-9 and MW-11 be discontinued or reduced based on favorable historical ground water sampling results.	Indian Health Service Division of Engineering Services. *2006 Groundwater Monitoring Report, Former Indian Health Service Hospital, Tanana, Alaska*. January 2007 ADEC Contaminated Sites Database, http://www.dec.state.ak.us/SPAR/CSP/db_search.htm. June 2009.
780.38.014	Tanana Power Company	Tanana Power Company	*Spill Date: 3/26/2002 Spill ID: 3946* The Tanana Power Company operated the power plant at Lot 8 Block 10 of the Tanana site from 1966 to 1983. Surface soils devoid of vegetation with dark stains were spotted in the northwest corner of the property by an EPA contractor. Analysis of soil samples collected on an adjacent property to the site near the stained area had elevated levels of benzene, toluene, ethylbenzene, total xylenes, GRO, DRO, RRO, semi volatile organic compounds, PAHs, and trace levels of pesticides. A site assessment was conducted in July 2008. Hydrocarbon-contaminated soils were found from 2.5 feet to 13.5 feet bgs. Field screening and confirmation soil sampling indicated DRO and benzene concentrations are present above ADEC cleanup levels. PAHs were also detected at concentrations above ADEC cleanup levels. Photographs of the site are included as photograph 6 and 7 in Appendix B.	Amundsen Environmental Services proposes a cleanup strategy of excavation and stockpiling/landfarming an estimated 800 cubic yards of hydrocarbon-contaminated soils from the Old Tanana Power Company. The cleanup should be undertaken to meet ADEC Method Two cleanup levels. Soils would be removed from the existing residential neighborhood and stockpiled on Tanana Power Company, Inc. property to the north.	Amundsen Environmental Services. *Tanana Power Plant Lot 8, Block 10 Site Characterization Report*. April 2009. ADEC Contaminated Sites Database, http://www.dec.state.ak.us/SPAR/CSP/db_search.htm, June 2009.
780.38.013	ADOT&PF	ADOT&PF Tanana Maintenance Shop	*Spill Date: 10/1/2004 Spill ID: 4375* Several abandoned drums likely containing used oil were identified behind the ADOT&PF maintenance shop at the Tanana Airport by ADEC staff in 2004. The Site is also the former location of a leaking AST that was removed in 2006. A new AST was installed and a photographic survey of abandoned drums, assumed to be associated with ADOT&PF maintenance shop operations, was conducted. A 2007 site investigation was conducted to determine the nature and extent of soil contamination remaining at the site. Contaminated soil was identified bellow the former drum storage area and the former AST. During 2008 activities, contaminated soil was excavated from the drum site. Confirmation samples collected from the limits of the drum site excavation were below cleanup levels demonstrating that all contamination at the drum site had been removed. Contaminated soil removed from the drum site was transferred to an ADOT&PF-approved landspreading location on the Tanana Airport property. At the AST location, test pits were excavated and sampled in 2008 to further determine the extent and location of contamination in this area. Results from both the 2007 and 2008		ADEC Contaminated Sites Database, http://www.dec.state.ak.us/SPAR/CSP/db_search.htm, June 2009. Hoefler Consulting Group (HCG). *Alaska Department of Transportation and Public Facilities Tanana, Alaska 2007 Site Characterization Report.* June 2007. HCG. ADOT Tanana Airport Data Report (NPT 1890281311). September 26, 2008.

TABLE 1 (CONTINUED)
DEC KNOWN CONTAMINATED SITES IN TANANA

DEC File Number	Site Owner	Site Name	History	Recommendations	Reference
			investigations at the former AST location indicate DRO, benzene, and ethylbenzene above ADEC cleanup levels are present in soils around the former AST. The site is shown in photograph 24 of Appendix B.		
780.38.008	ADOT&PF	FAA Tanana FABLM/AK Fire Service Station	*Spill Date: 1/25/1989 Spill ID: 723* Reported potential contaminants onsite in unknown quantities include petroleum, oil, lubricant waste, PCBs, asbestos, solvents, herbicides, paints, antifreeze. Dates of disposal, presence, or extent of contamination are unknown. Site investigations conducted indicate that fuel, primarily DRO, are contaminants of concern. Furthermore, isolated areas of benzene many exist across the FAA Flight Service Station. In 1998, soil was excavated in the locations of two former USTs at the site that were previously removed without ADEC guidance. Confirmation sampling determined that all soil in the excavation area did not contain concentrations of DRO, benzene, toluene, ethylbenzene, or total xylenes above ADEC cleanup levels. USTs with known contamination remain on site. These USTs are identified in LUST file 780.26.003.		ADEC Contaminated Sites Database. http://www.dec.state.ak.us/SPAR/CSP/db_search.htm, June 2009. U.S. Department of the Interior Bureau of Land Management Alaska Fire Service. *Tanana Fire Station Assessment.* August 1998.
780.26.003	Alaska Fire Service BLM	BLM Alaska Fire Service Tanana Station	*Spill Date: 8/30/1993 Spill ID: 24397* Expected to excavate the three 3,000-gallon 100LL AVGAS USTs in 1994. Twelve yards of contaminated soil is stockpiled on site. Previous file #780.38.008. The site is shown in photograph 30 in Appendix B.		ADEC Contaminated Sites Database. http://www.dec.state.ak.us/SPAR/CSP/db_search.htm, June 2009.
780.38.006	FAA	BLM/AK Fire Service Housing Complex Tanana	*Spill Date: 9/23/1993 Spill ID: 1928* This site includes BLM-owned property in the Former Living Quarter's Area, identified in Figure 3. Ground water at the site is impacted and contamination is moving towards the Yukon River, approximately 200 yards from the site. A rough site assessment was conducted in 1993 to assess possible contamination at four housing units in the Former Living Quarter's Area including homes #207, #106, #103, and #104. All of the houses used electric heat, however, three of the homes had previously been heated using fuel oil. Tanks remaining at the properties include a 1,000-gallon tank with 348 gallons of diesel remaining at #106, a 500-gallon tank with 275 gallons of diesel left at house #103; and a 500-gallon tank with 154 gallons of diesel left at house #104. Eight-foot test holes were drilled around areas of suspected contamination. Samples collected indicated contamination at houses #104 and #106. The site is shown in photograph 25 in Appendix B.		U.S. Department of the Interior Bureau of Land Management Alaska Fire Service. Letter Re: Soil Testing, Tanana FAA Housing. September 15, 1993. ADEC Contaminated Sites Database, http://www.dec.state.ak.us/SPAR/CSP/db_search.htm. June 2009.
780.38.010	U.S. Department of Interior BLM	BLM Tanana Lot 3 Former Tank Farm	*Spill Date: 2/28/2001 Spill ID: 3804* According to the BLM statement of work for the current removal action, the tank cars and most of the solid waste have been removed from the lot. Grid oriented field screening at 12 inches bgs on the 5-acre site of a former tank farm showed that petroleum contamination is present. DRO at 33,200 parts per million was detected from laboratory analysis of samples taken from a low-lying swampy area of silty sand soil where vegetation is suppressed. The Nenana Fuel Company has removed all solid waste (including the battery pile) from the property. The Nenana Fuel Company formerly operated a fuel offloading facility at the site and the company's fuel storage and distribution activities in the 1970s and 1980s is responsible for most of the contamination on the property. Ownership history of the property is unclear, however, reportedly the lot never left BLM ownership. In 2003, contaminated soil was excavated from the site; however, confirmation samples indicated that DRO remained in soils on site at concentrations above ADEC cleanup levels.	In 2005, Shannon and Wilson Inc. prepared a plan to remove contaminated soil remaining on site, as well as an abandoned fuel pipeline leading from the Yukon River to the site. Tasks for this work included soil excavation in the area of the 2003 corrective action areas; draining and removal of the old fuel pipeline; excavation of contaminated soils encountered during pipeline removal; and packaging, transporting, and treating or disposing of contaminated soil residual fuel, and pipeline scrap. Field screening and soil sampling would be used to confirm that the extent of contamination has been removed and to characterize excavated contaminated soil for treatment and/or disposal. Options for handling contaminated soil would be determined upon completion of the excavation activities, once the quantity of contaminated soil is known. Disposal options for handling contaminated soil would be determined upon completion of the excavation activities, once the quantity of contaminated soil is known. Disposal examples include on-site thermal treatment; transportation via barge and highway for off-site thermal treatment; or disposal at the Tanana City Landfill. Residual fuel drained from the pipeline will be transported off site for disposal. Pipeline sections and other non-hazardous solid waste will be disposed of at the Tanana City Landfill.	ADEC Contaminated Sites Database, http://www.dec.state.ak.us/SPAR/CSP/db_search.htm. June 2009. Shannon & Wilson, Inc. *Sampling and Analysis Plan Tanana Tank Site, Tanana, Alaska.* June 2005. Wilder Construction Company. *Work Plan, Site Investigation and Soil Removal Tanana Tank Site, Tanana, Alaska.* November 15, 2002.
780.38.001	FAA	FAA Tanana Station	*Spill Date: 12/15/1994 Spill ID: 2324* The FAA Tanana Station Site includes the NDB facility, the VORTAC facility, the FSS,	Closure of the FSS station was recommended by AHTNA Government Services Corporation. For the Former Living Quarters Area potential	CH2MHILL Constructors Inc. *Tanana FAA Station Power Point Presentation*. 2004ADEC Contaminated Sites

TABLE 1 (CONTINUED)
DEC KNOWN CONTAMINATED SITES IN TANANA

DEC File Number	Site Owner	Site Name	History	Recommendations	Reference
			and FAA-owned property at the Former Living Quarter's Area (Figure 3). Petroleum hydrocarbon contamination was present in site soils and ground water; free-product present in wells at various locations at the facility, including wells adjacent to the Yukon River. At the VORTAC facility, a 1,000-gallon UST was removed in 1997. Petroleum hydrocarbon concentrations in confirmation samples were below ADEC cleanup levels and clean closure of the VORTAC facility was achieved. At the NDB facility, a storage shed, generator, and two fuel storage tanks were removed during the 1960s. The only structures present now are an antenna and associated transformer. An oil sample was collected from the transformer in 1992 and analyzed for PCBs. PCB results for the transformer oil were 320 milligrams per kilogram, classifying the transformer as “PCB-contaminated.” This transformer has been replaced. At the FSS facility, a 1,064–gallon non-regulated UST (15-C-1) was excavated in 1997. A second UST was encountered under the FSS building and was left in place. In 1998, additional soil samples were collected from two soil borings. Three test pits were excavated in 1997 to attempt to locate a reported dry well. No signs of a dry well were observed. An inactive water supply well was abandoned in 1997. Confirmation soil samples from the UST excavation had one DRO above the ADEC Level B cleanup level. Soil samples from the two soil borings were below ADEC cleanup levels for DRO and benzene, toluene, ethylbenzene, and total xylenes. The FSS building was demolished in 2007, and the second UST was decommissioned, and all remaining contaminated soil from both USTs was excavated at that time. At the Former Living Quarters Area in 1997, fuel storage tanks and pipelines were decommissioned; two stained surface soil areas near the Shop Building and Engine Generator Building were excavated; four water wells and two sewage lift stations were abandoned; Buildings 30 and 602 were demolished; and lead-based paint abatement was performed on exterior siding of Buildings 30 and 205. Confirmation soil samples from several excavations indicated that soil contamination remained at the site. Ground water monitoring, soil sampling, surface water and sediment sampling; aquifer slug and pumping tests; and bail down rebound tests were performed from 1999 through 2003. Petroleum-contaminated soil was found to remain in the surficial silt (0 foot to approximately 10 feet deep) and the underlying sandy gravel soil (10 feet to 25 feet deep); benzene, GRO, and DRO at concentrations above ADEC Table C cleanup levels are present at the site; and three main ground water plumes exist: originating generally between the State Building and Shop Building 205 and extending around a permafrost area southward towards Quarters Building 102, near the decommissioned fuel pipeline "T" junction and extending southwards towards well MW003, and South of Engine Generator Building 600 and extending southwards towards probe MP029. In 2007, stockpiled soil at the Former Living Quarter's Area was treated using Infra-red Thermal boxes. Post-treated soil sampling indicated soil is below ADEC cleanup levels. The site is shown in photograph 26 in Appendix B.	remedial alternative were identified in the CH2MHill Tanana FAA Station presentation. Potential remedial approaches for benzene in ground water would include: natural attenuation with long-term monitoring; air sparging of hotspot areas; and institutional controls if the property is transferred. Residual DRO in soil and ground water has a lower risk and mobility potential and alternatives were not identified. Remediation alternatives for stockpiled soil include landspreading or thermal treatment. To move forward with the site, CH2MHILL suggested the following: seek ADEC review and approval of alternative cleanup levels and closure requirements; A Feasibility Study report will be prepared that includes a remedial alternative evaluation and selection of a preferred alternative; review and comments by ADEC, ADOT&PF and Tanana community; finalize approach; implementation of further remedial actions and/or long-term monitoring.	Database, http://www.dec.state.ak.us/SPAR/CSP/db_search.htm. June 2009.

Abbreviations:

ADEC – Alaska Department of Environmental Conservation
ADOT&PF – Alaska Department of Transportation & Public Facilities
AST – aboveground storage tank
AVGAS – aviation gasoline
bgs – below ground surface
BLM – Bureau of Land Management
DRO – diesel range organics
EPA – U.S. Department of Environmental Conservation
FAA – Federal Aviation Administration
FSS – Flight Service Station
GRO gasoline range organics
IHS – Indian Health Service
LUST – Leaking Underground Storage Tank
MCL – Maximum Contaminant Limit
NDB – Non-Directional Beacon
PAHs – polynuclear aromatic hydrocarbons
PCB – polychlorinated biphenyls
RRO – residual range organics
UST – underground storage tank
VORTAC – Very-High Frequency Omnidirectional Range Tactical Air Navigation

According to 2000 U.S. Census data, 100 Tanana residents are employed. Two-thirds of the full-time jobs in Tanana are with the city, school district, or native council. There are also a number of positions with local businesses and services. The unemployment rate at the time of the 2000 U.S. Census was 23.66%, although 52.38% of all adults were not in the work force. The median household income was $29,750, per capita income was $12,077, and 22.95% of residents were living below the poverty level. Bureau of Land Management (BLM), firefighting, trapping, construction work, and commercial fishing are important seasonal cash sources. Seventeen residents hold commercial fishing permits. There is one school located in the community, attended by 38 students.

2.2 COMMUNITY INVOLVEMENT

Following development of the Tanana EMP, a team of stakeholders were identified to discuss the desired cleanup and reuse of the Tanana contaminated sites. Reuse of contaminated sites is desirable to members of the community because limited open space is available in the city. Several homes located in a low lying area of Tanana are subject to flooding, and the community has expressed a desire to relocate these homes to a location closer to the center of the village.

2.2.1 COMMUNITY CONCERNS

Primary community concerns were identified through conversations with Tanana residents during the site visit. The source of contamination for the drinking water well is unknown and this is a concern for the residents of Tanana. Likewise, the community is concerned by the amount of known contaminated sites and potential contaminated sites located in the City of Tanana that have not yet been remediated. Furthermore, sewage disposal practices, where treated sewage is pumped into the river, causes concern for subsistence fishing in Tanana.

2.2.2 SUMMARY OF FIELD INTERVIEWS

Interviews were conducted with individuals available during the site visit who were knowledgeable about current and historical environmental conditions in Tanana. The following summarizes pertinent information gathered from interviews conducted for this EMP.

- The drinking water well occasionally is unable to provide sufficient water draw between March and April. When this occurs, drinking water is collected from the river. Water from the well or from the river is sent to the treatment plant. The treatment plant is also the location of the city laundromat and is the only filling station for hauling drinking water in town.

- A large swale located near the city water well was identified by several individuals as a potential source of subsurface contamination. It is reported to contain wooden and metallic debris and 55-gallon drums. (The property is known locally as the Joe Burns property. See photograph 5 in Appendix B.)

- Another potential source of petroleum impact in the area is the Don's Video property. Although Don's Video is no longer operational, fuel was formerly stored and dispensed at the site.

- In 2004 people were asked to bring waste material that included potential contamination sources (drums, batteries, scrap equipment, etc.) to the landing where it was staged for shipment. The shipment, however, reportedly did not happen and the material remained at the landing for several years. Residents were concerned about the potential for leakage or mishandling in disposal.

- A property across the street from the drinking water well was reported to be a former gasoline-drum storage area. This former drum storage area was located approximately 100 feet northwest of the drinking water well. Reportedly, more than 200 drums of "high-octane" gasoline were stored here, and there was a report of at least one occasion where several drums were punctured by a fork lift.

- Three buried rail tank cars historically used to store gasoline at the airport were identified as a potential source of contamination in Tanana.

- A former Fort Gibbon wood-stave tank farm where wooden containers were used to store fuel near and upgradient from the drinking water well was identified as a potential historical source of contamination.

- There were concerns resulting from recent flooding of the Yukon River in Tanana where outhouses and fuel tanks throughout Tanana were knocked over.

- Concern was expressed about the effect of sewage disposal practices on subsistence fishing as treated sewage is discharged into the river in the fall. The sewage dispensing site is shown in photograph 2 in Appendix B.

- The past practice of spraying oil onto Front Street for dust control raised concerns about leaching of contaminants present in the oil and their potential environmental impacts.

3. PROPERTY/SITE OVERVIEW

3.1 GENERAL OVERVIEW OF SITE PROPERTIES

There are 20 sites identified in the Tanana area from review of the DEC Contaminated Sites and LUST on-line database records. Two LUST sites identified; *FAA-Tanana VORTAC*, file identification (ID) 780.26.001; and *Tanana Gas Company*, file ID 780.26.002; have been cleaned up and closed and are not discussed further in this EMP. Seven additional sites listed under file number 780.38.002, including *Bear Creek RRS Yukon River POL Site SS008, Bear Creek RRS Borrow Pit Area SS007, Bear Creek RRS Barrel Storage Area SS006, Bear Creek RRS Fuel Storage Area SS003, Bear Creek RRS Equipment Bldg SS004, Bear Creek RRS Landfill LF001*, and *Bear Creek RRS Vehicle Maintenance Shop SS002*, are not located in close proximity to the town site and are also not discussed further in this EMP. The eleven remaining know active contaminated sites are in the Tanana town site area and are identified below with their respective DEC contaminated sites or LUST database file number.

1. Tanana City Drinking Water Well – 780.38.004
2. Tanana School – 780.38.012
3. IHS Tanana Health Center – 780.38.003
4. IHS Tanana Building 303 – 780.26.004
5. Tanana Power Company (former location) – 780.38.014
6. ADOT&PF Tanana Maintenance Shop – 780.38.013
7. FAA Tanana FABLM/AK Fire Service Station – 780.38.008
8. BLM Alaska Fire Service Tanana Station – 780.26.003
9. BLM/AK Fire Service Housing Complex Tanana – 780.38.006
10. BLM Tanana Lot 3 Former Tank Farm – 780.38.010
11. FAA Tanana Station (Flight Service Station) – 780.38.001
12. FAA Tanana Station (Former Living Quarters) – 780.38.001

Additional sites of environmental concern in Tanana identified through reporting reviews, interviews, and the site visit, include the following:

1. Buried Rail Tank Cars
2. Former Washeteria
3. Tanana Power Company (current location)
4. City Shop / Garage
5. Don’s Video

6. Former Fort Gibbon Tank Farm
7. Former Front Street Drum Storage Area
8. Drums and Debris in Swale
9. Former Fort Gibbon Wood Stave Tank Farm
10. Tanana Gas Company Store
11. Tanana Gas Company Fuel Station
12. Second Avenue Drum Storage Area
13. Scrap and Hazardous Material Storage Area
14. Front Street Dust Control

3.2 GEOLOGIC SETTING

Soils in the vicinity of Tanana consist of stratified silty and sandy loam approximately 2 feet to 3 feet thick, derived from fluvial and eolian deposits. Permafrost in the Tanana area is generally discontinuous and occurs at depths of 5 feet to 15 feet below ground surface. Soils on the lower portion of the floodplain are poorly drained and commonly are saturated above shallow permafrost. Soils on the higher natural levels are well drained and generally free of permafrost. (Ecology and the Environment, 1992)

3.3 KNOWN CONTAMINATED SITES

Summaries of each site located in the Tanana town site that are included in the DEC Contaminated Sites or LUST databases, are presented in Table 1. Information presented in Table 1 includes the DEC file number, the site owner, the spill date, the spill number, a brief site history known contamination sources and past actions or investigations at the site, recommendations if provided, and reference documents used to determine the information included in this table for each site.

3.4 OWNERSHIP INFORMATION

Site ownership information for known contaminated sites in the Tanana town site is included in Table 1.

3.5 RECORDS REVIEW

Records reviewed to prepare this EMP included DEC's Contaminated Sites and LUST databases in addition to report files maintained by DEC for each listed site. The database and available historical site reports were used to chronicle the history of each site; identify known contamination sources, and previous environmental investigations, or remediation conducted at the site, and remedial recommendations that may have been made for each site. Report references for each site are identified in Table 1 and are also included in the reference section of this document.

The State of Alaska Division of Environmental Health Drinking Water Program records were also reviewed for this EMP. The Drinking Water program identified three public drinking water sources, including one well and two surface water locations. Analytical data for the drinking water well (Appendix F) was reviewed in addition to a Source Water Assessment prepared by the Drinking Water Protection Program.

4. ENVIRONMENTAL REVIEW AND SUMMARY OF FINDINGS

This section summarizes the findings of environmental file reviews and on-site interviews conducted with community members in the Village of Tanana.

4.1 HISTORICAL ENVIRONMENTAL REVIEW

Information reviewed for preparation of this EMP included records of known contaminated sites discussed in Section 3.5, and interviews with community members, discussed in Section 2.2.2.

4.2 SITE RECONNAISSANCE METHODOLOGY

Representatives from SLR and DEC visited Tanana on June 15 through June 17, 2009. The primary objective for the site visit was, through visual observation and interviews with persons knowledgeable in the present and historical activities conducted in the community, to document and verify potential environmental concerns and areas of contamination in Tanana not included in the DEC contaminated sites or LUST databases. Photographs of all potential contaminated sites identified, with the exception of the Scrap and Hazardous Material Storage Area, were taken (Appendix B), and the locations were recorded using a handheld global positioning system device (Appendix G). Observations of potentially contaminated sites are discussed in Section 5.2. Locations of known contaminated sites identified in the DEC databases were also confirmed during the site visit.

4.3 POTENTIAL SOURCE AREAS

All active contaminated sites identified in the DEC contaminated sites and LUST records are known source areas of contamination. These sites are discussed in detail in Table 1 and the locations of these sites are shown on Figures 1 and 2.

Additional areas of potential concern in Tanana identified through SLR's 2009 site visit are discussed below. The locations of these potential sites are shown on Figure 2. Previous investigations conducted to determine potential areas of environmental concern in Tanana were conducted by Ridolfi Engineers Inc. in 2002 (Ridolfi, 2002), and by the DEC Alaska Drinking Water Protection Program in 2004 (DEC Drinking Water Protection Program, 2004). Tables and figures presenting the sites of concern identified through these studies are presented in Appendix C and Appendix H. The information presented below was determined through visual observation and interviews conducted during SLR's Tanana site visit, documented in Section 2.2.2.

4.3.1 BURIED RAIL TANK CARS

Three rail tank cars, each reportedly 15,000-gallons in size, are buried near the runway at the airport. The tanks have manholes visibly protruding upwards through the ground surface. A former fuel dispenser is located near the tanks. No evidence of fuel spills at this area was observed; however, as a bulk fuel storage location, this area is a potential contamination source. The tanks are reportedly abandoned and information on the owner and operational history of this fuel storage and dispensing system was not available. The site is shown in photographs 22 and 23 in Appendix B.

4.3.2 FORMER WASHETERIA

Two 55-gallon capacity drums and a 10,330-gallon train fuel tank were observed at the site of the former washeteria during SLR's site visit. No soil staining was observed at this facility; however, a fuel odor was noted indicating contamination is present in this area. The site is shown in photograph 20 in Appendix B.

4.3.3 TANANA POWER COMPANY

Tanks stored at the Tanana Power Company include eight 25,000-gallon capacity diesel storage tanks, two 25,000-gallon capacity compartment diesel tanks, one 4,000-gallon capacity city fuel dispenser tank, and one empty 25,000-gallon capacity contingency tank. While this is a bulk petroleum storage facility and could be a potential contaminated site, no staining, stressed vegetation, or other evidence of spills were observed during the site visit. The Tanana Power Company is shown in photograph 12 in Appendix B.

4.3.4 CITY SHOP / GARAGE

Multiple miscellaneous bulk fuel storage tanks under 1,000 gallons, as well as heavy machinery identified in Section 6.3, are stored at the city shop. There was some minor staining observed during the site visit indicating a possible release at this site. The City Shop / Garage are shown in photographs 13 and 14 in Appendix B.

4.3.5 DON'S VIDEO

Don's video, no longer in operation, reportedly stored and dispensed fuel. No evidence of dispensing activities was identified at this location during the site visit; however, a few unidentified drums were noted to be located at this property.

4.3.6 FORMER FORT GIBBON TANK FARM

A tank farm reportedly operated by Fort Gibbon was formerly located in the vicinity of the contaminated drinking well. In 1898, Fort Gibbon was founded at Tanana to maintain the telegraph line between Fairbanks and Nome. Later, in 1908, the telegraph line was abandoned for wireless radio communications. Fort Gibbon was abandoned in 1923. No other information is known about this site, however, as a former bulk fuel storage area; this is a potential source of contamination. A nearby but separate facility, referred to as the former

Fort Gibbon wood stave tank farm, is located to the southwest of this tank farm and is discussed below. The site is shown in photograph 5 in Appendix B.

4.3.7 FORMER FRONT STREET DRUM STORAGE AREA

In 1966 or 1967, over 200 drums of high octane gasoline were reportedly stored at this location. A former employee for this area described an instance of a fork lift puncturing a few drums at this site making it a potential source of contamination. The site area is shown in photograph 5 in Appendix B.

4.3.8 DRUMS AND DEBRIS IN SWALE

A large drum dump was observed during the site visit. Ten to 15 drums were present in this location. All of the drums observed during the June 2009 site visit were in poor condition, and the drums were corroded such that a release of any contents may be imminent. The site area is shown in photograph 5 in Appendix B.

4.3.9 FORMER FORT GIBBON WOOD STAVE TANK FARM

Wooden containers and wood stave tanks were reportedly used to store fuel for the Fort Gibbon facility. Wood alone is not sufficient containment for fuel, and it is likely that historical contamination is present in the areas of any former wooden fuel storage containers. Additionally, an old pump reportedly associated with the wood stave tank farm was observed during the site visit. The pump was in poor condition and any oil used to operate this pump likely has been released. It is not known when this system was decommissioned. Photograph 11 in Appendix B shows the pump at the site.

4.3.10 TANANA GAS COMPANY STORE

The former store operated by the Tanana Gas Company was reportedly a location of fuel storage and is a logical potential contamination source; however, the store is no longer operational and no staining, stressed vegetation, or evidence of surface contamination was observed during the site visit.

4.3.11 TANANA GAS COMPANY FUEL STATION

The Tanana Gas Company is identified as a closed LUST site in the DEC LUST database, therefore, the former underground storage tank is not included as a potential source of contamination. A bulging drum containing unknown liquids was observed on the property during the site visit. This drum has the potential for leaks and could be a possible contamination source. The Tanana Gas Company Fuel Station is shown in photographs 9 and 10 in Appendix B.

4.3.12 SECOND AVENUE DRUM STORAGE AREA

This drum storage area was observed during the site visit. Approximately eight drums and 30 gas cylinders were present at the time of observation. All of the drums appeared to be in poor condition and one of the drums was bulging. It is possible the weathered drums at this

location have previously caused a release and potential contamination. The site area is shown in photograph 21 in Appendix B.

4.3.13 SCRAP AND HAZARDOUS MATERIAL STORAGE AREA

In 2004 scrap and hazardous material was reportedly transported to a storage area near the Yukon River by the residents of Tanana for staging prior to removal by barge. Materials brought to this area were reported to include batteries, old engines, and drums and plastic buckets of miscellaneous fluids. It is not known if the materials were barged out since the staging area was not visited during the 2009 site visit and may have been within the area flooded during breakup in spring 2009. The present location of the materials historically staged at this area is unknown.

4.3.14 FRONT STREET DUST CONTROL

Oil believed to contain polychlorinated biphenyls was reportedly historically sprayed on the roads in Tanana for dust control. Front Street was allegedly heavily oiled and, as a result, heavy or residual range oils may be detectable in surface roads. Road samples in Tanana are reported to have been collected for petroleum hydrocarbon analysis, but these reports were not available to SLR.

4.4 KNOWN OR PERCEIVED DATA GAPS

Flooding during spring 2009 and in earlier years may have washed out obvious evidence of contamination in flooded areas, including soil staining and stressed vegetation that would have been observed during the site visit. The magnitude of impact to environmental media at the potentially contaminated sites not included in DEC's Contaminated Sites or LUST records is unknown, and it is possible that no contamination is present at these sites.

5. RECOMENDED ACTIONS

The following sections summarize proposed actions to aid in addressing contaminated areas in Tanana.

5.1 RECOMMENDED REMEDIAL ACTIONS BY SOURCE AREA

Specific recommended environmental actions for sites included in the DEC Contaminated Sites and LUST records are included in Table 1. SLR recommends conducting Phase I Environmental Site Assessments at the potential sites not included in the DEC databases, identified in Section 5.2, using American Society for Testing and Materials (ASTM) E1527-05 Standard Practice for Environmental Site Assessments. In addition, SLR recommends that actions be taken at the two drum sites to prevent an imminent release of contaminants to the environment. SLR further recommends that a search for the owner of the buried rail tank cars at the airport be conducted for the purpose of requesting the rail cars, which are configured as USTs, be decommissioned in accordance with DEC regulations as required by 18 Alaska Administrative Code (AAC) 78.

5.2 GENERAL SOIL REMEDIATION STRATEGIES

The following remedial strategies have been considered for the management of contaminated soil in Tanana. Site-specific characterization should be conducted to determine the extent and location of contamination prior to finalizing remediation strategies.

- **Passive Biopile Construction** – In this option, excavated soils are mixed with clean soil, placed on a treatment area, and covered. Aeration is provided passively through perforated pipe extending into the pile. The pile is covered and a leachate collection sump is included to manage water if the cover is damaged. The pile is left until the soils meet specified cleanup levels for land spreading or beneficial reuse.
- **Road Base Encapsulation** – This method would be appropriate if a barrier to provide zero net infiltration was part of the road prism design along with other requirements of 18 AAC 75.360(11)(G). However, as soil in Tanana is mostly a silt matrix, and since silt is not generally suitable as road base material, this option is likely not feasible for Tanana because it would require blending contaminated soil with significant amounts of uncontaminated material to meet construction specifications.
- **Daily Landfill Cover** – Under this option, contaminated soils could be used for landfill cover. This option requires permission from DEC's Solid Waste Program, and typically is contingent on pre-treatment of soil prior to use as landfill cover. This alternative is a common form of beneficial reuse of contaminated soil, is less expensive than many other options at remote sites, and effectively manages risks associated with contaminated soil. Following treatment to acceptable standards, this method would require the construction of a temporary soil stockpile or landfarming area to store/manage the material until it is used as cover material.

- **Landfarming** – This method includes spreading the contaminated soil into a 1-foot thick layer. The soil is tilled monthly during the summer months using a roto-tiller. Tilling aerates the soils to promote aerobic degradation of contaminants in the soil. The addition of fertilizer is also used to promote biological activity. Initial landfarm characterization samples are collected to document contaminant levels at the time of placement. Characterization samples are collected on an annual basis to determine when cleanup goals are met. The DEC Solid Waste Program may specify the cleanup requirements prior to using landfarmed soils as daily landfill cover.
- **Thermal Remediation** – Thermal remediation of contaminated soil is generally expensive at remote locations both to ship in treatment equipment and for the fuel required, and is most likely not a feasible option for Tanana.
- **Shipment off Site for treatment or disposal** – This option is used if soils cannot be reasonably treated on site and is most feasible when inexpensive transportation is available. If soil storage is determined to be hazardous, or no appropriate area exists for on-site treatment, it may have to be containerized and transported to a facility for treatment or disposal. In these instances, treatment typically involves incineration, and disposal typically involves placement in a permitted landfill.

The results of the evaluation of the identified soil remedial alternatives are presented in Table 2. The preferred alternative for contaminated soils at Tanana is landfarming prior to use as landfill cover. Precedence exists for using contaminated soils as landfill cover in rural communities, but it requires approval by DEC's Solid Waste Program. The Solid Waste Program requires that contaminated soil be managed prior to use as landfill cover after landfarming has been implemented to reduce contaminant levels to acceptable thresholds. Depending on the contaminant concentrations, this process typically takes two to three years.

Any management alternative for contaminated soil at the site should be preceded by the management, reduction and removal or disposal of construction debris, piping, above or below ground storage containers, buildings, or other material.

5.3 AVAILABLE RESOURCES IN TANANA AREA

Equipment identified in Tanana during the site visit included two large excavators, several small excavators, two bulldozers, two graders, two water trucks, and four to five dump trucks. Reportedly 20 people in the City of Tanana are trained in Hazardous Waste Operations and Emergency Response (HAZWOPER) per Occupational Safety and Health Administration (OSHA) requirements in 29 Code of Federal Regulations (CFR) 1910.120.

In addition, the City of Tanana has recently been using a former dumpsite as the location for the storage and management of a stockpile of contaminated soil resulting from the removal of two heating oil tanks at the school. This location has the potential of serving as a city-wide landfarming facility if managed properly and with DEC oversight.

5.4 QUALIFICATIONS OF QUALIFIED PERSONNEL

Personnel working on any field component for this project must be trained in HAZWOPER per the OSHA requirements in 29 CFR 1910.120. Equipment operators must have

certification with a commercial driver's license and be able to verify their training and experience to operate equipment required for this project.

Table 2
Evaluation of Remedial Alternatives for Soil

Alternative	Environmental Protection	Regulatory Compliance	Effectiveness	Implement-ability	Cost	Overall Rating
No Action	Fair	Fair	Poor	Excellent	Good; site ground water monitoring required	Fair
Passive Biopile Construction	Good	Good	Fair	Fair	Fair	Fair
Road Base Encapsulation	Good	Good	Good	Fair; Best if pavement is used in road construction. The contaminated soil is silt which is likely unsuitable for road base use.	Fair	If pavement is used – Good If not - Fair
Daily Landfill Cover	Fair	Fair	Fair	Good	Good	Good
Landfarming	Fair	Fair	Fair	Fair	Good	Good
Thermal Remediation	Fair	Fair	Good	Fair	Poor; extremely high cost for small projects	Fair

6. CONCLUSIONS

The following conclusions were drawn regarding the status of contaminated sites in the Village of Tanana.

Eleven contaminated sites located in the Tanana town site vicinity are current DEC contaminated sites or LUST sites. A summary of the DEC records and SLR site interview findings for each of these sites are included in Table 1 of this EMP.

SLR identified 14 additional sites of potential concern with respect to contamination with hazardous material. These sites were identified from interviews with Tanana community members and from visual observation during the site visit. SLR recommends conducting Phase I Environmental Site Assessment at each of these locations using ASTM E1527-05 Standard Practice for Environmental Site Assessments to further evaluate the potential of contamination at these sites. SLR identified landfarming as the preferred remedial alternative for sites with confirmed contamination that have been sufficiently characterized. In addition, SLR recommends that actions be taken at the two drum sites to prevent an imminent release of contaminants to the environment. SLR further recommends that a search for the owner of the buried rail tank cars at the airport be conducted for the purpose of requesting the buried rail cars, which were reportedly historically operated as USTs, be decommissioned in accordance with DEC UST regulations as required by 18 AAC 78.

7. REFERENCES

Amundsen Environmental Services. Tanana Power Plant Lot 8, Block 10 Site Characterization Report. April 2009.

Alaska Department of Environmental Conservation (DEC), Division of Environmental Health, Drinking Water Program. www.dec.state.ak.us/eh/dw/index.htm. June 2009.

DEC Division of Environmental Health, Drinking Water Program. *Source Water Assessment A Hydrogeologic Susceptibility and Vulnerability Assessment for the Tanana Safewater Facility Drinking Water System, Tanana, Alaska PWSID # 360109.001*. June 2004.

DEC. Letter RE: Contaminated stockpile from two 15,000 gallon buried heating oil tanks removal. Tanana School, January 5, 2009.

DEC Contaminated Sites Database, http://www.dec.state.ak.us/SPAR/CSP/db_search.htm. June 2009.

DEC Community Database Online, http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm. June 2009.

CH2MHILL Constructors Inc. Tanana FAA Station Power Point Presentation. 2004.

Ecology and Environment, Inc. *Environmental Compliance Investigation Report, Tanana FAA Station, Tanana, Alaska.* December, 1992.

Hoefler Consulting Group (HCG). Alaska Department of Transportation and Public Facilities Tanana, Alaska 2007 Site Characterization Report. June 2007.

HCG. ADOT Tanana Airport Data Report (NPT 1890281311). September 26, 2008.

Indian Health Service Department of Human Services. Project Summary Document Tanana Environmental Remediation, Indian Health Service Former Indian Health Service Hospital. March 2009.

Indian Health Service Division of Engineering Services. 2006 Ground water Monitoring Report, Former Indian Health Service Hospital, Tanana, Alaska. January 2007.

Independent Consultant Associated. Letter RE: Update on Contaminated Stockpile From Two 15,000-Gallon Buried Heating Oil Tanks Removal Summer 2006, Tanana School, Tanana Alaska. December 1, 2008.

Ridolfi Engineers Inc. Compilation of Environmental Information for Sites of Concern in and Around Tanana. August 29, 2002.

Shannon & Wilson, Inc. Sampling and Analysis Plan Tanana Tank Site, Tanana, Alaska. June 2005.

U.S. Bureau of the Census, Census 2000.

U.S. Department of the Interior Bureau of Land Management Alaska Fire Service. *Tanana Fire Station Assessment*. August 1998.

U.S. Department of the Interior Bureau of Land Management Alaska Fire Service. Letter Re: Soil Testing, Tanana FAA Housing. September 15, 1993.

Wilder Construction Company. Work Plan, Site Investigation and Soil Removal Tanana Tank Site, Tanana, Alaska. November 15, 2002.

LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

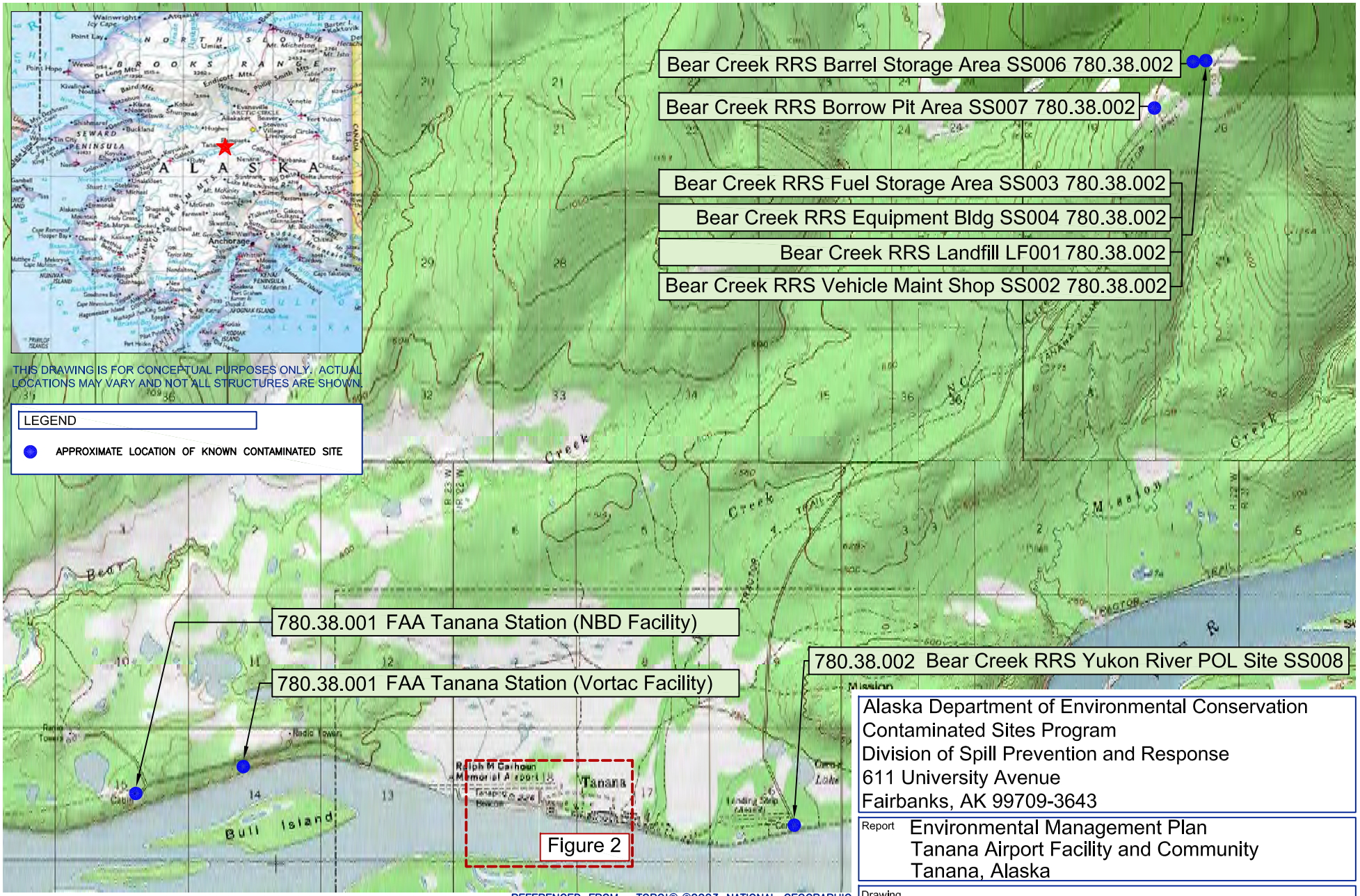
The purpose of an environmental assessment is to reasonably evaluate the potential for or actual impact of past practices on a given site area. In performing an environmental assessment, it is understood that a balance must be struck between a reasonable inquiry into the environmental issues and an exhaustive analysis of each conceivable issue of potential concern. The following paragraphs discuss the assumptions and parameters under which such an opinion is rendered.

No investigation is thorough enough to exclude the presence of hazardous materials at a given site. If hazardous conditions have not been identified during the assessment, such a finding should not therefore be construed as a guarantee of the absence of such materials on the site, but rather as the result of the services performed within the scope, limitations, and cost of the work performed.

Environmental conditions may exist at the site that cannot be identified by visual observation. Where subsurface work was performed, our professional opinions are based in part on interpretation of data from discrete sampling locations that may not represent actual conditions at unsampled locations.

Except where there is express concern of our client, or where specific environmental contaminants have been previously reported by others, naturally occurring toxic substances, potential environmental contaminants inside buildings, or contaminant concentrations that are not of current environmental concern may not be reflected in this document.

FIGURES



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LEGEND

APPROXIMATE LOCATION OF KNOWN CONTAMINATED SITE

REFERENCED FROM : TOPO!® ©2003 NATIONAL GEOGRAPHIC

SCALE: 1" = 1mi
WHEN PLOTTED AT 8.5 x 11 PAGE SIZE
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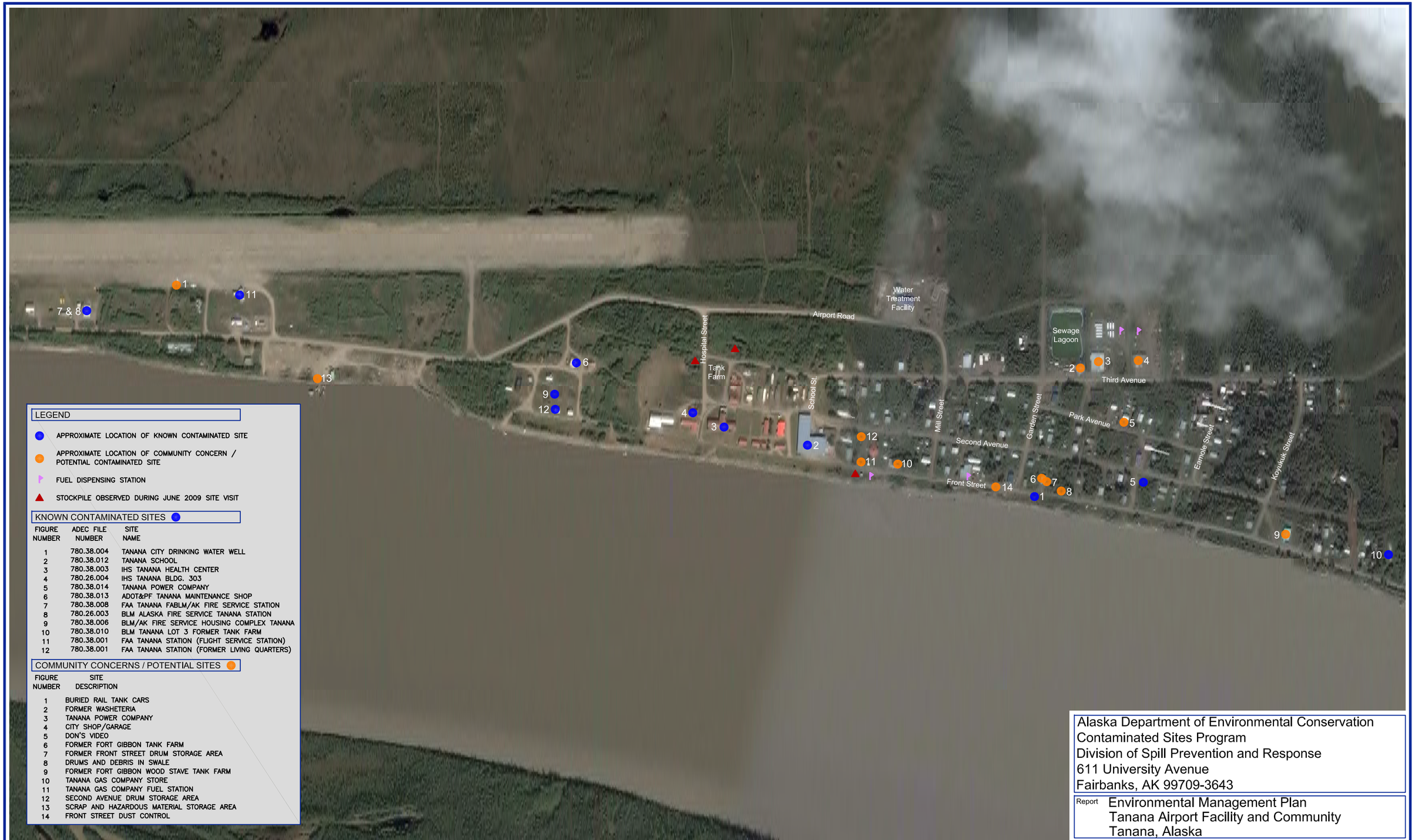
SLR

Alaska Department of Environmental Conservation
Contaminated Sites Program
Division of Spill Prevention and Response
611 University Avenue
Fairbanks, AK 99709-3643

Report: Environmental Management Plan
Tanana Airport Facility and Community
Tanana, Alaska

Drawing: Contaminated Sites Location Map

Date: June 2, 2009	Scale: 1"=1mi	Fig. No. 1
File Name: F1 Tanana	Project No.: 005.0065.09006	



LEGEND

- APPROXIMATE LOCATION OF KNOWN CONTAMINATED SITE
- APPROXIMATE LOCATION OF COMMUNITY CONCERN / POTENTIAL CONTAMINATED SITE
- FUEL DISPENSING STATION
- STOCKPILE OBSERVED DURING JUNE 2009 SITE VISIT

KNOWN CONTAMINATED SITES

FIGURE NUMBER	ADEC FILE NUMBER	SITE NAME
1	780.38.004	TANANA CITY DRINKING WATER WELL
2	780.38.012	TANANA SCHOOL
3	780.38.003	IHS TANANA HEALTH CENTER
4	780.26.004	IHS TANANA BLDG. 303
5	780.38.014	TANANA POWER COMPANY
6	780.38.013	ADOT&PF TANANA MAINTENANCE SHOP
7	780.38.008	FAA TANANA FABLM/AK FIRE SERVICE STATION
8	780.26.003	BLM ALASKA FIRE SERVICE TANANA STATION
9	780.38.006	BLM/AK FIRE SERVICE HOUSING COMPLEX TANANA
10	780.38.010	BLM TANANA LOT 3 FORMER TANK FARM
11	780.38.001	FAA TANANA STATION (FLIGHT SERVICE STATION)
12	780.38.001	FAA TANANA STATION (FORMER LIVING QUARTERS)

COMMUNITY CONCERNS / POTENTIAL SITES

FIGURE NUMBER	SITE DESCRIPTION
1	BURIED RAIL TANK CARS
2	FORMER WASHETERIA
3	TANANA POWER COMPANY
4	CITY SHOP/GARAGE
5	DON'S VIDEO
6	FORMER FORT GIBBON TANK FARM
7	FORMER FRONT STREET DRUM STORAGE AREA
8	DRUMS AND DEBRIS IN SWALE
9	FORMER FORT GIBBON WOOD STAVE TANK FARM
10	TANANA GAS COMPANY STORE
11	TANANA GAS COMPANY FUEL STATION
12	SECOND AVENUE DRUM STORAGE AREA
13	SCRAP AND HAZARDOUS MATERIAL STORAGE AREA
14	FRONT STREET DUST CONTROL

2006 AERIAL PHOTOGRAPH REFERENCED FROM : ©2009 GOOGLE EARTH PRO

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SCALE: 1" = 525'
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Alaska Department of Environmental Conservation
Contaminated Sites Program
Division of Spill Prevention and Response
611 University Avenue
Fairbanks, AK 99709-3643

Report: Environmental Management Plan
Tanana Airport Facility and Community
Tanana, Alaska

Drawing: Contaminated Sites Location Map Tanana City Detail

Date	June 2, 2009	Scale	1"=525'
File Name	F2 Tanana	Project No.	005.0065.09006

Fig. No. 2

LEGEND	
	INTERMITTENT STREAM
	FAA PROPERTY
	BLM PROPERTY
	FUEL LINE REMOVED
	FUEL LINE REMAINING
	LIMITS OF UST EXCAVATION

NOTES

PROPERTY OUTSIDE OF FAA AND BLM LOTS IS WITHIN STATE DOT TANANA AIRPORT PROPERTY

ALL FUEL STORAGE TANKS IN THE FORMER LIVING QUARTERS AREA HAVE BEEN REMOVED

DIAGRAM IS REFERENCED FROM CH2MHILL'S 2004 TANANA FAA STATION STATUS POWER POINT PRESENTATION

SLR

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Alaska Department of Environmental Conservation
Contaminated Sites Program
Division of Spill Prevention and Response
611 University Avenue
Fairbanks, AK 99709-3643

Report: Environmental Management Plan
Tanana Airport Facility and Community
Tanana, Alaska

Drawing: Tanana Airport Former Quarter's Area
Property Ownership Detail

Date: June 16, 2009		Scale: 1"=80'	Fig. No. 3
File Name: F3 Tanana		Project No.: 005.0065.09006	

APPENDIX A

FIELD NOTES

David Puchrik w/
Tamara Cardona-Marek

Tanana Environmental Management visit 6/15/09

1100 Arrive in Tanana.

1120 meet w/ Cynthia

She says Bear Creek, FAA sites are known w/ contamination

The well only draws water between March and April from the river when the well gets low water. Apparently there is a drum storage/hole in ground near ~~city~~ village water well (east of well)

Well water is sent to laundromat and treated. This is the only filling station. Tanana Gas Company apparently is the only place w/ UST'S. The rest are AST.

- People were told (5 years ago) to bring contamination sources to landing. It sat @ landing for 5 years, and likely made some contamination. It was supposed to be shipped off.

Bear - City Manager

Kathleen - Village

Money comes from Denali

Village Safe water does most projects. There is big concern over sewer/water installations. They put water and sewer in same box into houses. Sewer vents freeze up during winter.

Dons video no longer exists, but fuel was →

6/15/09

Stored and dispensed there. There are only two dispensing stations — Dale and Cindy's and Tanana Gas Company.

1300 Meet with Don. He says the well pumped dry and sucked contamination that direction from an old fuel supply company present during the 50's. 55 gallon drums of fuel. This is the location of the hole in the ground.

1330 Arrive @ Tanana Power Company Appears to be stained soil @ site. Purchased power company 1968-70?

1340 Take tour w/ Don

Albert Alley - Bulk Facilities, Cogehill

At airport - 3 railroad gasoline cars are buried.

1400 Meet w/ Kathleen (From Flood)

Flood silts on road, outhouses get knocked over, Fuel tanks got knocked down, The Circle area got hit hardest.

Kathleen feels that the power company is responsible for contamination in that area. A trench was open where strong diesel odors were observed. Area has been since covered. Apparently a tank farm was @ the power company.

Compound next to Tribal hall had a large tank farm w/ many spills.
White Alice sites used to oil roads w/ PCB oil.
Military old landfill has not been cleaned up.
Kathleen is concerned about remaining FAA building. They bid out their bldgs. instead of decommissioning them.
July 6 asbestos cleanup at 3 bldgs.
Kathleen is also concerned about PCB's in the ground water and feels that no one else is.
In the fall the sewage lagoon dumps sewage into the Yukon river. This is a big concern w/ subsistence fishing.
American Creek/Fish lake area (mining) Kathleen says they sample soil and water there every couple years. She says there are hits of mercury but does not know if they were above cleanup levels. She will ~~fax~~ report to Tamara. She claims there was a fish die off.
Texas creek (1960's) State had exploration site. Debris/barrels still remain. 45 miles up on Yukon river

Barging docking occurred @ well. Fuel offloading. ~~The~~ Front Street was heavily oiled in the past ~
Fort Gibbons 1899-1930's occupied Tanana area.

There was a large tank farm in the gravel pond area East of town -
1600 We take Tour with Katherine and look @ sites.
1700 FINISH tour, talk to Charlie with Toogha water company. We will meet with him Tuesday @ 0800.

0930 6/16/09
HEAD TO TALK TO Charlie @ water treatment laundry facility, Goes over system - water goes Through potassium for iron, manganese, then chlorinated, then polymer treated, floculated, moved through multimedia filter @ 18 gallons per minute Then through activated carbon tank to a final 2,000 gallon chlorinated tank
Daily tests for chlorine and turbidity
Bimonthly DEC Testing raw water testing. They send it to Analytica.
LT2 testing. Benzene is tested every other year only for raw water.

He isn't there. we talk to Dennis

(DP/TCM)

For contaminant testing results. It seems best to contact Analytica directly. —

1015 Charlie arrives we talk to him about testing. He also claims Fort Gibbons used to have a gasoline tank farm across the road from the well. —

Lester Earhart has well. Power company has well. Donald Johnson has a secondary well. School has a bad well.

1045 Back a Dale and Cinthia's. Tamara tries to find out when plane is coming. We talk to Cynthia about other people to talk to in town. Bear Ketzler, Julie Roberts, Mark. Hagland aren't in the village @ this time. We head out to take pictures and GPS sites. ~~We~~ I will drop of Tamara at airport. Dennis w/ Toogha drops by well when Tamara and I are looking at it. He said the well house is the old well. The new well (well #3) is outside of the well house. He says the surface water is collected from 250' away from shore. — Take pictures/GPS drums in low lying area caddy corner from Toogha Well #3. (New well) Apparently this used to be a hotel/saloon. — Go back to former Tanana Power company and GPS

(DP) 6

There is stained soil @ site. It smells like strong diesel. Stain was 5x10'. —
1215 HEAD TO Airport to drop off Tamara. —
1320 HEAD TO OLD TRAIN CARS At end of Runway. They are buried fuel carriers. There are 3 15,000 gallons fuel tanks from railroad cars buried @ end of runway. There is also an old dispenser. Took photos GPS. While @ airstrip go gps 780.38.008, and 780.38.001. —
1400 Call Carl for update ——
1430 Back out GPS and photos ——
Visit Don's video. There is no store/just someone's house. No evidence of former dispensing station. Just some drums.
1500 Go to ~~garage/shop~~ new power plant PP and gps and take photos. It is locked. There is some stained soil on the ground. Go behind new power plant area. → in front of bldg.
There is a lot of heavy equipment behind the city shop/garage. 2 very large excavators, dumptrucks, bulldozer, water truck
Behind power company is the old fill tanks that used to sit in the water. It got filled with no vapor release and blew up in the water 10000 g? —

1515 Arrive at City Shop Garage. Everything seems pretty clean. Some small stains on soil around shop but nothing real bad. GPS/Photograph. ——

1530 drive out to landfill gps/photo It appears well maintained w/ storage areas for batteries/oils etc. ——

Look for landfarm. Possible landfarm far out next to FAA area. Not sure. There is also a possibility that the landfarm is adjacent to the landfill. I gps both. ——

1600 I believe I have found actual landfarm. It is GPS'd as LFarm2. There is plastic underneath all of it w/ stained soil and drums of stained soil above the liner. Does not appear well maintained. ——

The rear tire is going flat. Go back to Dale and Cynthia's to get it repaired ——.

1630 Borrow Mule GPS other dispensing station Tanana Gas Co. ——

GPS'd stockpile near old well near Tanana Gas Co. dispenser. ——

GPS school and health center. School has a new tank on side of building ——

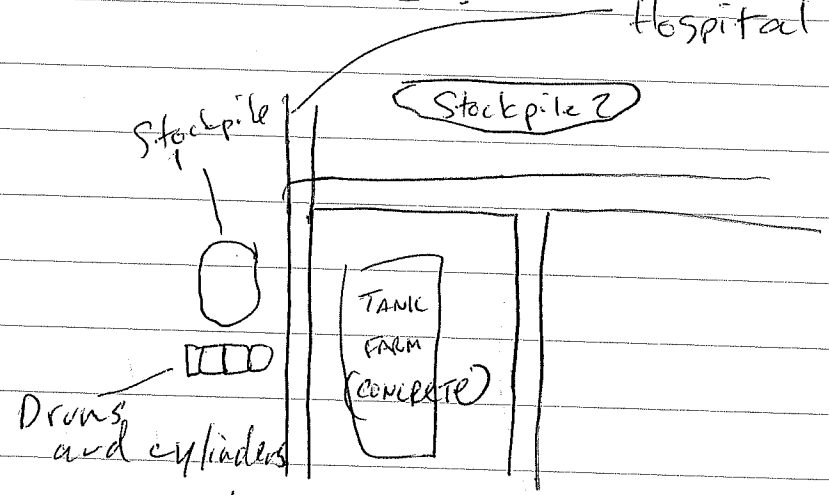
(DP) 8

6/14

The health center is shut down. A new health center is open a block east of big building.

There is no evidence of contamination @ school or health center.

Go to IHS ~~tank~~ farm area area and gps location plus other areas of concern in area.



GPS

1720 GPS / Photo ADOT + PF Maintenance shop

No signs of contamination / Shut down

1730 GPS / photo FAA Former Quarters Area (FAA FQA) and BLM/AK Fire Service Housing Complex (BLM AK FSHC)

The former Quarters area has what appears to be soil staining and large areas with no vegetation. There are no structures present in either of these areas

1745 Goto a former store location where Kathleen indicated a possible

(DP)

source of contamination. (on map). GPS and photograph. There is no evidence of contamination.

1800 Back @ Dale & Cynthia's. Dinner

1830 Head out to look for more sites near village well. (Tooghee) Nothing new is found. Inspect both dispensers of fuel. They appear to be brand new. Flood? There is zero evidence of soil staining at either dispenser. Nor is there leaks in the hoses. Tanana Commercial Co. (Dale/Cynthia) have above-ground lines from tank to dispensor that are in good shape. Tanana Gas Co. has below ground lines running to UST's.

NOTE: The flood may have erased evidence of contamination in many areas along the shoreline. Everything appears clean. ~~It~~ DP New dirt/material was likely brought in to redo ~~the~~ DP Front St. after the flood.

1930 Back @ DEC.

(David Pschirke)

6/17/09

0900 Head to tribal hall to review records. Before I get there, I go to GPS Sewage output location on River. I run into Mike Anden. He provides a lot of good information.

#1 In 1966 or 67, caddy corner (across street) (GPS'd) was a 55-gallon drum storage area. Over 200 drums of high octane gasoline was stored here for the white Alice sites. Mike said him and his friend were kids and loading drums and stacking them with a fork lift. Two 55-gallon drums (110 gallons) were punctured with the forks and fuel was spilled to land.

#2 He said there were two large tanks @ white Alice location near gravel ponds. During removal of the tanks Instead of purging remaining estimated 2,000 gallons, the operator of heavy equipment just tipped the tank over ~~spilling~~ DP emptying entire contents of either diesel or gasoline fuel.

#3 At the former tank farm location behind the hospital, there were three large tanks 10,000g? and one smaller tank. Mike remembers watching fuel spill over containment dikes when he was younger. Note: This is a huge containment area. Operator error. —
0945 At village office. Look through documents. I see Department of Interior report stating soil samples were collected on road for pcb's and negative results was the detection. Talk to Kathleen. She says Paul Earhart has good info Paul Earhart 7258 He was in her position before hers She is going to have him contact me and provide me with the rest of the Tidolphi report. I asked about talking to some elders. She said most of them are not here after flood and funerals.
1030 I check my list of action items and go gps the old washeteria. —
There are two 55-gallon (empty) drums on side of building near a 10,830-gallon train fuel tank which is behind locked fences. I take photographs. No soil staining is observed however a fuel odor in area was noticed.

(DP)

Talk to worker @ Power company. He says there are two dispensing locations: One at power company, a loading dock containment for fuel trucks, and one at city shop for heavy equipment. GPS both locations. He tells me bulk tank facilities and tank number and volumes. (Next page)

1130 Head back to Tribal Hall to find out volumes of tanks there. ———

There is not too much good info ~~for~~ UST's at Tribal Hall. List is on page 14. ———

1200 Head back to Tan. Com. Co. Pay for accomodations. ———

1230 Standby @ airport ———

(DP) conversation w/ power company

Power Company

8 ~~to~~ 25,000-gallon diesel

2 compartment 25,000 diesel

These are community tanks

1 4,000 gallon city dispenser pump

1 empty 25,000 contingency tank

School, city, tribal, Dale Tana; Alascom VS Star

Alascom New setup (remotely monitored)
1 tank

School 1 5,000-g double walled
1 1,000 g tank d/w

(DOT) State 2 double-walled 5,000 gallon diesel

Tanana Gas 3 10,000 g buried (UST'S) gasoline

Hospital (new) 1994 5 buried (UST'S) heating oil
- 1 AST

Harwopper ~~-~~ 20 people in town

18 feet is maximum dig depth.

They do have manpower to do remedial work

APPENDIX B

PHOTO LOG

Photographic Log

Photograph 1: The red well house in the picture is the location of the Tanana City Drinking Water Well site. The new Toogha well (Well #3), the current drinking water source, is located in the box in the lower right hand corner of the photograph.

Photograph 2: The old well house is also the location where sewage from the sewage lagoon is pumped into the Yukon River during fall months of the year.

Photograph 3: Surface water collection hose. This hose collects surface water for the village during low water months.

Photograph 4: The new water treatment and laundry facility.

Photograph 5: Drums and Debris in Swale site of environmental concern. This site is adjacent to the former Fort Gibbon Tank Farm and former Front Street Drum Storage Area.

Photograph 6: Tanana Power Company known contaminated site.

Photograph 7: Soil staining with odor at the *Tanana Power Company* known contaminated site.

Photograph 8: The fuel dispenser located at Tanana Commercial Company.

Photograph 9: The dispenser at Tanana Gas Company Fuel Station site of environmental concern.

Photograph 10: Expanded drum above UST's at the Tanana Gas Company Fuel Station site of environmental concern.

Photograph 11: Old pump which fueled the Former Fort Gibbon Wood Stave Tank Farm site of environmental concern.

Photograph 12: Tank farm at the Tanana Power Company site of environmental concern.

Photograph 13: City Shop/Garage site of environmental concern.

Photograph 14: Tanks and drums at the City Shop/Garage site of environmental concern..

Photograph 15: IHS Tanana Health Center contaminated site former tank farm.

Photograph 16: Large stockpile located north of the former tank farm at the IHS Tanana Health Center.

Photograph 17: Large stockpile located west of the former tank farm at the IHS Tanana Health Center.

Photograph 18: Drum/cylinder storage at the IHS Tanana Health Center.

Photograph 19: Land-farming area near landfill.

Photograph 20: 10,000 gallon train-car fuel tank used for heating the Former Washeteria site of environmental concern.

Photograph 21: Second Avenue Drum Storage Area site of environmental concern.

Photograph 22: This dispensing unit formerly drew fuel from the Buried Rail Cars site of environmental concern.

Photograph 23: Manhole to one of the Buried Rail Cars site of environmental concern.

Photograph 24: ADOT&PF Tanana Maintenance Shop

Photograph 25: Former location of BLM/AK Fire Service Housing Complex Tanana.

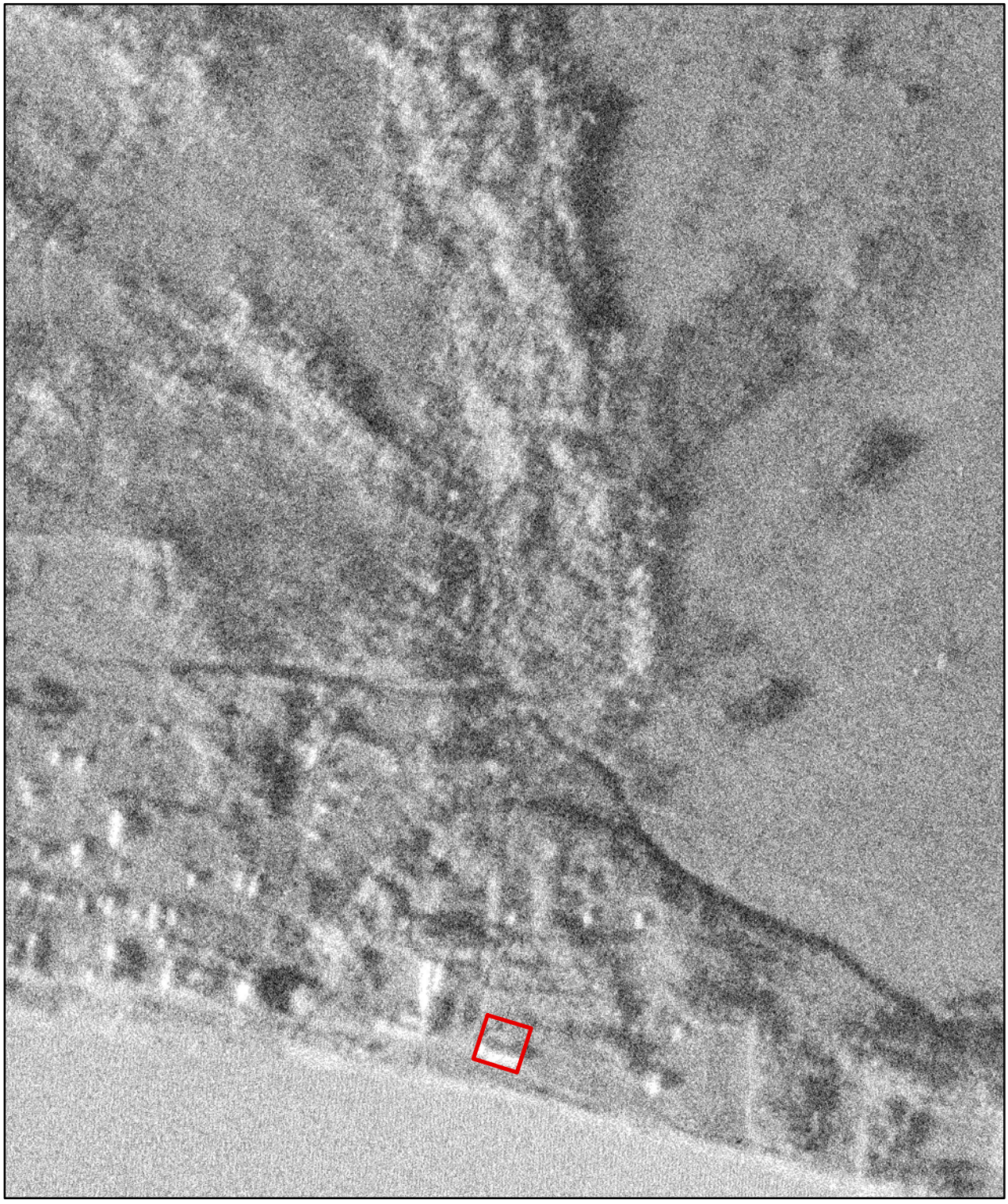
Photograph 26: Former location of FAA Tanana Station.

Photograph 27: IHS Tanana Building 303.

APPENDIX H

AERIAL PHOTOGRAPHS

- 1953 Aerial Photograph, 1:500 scale
- 1963 Aerial Photograph, 1:100 scale
- 1982 Aerial Photograph, 1:100 scale
- 2009 Aerial Photograph, 1:100 scale
- 2010 Aerial Photograph, 1:100 scale



LEGEND

Property Outline

0 100 200 300

Feet

Tanana Community Hall PACP
Tanana, Alaska

1953 AERIAL PHOTOGRAPH

December 2014 31-1-11738-004

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

H-1

LEGEND

Property Outline

0 50 100 150

Feet

N

Tanana Community Hall PACP
Tanana, Alaska

1963 AERIAL PHOTOGRAPH

December 2014

31-1-11738-004

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

H-2

LEGEND

Property Outline

0 50 100 150

Feet

N

Tanana Community Hall PACP
Tanana, Alaska

1982 AERIAL PHOTOGRAPH

December 2014 31-1-11738-004

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

H-3

LEGEND

Property Outline

0 50 100

Feet

Tanana Community Hall PACP
Tanana, Alaska

2009 AERIAL PHOTOGRAPH

December 2014

31-1-11738-004

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

H-4

LEGEND

Property Outline

0 50 100

Feet

Tanana Community Hall PACP
Tanana, Alaska

2010 AERIAL PHOTOGRAPH

December 2014

31-1-11738-004

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

H-5

APPENDIX I

ADJOINING PROPERTIES OWNERSHIP DOCUMENTS

- United States of America Land Patent No. 1180100 dated March 6, 1958
- Quitclaim Deed dated December 15, 1976
- Warranty Deed dated October 3, 1977
- Warranty Deed dated October 1, 1984
- Annotated Plat Map, prepared beginning in 1996 by Mr. Nicholia and Ms. Nina Heyano; provided by Mr. Nicholia
- Warranty Deed dated June 12, 1997

Fairbanks 015403

4—1040
(October 1955)

The United States of America,

To all to whom these presents shall come, Greeting:

WHEREAS, a Certificate of the Land Office at Fairbanks, Alaska, is now deposited in the Bureau of Land Management, whereby it appears that pursuant to Section 2387 of the Revised Statutes of the United States and Section eleven of the Act of March 3, 1891 (26 Stat. 1095), as amended by Section three of the Act of May 25, 1926 (44 Stat. 629), Roger R. Robinson, Trustee, is entitled to a patent for the lands embraced in U. S. Survey No. 2754 A and B, being the Townsite of Tanana, Alaska, excepting and excluding therefrom, Lot 11 of Block 7; containing, after making the exception above specified, 55.49 acres, according to the Official Plat of the Survey of the said Land, on file in the Bureau of Land Management:

NOW KNOW YE, that there is, therefore, granted by the UNITED STATES, unto the said Roger R. Robinson, the tract of Land above described; TO HAVE AND TO HOLD the said tract of Land, with the appurtenances thereof, unto the said Roger R. Robinson, in trust for the several use and benefit of the natives and other occupants of the Townsite of Tanana, Alaska, according to their respective interests and to his successors in trust as aforesaid; subject to any vested and accrued water rights for mining, agricultural, manufacturing, or other purposes, and rights to ditches and reservoirs used in connection with such water rights, as may be recognized and acknowledged by the local customs, laws, and decisions of courts; and there is reserved from the lands hereby granted, a right-of-way thereon for ditches or canals constructed by the authority of the United States.

There is also reserved to the United States, a right-of-way for the construction of railroads, telegraph and telephone lines, in accordance with the Act of March 12, 1914 (38 Stat. 305).

There is reserved from the lands hereby granted, a right-of-way thereon for roads, roadways, highways, tramways, trails, bridges, and appurtenant structures constructed or to be constructed by or under authority of the United States or of any State created out of the Territory of Alaska, in accordance with the Act of July 24, 1947 (61 Stat. 418).

This patent is issued subject to all the provisions, limitations and restrictions of said Act of May 25, 1926.

IN TESTIMONY WHEREOF, the undersigned authorized officer of the Bureau of Land Management, in accordance with the provisions of the Act of June 17, 1948 (62 Stat., 476), has, in the name of the United States, caused these letters to be made Patent, and the Seal of the Bureau to be hereunto affixed.

GIVEN under my hand, in the District of Columbia, the SIXTH day of MARCH in the year of our Lord one thousand nine hundred and FIFTY-EIGHT and of the Independence of the United States the one hundred and EIGHTY-SECOND.

[SEAL]

For the Director, Bureau of Land Management.

By Rose M. Beall
Chief, Patents Section.

Patent Number 1180100

16 21670-5 U. S. GOVERNMENT PRINTING OFFICE

BOOK 4 PAGE 111
Ft. Gibbon Recording District

Original

QUITCLAIM DEED

THE GRANTOR, NORTHERN COMMERCIAL COMPANY, a Delaware corporation, for and in consideration of Ten Dollars ($10.00) and other valuable consideration, conveys and quitclaims to ALASKA COMMERCIAL COMPANY, a Delaware corporation, the following-described real estate, situated in the FT. GIBBON RECORDING DISTRICT, FOURTH JUDICIAL DISTRICT, STATE OF ALASKA, including any after-acquired title:

Grantee address [illegible] South 19[illegible] St. Ken[illegible] Washington 9[illegible]

Lot Four (4), Block [illegible] ([illegible]), Lot Three (3) and Lot Five (5), Block Eight (8), Lot [illegible] ([illegible]), Two (2), [illegible] Three (3), Block Ten (10), except [illegible] feet of Lot One (1), as conveyed to Samuel [illegible] [illegible] Volume 2, page 60, and Lots Three (3), [illegible] ([illegible]), [illegible] ([illegible]), Eight (8), Nine (9) and Ten (10), [illegible] [illegible] (11)

-A [illegible]-

That portion of Lot [illegible] ([illegible]), Block Ten (10), U. S. Survey No. 2754 [illegible], described as follows

Beginning [illegible] (4) of Lot Four (4).
thence North 77 [illegible] feet along the Southerly boundary
of [illegible]
[illegible]
Lot Four (4),
thence South 7[illegible] feet along the North Boundary of
First Ave[illegible],
thence North 13°[illegible] 177.62 [illegible] to the Point of Beginning.

[illegible] S. [illegible] No. 275[illegible], according to
the [illegible] the General Land Office

Records of [illegible] Recording District, Fourth Judicial
District, State of Alaska

DATED this DEC 10 day of December, 1976.

NORTHERN COMMERCIAL COMPANY

By [signature]
John E. Larson, President

[signature]
Jean Thomson, / Secretary
Assistant

BOOK 4 PAGE 112
Ft. Gibbon Recording District

STATE OF WASHINGTON)
(ss.
COUNTY OF K I N G)

On this 15 day of December, 1976, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared JOHN E. LARSON and JEAN THOMSON, to me known to be the President and/Assistant Secretary, respectively, of NORTHERN COMMERCIAL COMPANY, the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute the said instrument and that the seal affixed is the corporate seal of said corporation.

WITNESS, My hand and official seal hereto affixed, the day and year in this certificate above written.

Richard A Clark
Notary Public in and for the State of Washington, residing at Seattle

76-39

RECORDED - ~~FILED~~ 7.00
FT. GIBBON REC DIST
DATE DEC. 30, 1976
TIME 3:46 P M
Requested by TTLCO
Address

Transamerica Title Insurance Services

Transamerica Title Insurance Company

FILED FOR RECORD AT REQUEST OF

Transamerica Title Insurance Co.

THIS SPACE PROVIDED FOR RECORDER'S USE:

BOOK 4 PAGE 803
Ft. Gibbon Recording District

RECORDED - FILED
REC DIST
DATE ____, 19____
TIME ____ M
Requested by
Address

WHEN RECORDED RETURN TO

Name TRANSAMERICA TITLE INSURANCE CO
510 L Street Suite 100
Address Anchorage, Alaska 99501
City, State, Zip

796100?

Statutory Warranty Deed

THE GRANTOR ALASKA COMMERCIAL COMPANY, a Delaware corporation,

for and in consideration of Ten Dollars ($10.00) and for other good and valuable consideration

in hand paid, conveys and warrants to CEDC SALES, INC., an Alaskan corporation, Suite 210, 1011 E. Tudor Road, Anchorage, Alaska 99503

the following described real estate, situated in the Ft. Gibbon Recording District, Fourth Judicial District, State of Alaska:

That real property as described in Appendix A, attached hereto and by this reference made a part hereof.

This Statutory Warranty Deed is intended to comply with the provisions of Alaska Statutes, A S 34.15.030.

This Statutory Warranty Deed is subject to easements, reservations, and restrictions of record.

Dated OCT 3 1977, 19 77

ALASKA COMMERCIAL COMPANY

By _____ President

By _____ Secretary

STATE OF WASHINGTON } ss.
COUNTY OF _____

On this day personally appeared before me _____ to me known to be the individual described in and who executed the within and foregoing instrument, and acknowledged that _____ signed the same as _____ free and voluntary act and deed, for the uses and purposes therein mentioned.

GIVEN under my hand and official seal this _____ day of _____, 19__.

_____
Notary Public in and for the State of Washington residing at _____

STATE OF WASHINGTON } ss.
COUNTY OF KING

On this 3 day of October, 19 77, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared John E. Larson and Jean Thomson to me known to be the President and Secretary, respectively, of Alaska Commercial Company the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute the said instrument and that the seal affixed is the corporate seal of said corporation.

Witness my hand and official seal hereto affixed the day and year first above written.

Richard A Clark
Notary Public in and for the State of Washington, residing at Bellevue, Washington

Form No. W-969 Rev. 4-76

FT GIBBONS RECORDING DISTRICT

TANANA

Order No. 76-1007

DESCRIPTION:

Lot Four (4), Block Four (4); Lot Three (3) and Lot Five (5), Block Eight (8) (Store); Lots One (1), Two (2) and Three (3), Block Ten (10), except the West 60 feet of Lot One (1), as conveyed to Samuel S. Mogg and Mary Anne Mogg by Volume 2, page 60; and Lots Three (3), Four (4), Five (5), Six (6), Eight (8), Nine (9), and Ten (10), Block Eleven (11).

-AND-

That portion of Lot Four (4), Block Ten (10), U.S. Survey No. 2754 B Described as follows:

Beginning at the Northeast Corner of Lot Four (4);
thence North 77°3' West 40 feet along the Southerly boundary of Second Avenue;
thence South 13°8' 177.49 feet to the Southerly boundary of Lot Four (4);
thence South 76°52' East 40 feet along the North Boundary of First Avenue;
thence North 13°8' East 177.62 feet to the Point of Beginning.

TOWNSITE OF TANANA, U.S. Survey No. 2754 A & B, according to the official plat filed in the General Land Office.

Records of the Ft. Gibbon Recording District, Fourth Judicial District, State of Alaska.

77-636

RECORDED - ~~FILED~~
Ft. Gibbon REC DIST 7-
DATE 10-6 19 77
TIME 3:10 P M
Requested by
Address TTCo

Appendix A

BOOK 7 PAGE 487
Ft. Gibbon Recording District

STATUTORY WARRANTY DEED
A.S. 34.15.030

The Grantor, CEDC Sales, Inc., for and in consideration of Ten and 00/100 Dollars ($10.00) and other good and valuable consideration in hand paid, the receipt of which is hereby acknowledged, conveys and warrants to the Grantee, Alaska Rural Investments, Inc., the following described real property:

SEE ATTACHMENT A

SUBJECT TO that certain Deed of Trust given to secure an indebtedness of $239,000.00, and any other amounts payable under the terms thereof, dated December 17, 1979, wherein CEDC Sales, Inc., appeared as Trustor; Transamerica Title Insurance Company , a California corporation, appeared as Trustee; and Alaska Bank of Commerce, an Alaska Banking Corporation, appears as Beneficiary, which Deed of Trust was recorded on December 21, 1979, in Book 12, at Page 348, books and records of the Mt. McKinley Recording District, Fourth Judicial District, State of Alaska, AND WHICH DEED OF TRUST THE GRANTEE HEREIN EXPRESSLY CONSENTS AND AGREES TO ASSUME AND TO PAY, AND TO HOLD HARMLESS THE GRANTORS THEREFROM.

FURTHER SUBJECT TO any easements, reservations, restrictions, covenants, conditions, exceptions and rights-of-way of record, if any;

TOGETHER WITH, all and singular, the tenements, hereditaments and appurtenances thereunto belonging or in any wise appertaining, unto said Grantees and to their heirs, executors, administrators and assigns forever.

DATED this 1st day of October, 1984.

CEDC Sales, Inc.
"Grantor"

By: Allan P. Seelert
Its: President

By: Linda D. Smith
Its: Assistant Secretary

Grantee's Address:

1011 East Tudor Rd., Suite 210
Anchorage, Alaska 99503

STATE OF ALASKA CORPORATE SEAL

011790

Law Offices of
Bledsoe & Schadt
A Professional Corporation
4111 Minnesota Drive, Suite 1
Anchorage, Alaska 99503
(907) 561-1212

BOOK 7 PAGE 488
Ft. Gibbon Recording District

STATE OF ALASKA)
) ss.
THIRD JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this 1st day of October, 1984, before me, the undersigned, a Notary Public in and for the State of Alaska, personally appeared Allan D Gallant, to me known and known to me to be the President, of CEDC Sales, Inc., and he/she acknowledged to me that he/she had, in his/her official capacity aforesaid, executed the foregoing instrument as the free act and deed of the said corporation for the uses and purposes therein stated.

WITNESS my hand and official seal the day and year in this certificate first above written.

Sherrill J. Wellman
Notary Public in and for Alaska
My Commission Expires: 9-15-87

STATE OF ALASKA)
) ss.
THIRD JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this 1st day of October, 1984, before me, the undersigned, a Notary Public in and for the State of Alaska, personally appeared Linda L. South, to me known and known to me to be the Assistant Secretary, of CEDC Sales, Inc., and he/she acknowledged to me that he/she had, in his/her official capacity aforesaid, executed the foregoing instrument as the free act and deed of the said corporation for the uses and purposes therein stated.

WITNESS my hand and official seal the day and year in this certificate first above written.

Sherrill J. Wellman
Notary Public in and for Alaska
My Commission Expires: 9-15-87

Grantee's Address:
1011 E Tudor Rd, Suite 210
Anch, AK 99503

Law Offices of
Bledsoe & Schadt
A Professional Corporation
4111 Minnesota Drive, Suite 1
Anchorage, Alaska 99503
(907) 561-1212

ATTACHMENT A

BOOK 7 PAGE 489
Ft. Gibbon Recording District

PROPERTY LOCATED AT NOME, ALASKA

The East 3 feet of Lot Six (6) and all of Lot Seven (7), Block "D"; Lot Four (4), Block Thirty-two (32); Lots Three (3), Four (4), Five (5) and Six (6), Block Fifty-four (54); TOWNSITE OF NOME, according to the official plat as amended on October 3, 1934 by Ordinance No. 267, Records of Cape Nome Recording District, Second Judicial District, State of Alaska.

PROPERTY LOCATED AT TANANA, ALASKA

PARCEL NUMBER 1

Lot Four (4), Block four (4); Lot One (1), except the West 60 feet thereof, Lots Two (2) and Three (3), Block Ten (10); Lots Three (3), Four (4), Five (5), Six (6), Eight (8), Nine (9), and Ten (10), Block Eleven (11); TOWNSITE OF TANANA, U.S. Survey No. 2754 A and B, according to the official plat thereof filed in the General Land Office, situate in the Fort Gibbons Recording District, Fourth Judicial District, State of Alaska.

PARCEL NUMBER 2

That portion of Lot four (4), Block Ten (10), TOWNSITE OF TANANA, U.S. Survey 2754 A and B, described as follows:

BEGINNING at the Northeast Corner of Lot Four (4);

Thence North 77°03' West 40 feet along the Southerly boundary of Second Avenue;

Thence South 13°08' West 177.49 feet to the Southerly boundary of Lot Four (4);

Thence South 76°52' East 40 feet along the North boundary of First Avenue;

Thence North 13°08' East 177.62 feet to the POINT OF BEGINNING;

Situate in the Fort Gibbons Recording District, Fourth Judicial District, State of Alaska.

BOOK 7 PAGE 490
Ft. Gibbon Recording District

PROPERTY LOCATED AT FT. YUKON, ALASKA

All of Blocks Thirty-nine (39) and Forty (40); Lots Six (6), Seven (7), Eight (8) and Nine (9), Block Forty-five (45), TOWNSITE OF FORT YUKON, U.S. Survey 2760 A and B, situate in the Fairbanks Recording District, Fourth Judicial District, State of Alaska.

PROPERTY LOCATED AT McGRATH, ALASKA

PARCEL NUMBER 1

That portion of the U.S. Survey 1962, described as follows:

BEGINNING at Meander Corner No. 4 of said U.S. Survey on the left bank of the Kuskokwim River;

Thence North 82°45' East along said Meander line 1249.38 feet;

Thence South 82°49' East 195.12 feet to the TRUE POINT OF BEGINNING;

Thence South 200 feet;

Thence South 82°35' East 1075.93 feet to the Meander line of the Kuskokwim River;

Thence Northwesterly along said Meander line to the POINT OF BEGINNING;

Situate in the Mt. McKinley Recording District, Fourth Judicial District, State of Alaska.

PARCEL NUMBER 2

Lot One (1), of the A.C. SUBDIVISION, according to the plat filed August 23, 1978 as Plat No. 78-3, Records of the Mt. McKinley Recording District, Fourth Judicial District, State of Alaska.

PARCEL NUMBER 3

Lots One (1) and Four (4), Block One (1), Tract A, according to the official plat of U.S. Survey 3140B, situate in the Mt. McKinley Recording District, Fourth Judicial District, State of Alaska.

PARCEL NUMBER 4

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Ft. Gibbon Recording District

All of that portion of U.S. Survey 1962 lying South and East of the following-described line;

Beginning at the meander corner No. 4 of said U. S. Survey 1962 on the left bank of the Kuskikwim River;

Thence North 82°45' East along said meander line 1249.38 feet;

Thence South 82°49' East 195.15 feet;

Thence South 200 feet;

Thence South 82°35' East 1975.93 feet to the meander line of the Kuskokwim River;

Thence along said river bank South 38°15" East 138.60 feet;

Thence South 33°15' East 99 feet;

Thence South 123.37 feet to the True Point of Beginning of said line;

Thence West 829.35 feet;

Thence South 2516.63 feet to the South boundary of said U.S. Survy 1962 to the terminus of said line.

EXCEPT that portion conveyed to Joseph Johnson by Instrument recorded July 7, 1964 in Book 2, Page 43, Records of the Mt. McKinley Recording District, Fourth Judicial District, State of Alaska;

AND EXCEPT that portion conveyed to the State of Alaska by Instrument recorded February 28, 1964, in Book 1, Page 354, Records of the Mt. McKinley Recording District, Fourth Judicial District, State of Alaska;

AND EXCEPT that portion conveyed to Theodore J. Almasy by Instrument recorded October 3, 1963, in Book 1, Page 274, Records of the Mt. McKinley Recording District, Fourth Judicial District, State of Alaska.

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Ft. Gibbon Recording District

PROPERTY LOCATED AT BETHEL, ALASKA

PARCEL NUMBER 1

Lots Two (2) and Four (4), Block Sixteen (16), in the TOWNSITE OF BETHEL, as shown on U.S. SURVEY NUMBER 3230A and 3230B, being within the Bethel Recording District, Fourth Judicial District, State of Alaska.

PARCEL NUMBER 2

That portion of U.S. Survey No. 1002, situated on the right bank of the KUSKOKWIM RIVER, being within the Bethel Recording District, Fourth Judicial District, State of Alaska, lying Northerly of the North Right of Way line of FIRST AVENUE and Southwesterly of the Southwest Right of Way line of MAIN STREET, both roads as depicted on said U.S. Survey No. 1002.

PARCEL NUMBER 3

Lot Forty-two (42), of U. S. Survey 4117, being within the Bethel Recording District, Fourth Judicial District, State of Alaska.

PARCEL NUMBER 4

Lot Ten (10), Block Fifteen (15), in the TOWNSITE OF BETHEL, as shown on U. S. Survey Number 3230A and 3230B, being within the Bethel Recording District, Fourth Judicial District, State of Alaska.

PARCEL NUMBER 5

Lot Six (6), Block Five (5), as shown on U. S. Survey Number 3770, being within the Bethel Recording District, Fourth Judicial District, State of Alaska.

PROPERTY LOCATED AT ANIAK, ALASKA

PARCEL NUMBER 1

Lot Four (4), Block Three (3), situate in Tract A TOWNSITE OF ANIAK, Kuskokwim Recording District, Fourth Judicial District, State of Alaska, as embraced in U. S. Survey 3093 A and B.

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Ft. Gibbon Recording District

PARCEL NUMBER 2

U. S. Survey No. 2236 excepting therefrom the following described parcel:

Beginning at a Point on the Northwesterly boundary of U. S. Survey No. 2236 about 198 feet Southwesterly of Meander Corner No. 4 of said survey to a point where the South edge of a road intersects said boundary line;

Thence Southeasterly at an approximate right angle to said Northwestern boundary of said survey along the Southerly edge of said road a distance of 308 feet measured in a Straight line to the True Point of Beginning of this description;

Thence continuing Southeasterly along the South edge of said road a distance of 100 feet measured in a straight line;

Thence South 28°39' West a distance of about 314 feet more or less to a point where such line intersects the Southeast boundary line of U. S. Survey No. 2236;

Thence along the Southeasterly boundary of U. S. Survey No. 2236 to a point which is South 28°39' West of the True Point of Beginning;

Thence North 28°39' East about 340 feet more or less to the True Point of Beginning.

And excepting therefrom:

The following described real property located in the TOWNSITE OF ANIAK, Kuskokwim Recording District, Fourth Judicial District, State of Alaska:

A triangular parcel of land located in the TOWNSITE OF ANIAK, ALASKA, described as follows:

Beginning at the intersection of the Westerly boundary line of FIRST STREET and the Southeasterly boundary line of U. S. Survey No. 2236;

Thence Northwesterly along the Southerly edge of the rights of way which connects FIRST STREET and SECOND STREET-RIVER AVENUE (ANIAK) approximately 125 feet to the Easterly boundary of the property known as the ROBERT HAYAKAWA PROPERTY;

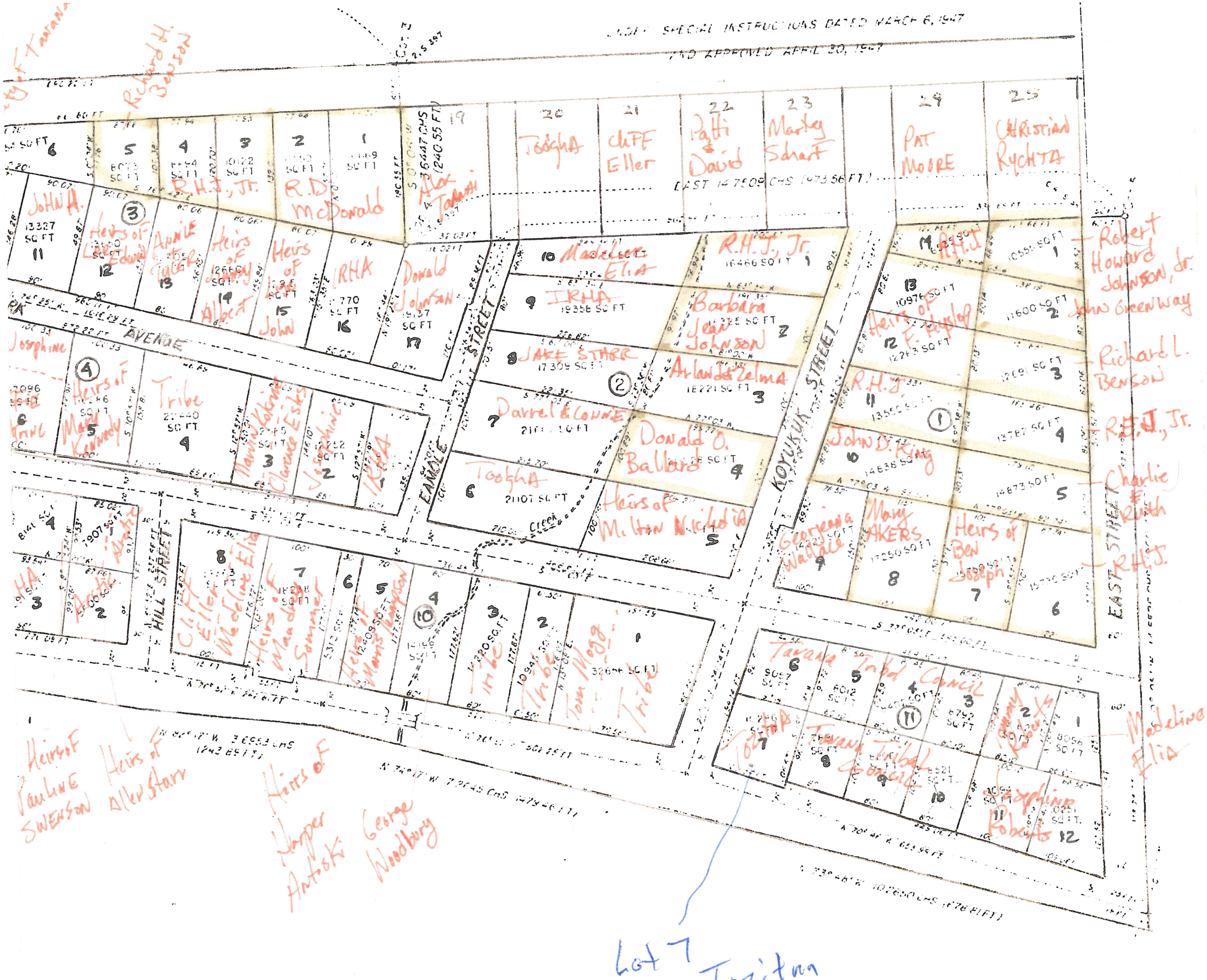
Page Six
Legal Descriptions
Attachment A

Thence Southwesterly along said boundary line of the ROBERT HAYAKAWA PROPERTY to the Point where said boundary line intersects with the Southeasterly boundary line of U.S. SURVEY No. 2236;

Thence Northeasterly along said Southeasterly boundary line of U.S. SURVEY No. 2236, North 60°24' East approximately 200 feet to the Point of Beginning.

84-111

RECORDED - ~~FILED~~ 2900
FT. GIBBON REC. DIST. CC 1.00
DATE 12-6 1984
TIME 8:34 AM
Requested by TTCO
Address A31175


UNDER SPECIAL INSTRUCTIONS DATED MARCH 6, 1947
AND APPROVED APRIL 30, 1947
AVENUE
EANOLE STREET
HILL STREET
KOYUKUK STREET
EAST STREET
Creek
EAST 14.7509 CHS (973.56 FT)
N 84°17' W 3.6953 CHS (243.89 FT)
N 74°17' W 7.2648 CHS (479.48 FT)
N 73°46' W 10.2650 CHS (678.81 FT)
Pat Moore
Christian Rychta
Patti David
Marty Scharf
Cliff Eller
Toogha
R.H.J., Jr.
R.D. McDonald
Alex Tanani
John A.
Heirs of Edward
Annie
Heirs of Albert
Heirs of John
IRHA
Donald Johnson
Madeline Elia
Barbara Jean Johnson
Jake Starr
Arland & Zelma
Darrel & Connie
Donald O. Ballard
Heirs of Milton Nicholia
Robert Howard Johnson, Jr.
John Greenway
Richard L. Benson
Charlie & Ruth
John D. King
Mary Akers
Heirs of Ben Joseph
Georgianna Wallace
Heirs of Mary Kennedy
Tribe
Josephine
Tanana Tribal Council
Josephine Roberts
Tom Moggi
Heirs of Pauline Swenson
Heirs of Allen Starr
Heirs of Harper Antoski
George Woodbury
Madeline Elia
Lot 7 Tozitna

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. March 20, 1947

HOWARD ROCK FOUNDATION BOOK 10 PAGE 84
1577 "C" Street, Suite 304 Ft. Gibbon Recording District
Anchorage, Alaska 99501

STATUTORY WARRANTY DEED
Alaska Stat. §34.15.030

The Grantor, HOWARD ROCK FOUNDATION, a corporation whose for and in consideration of the sum of TEN AND NO/100, ($10.00) an other valuable consideration in hand paid, the receipt of which is hereby acknowledged, conveys and warrants to the Grantee, TANANA TRIBAL COUNCIL of P. O. Box 130, Tanana, Alaska 99777, the Grantees the following real estate:

Lot Four (4), Block Four (4), Lot One (1), except the West 60' feet thereof, Lots Two (2) and Three (3), Block Ten (10), Lots Three (3), Four (4), Five (5), Six, (6), Eight (8) and Nine (9), Block Eleven (11), TOWNSITE OF TANANA, U.S. SURVEY 2754 A & B, according to the official plat thereof, filed in the General Land Office, situated in the Fort Gibbon Recording District, Fourth Judicial District, State of Alaska.

AND

That portion of Lot Four (4), Block Ten (10), TOWNSITE OF TANANA, US Survey 2754 A & B, described as follows:

BEGINNING at the Northeast Corner of Lot Four (4);

Thence North 77°03' West 40 feet along the Southerly boundary of Second Avenue;

Thence South 13°08' West 177.49 feet to the Southerly boundary of Lot Four (4);

Thence South 76°52' East 40 feet along the North boundary of First Avenue;

Thence North 13°08' East 177.62 feet along the POINT OF BEGINNING.

Situation in the Fort Gibbon Recording District, Fourth Judicial District, State of Alaska.

Subject to reservations and exceptions as contained in the U.S. Patent;

BOOK 10 PAGE 85
Ft. Gibbon Recording District

Further subject to covenants, conditions and restrictions of record and amendments thereto, if any;

Further subject to reservations, exceptions, easements, right-of-ways, and other matters of record, not affecting marketability, if any;

TOGETHER WITH, all and singular, the tenements, hereditaments and appurtenances thereunto belonging or in any wise appertaining, unto said Grantee and to its heirs, executors, administrators and assigns forever.

HOWARD ROCK FOUNDATION
1577 "C" Street, Suite 304
Anchorage, Alaska 99501

President
Date: 6-12-97

STATE OF ALASKA)
) ss.
THIRD JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this 12 day of June, 1997, before me, the undersigned, a Notary Public in and for Alaska, personally appeared Perry R. Eaton, to me known to be the president of the corporation named in the foregoing instrument, and he acknowledged to me that he had, in his official capacity aforesaid, executed the foregoing instrument as the free act and deed of the said corporation for the uses and purposes therein stated.

WITNESS my hand and official seal the day and year in this certificate first above written.

SANDRA WILLIAMS NOTARY PUBLIC STATE OF ALASKA

Sandra Williams
Notary Public in and for Alaska
My Commission Expires: July 18, 1997

97-58

RECORDED - FILED 18 CC
Ft. Gibbon REC. DIST.
DATE 6-30, 1997
TIME 2:36 P M
Requested by Howard Rock Foundation
Address

RETURN TO: Howard Rock Foundation

APPENDIX J

LABORATORY DATA PACKAGE

- SGS Laboratory Report
- ADEC Data Review Checklist

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Road
Fairbanks, AK 997095244
(907)479-0600

Report Number: **1148457**

Client Project: **31-1-11738 Tanana PALP**

Dear Julie Keener,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Alaska Division Technical Director

Stephen Ede
2014.09.19
13:06:39 -08'00'

Jennifer Dawkins
Project Manager

Date

Print Date: 09/19/2014 12:49:57PM

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1148457**
Project Name/Site: **31-1-11738 Tanana PALP**
Project Contact: **Julie Keener**

Refer to sample receipt form for information on sample condition.

11738-TP1S1 (1148457001) PS

AK102 - Diesel range organics result is biased high due to heavier hydrocarbons contributing to the middle distillate range.
AK103 - The pattern is consistent with a lube oil.

11738-TP1S4 (1148457002) PS

AK103 - Unknown hydrocarbon with several peaks is present.

11738-TP2S1 (1148457003) PS

AK102 - Diesel range organics result is biased high due to heavier hydrocarbons contributing to the middle distillate range.
AK103 - The pattern is consistent with a lube oil.

11738-TS1 (1148457004) PS

AK102/103 - 5a-Androstane and n-triacontane (surrogates) recoveries are outside QC criteria due to sample dilution.
AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.
8270D SIM - Surrogate (2-fluorobiphenyl and terphenyl-d14) recovery is outside of QC criteria due to sample dilution.
8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

11738-TS2 (1148457005) PS

AK102/103 - 5a-Androstane and n-triacontane (surrogates) recoveries are outside QC criteria due to sample dilution.
AK102 - Diesel range organics result is biased high due to heavier hydrocarbons contributing to the middle distillate range.
AK103 - The pattern is consistent with a lube oil.
AK102 - Sample was diluted due to dark color of extract; therefore the LOQ was elevated.

11738-TS11 (1148457006) PS

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased low). Sample was analyzed twice and results confirmed.
AK102/103 - 5a-Androstane and n-triacontane (surrogates) recoveries are outside QC criteria due to sample dilution.
AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

11738-TS12 (1148457007) PS

AK102 - Diesel range organics result is biased high due to heavier hydrocarbons contributing to the middle distillate range.
AK103 - The pattern is consistent with a lube oil.

1148458026(1232519MS) (1232520) MS

8021B - MS recovery for o-Xylene does not meet QC criteria due to matrix interference. Refer to LCS/LCSD for accuracy.

1148458026(1232519MSD) (1232521) MSD

8021B - MSD recovery for o-Xylene does not meet QC criteria due to matrix interference. Refer to LCS/LCSD for accuracy.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1148457**
Project Name/Site: **31-1-11738 Tanana PALP**
Project Contact: **Julie Keener**

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

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Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
11738-TP1S1	1148457001	08/29/2014	09/06/2014	Soil/Solid (dry weight)
11738-TP1S4	1148457002	08/29/2014	09/06/2014	Soil/Solid (dry weight)
11738-TP2S1	1148457003	08/29/2014	09/06/2014	Soil/Solid (dry weight)
11738-TS1	1148457004	08/29/2014	09/06/2014	Soil/Solid (dry weight)
11738-TS2	1148457005	08/29/2014	09/06/2014	Soil/Solid (dry weight)
11738-TS11	1148457006	08/29/2014	09/06/2014	Soil/Solid (dry weight)
11738-TS12	1148457007	08/29/2014	09/06/2014	Soil/Solid (dry weight)
11738-TP3S1	1148457008	08/29/2014	09/06/2014	Soil/Solid (dry weight)
Trip Blank	1148457009	08/29/2014	09/06/2014	Soil/Solid (dry weight)

Method	Method Description
8270D SIMS (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK101	AK101/8021 Combo. (S)
SW8021B	AK101/8021 Combo. (S)
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
SM21 2540G	Percent Solids SM2540G

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Detectable Results Summary

Client Sample ID: **11738-TP1S1**
Lab Sample ID: 1148457001

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	10800	mg/Kg
	Residual Range Organics	36800	mg/Kg

Client Sample ID: **11738-TP1S4**
Lab Sample ID: 1148457002

	Parameter	Result	Units
Semivolatile Organic Fuels	Residual Range Organics	64.5	mg/Kg

Client Sample ID: **11738-TP2S1**
Lab Sample ID: 1148457003

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	1150	mg/Kg
	Residual Range Organics	5340	mg/Kg
Volatile Fuels	Toluene	0.0262J	mg/Kg

Client Sample ID: **11738-TS1**
Lab Sample ID: 1148457004

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	148	mg/Kg
	2-Methylnaphthalene	85.1	mg/Kg
	Acenaphthene	47.5	mg/Kg
	Anthracene	33.5	mg/Kg
	Benzo(a)Anthracene	7.94J	mg/Kg
	Benzo[g,h,i]perylene	2.60J	mg/Kg
	Chrysene	19.5	mg/Kg
	Fluoranthene	4.81J	mg/Kg
	Fluorene	43.7	mg/Kg
	Naphthalene	3.12J	mg/Kg
	Phenanthrene	102	mg/Kg
	Pyrene	35.9	mg/Kg
Semivolatile Organic Fuels	Diesel Range Organics	122000	mg/Kg
	Residual Range Organics	139000	mg/Kg
Volatile Fuels	Gasoline Range Organics	1.70J	mg/Kg
	o-Xylene	0.0194J	mg/Kg
	Toluene	0.0121J	mg/Kg

Client Sample ID: **11738-TS2**
Lab Sample ID: 1148457005

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	623J	mg/Kg
	Residual Range Organics	2970	mg/Kg
Volatile Fuels	Benzene	0.0396	mg/Kg
	Ethylbenzene	1.27	mg/Kg
	Gasoline Range Organics	19.7	mg/Kg
	o-Xylene	0.705	mg/Kg
	P & M -Xylene	3.62	mg/Kg
	Toluene	1.68	mg/Kg

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Detectable Results Summary

Client Sample ID: **11738-TS11**
Lab Sample ID: 1148457006

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	87900	mg/Kg
	Residual Range Organics	87100	mg/Kg
Volatile Fuels	Gasoline Range Organics	1.96J	mg/Kg
	Toluene	0.0159J	mg/Kg

Client Sample ID: **11738-TS12**
Lab Sample ID: 1148457007

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	840	mg/Kg
	Residual Range Organics	3280	mg/Kg
Volatile Fuels	Benzene	0.0591	mg/Kg
	Ethylbenzene	1.73	mg/Kg
	Gasoline Range Organics	26.6	mg/Kg
	o-Xylene	0.958	mg/Kg
	P & M -Xylene	4.93	mg/Kg
	Toluene	2.32	mg/Kg

Client Sample ID: **11738-TP3S1**
Lab Sample ID: 1148457008

	Parameter	Result	Units
Semivolatile Organic Fuels	Residual Range Organics	9.67J	mg/Kg

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Results of **11738-TP1S1**

Client Sample ID: **11738-TP1S1**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457001
Lab Project ID: 1148457

Collection Date: 08/29/14 14:20
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 83.1
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	10800		2770	857	mg/Kg	10		09/15/14 19:28
Surrogates								
5a Androstane	0	*	50-150		%	10		09/15/14 19:28

Batch Information

Analytical Batch: XFC11566
Analytical Method: AK102
Analyst: AYC
Analytical Date/Time: 09/15/14 19:28
Container ID: 1148457001-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 30.027 g
Prep Extract Vol: 11.5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	36800		2770	857	mg/Kg	10		09/15/14 19:28
Surrogates								
n-Triacontane-d62	0	*	50-150		%	10		09/15/14 19:28

Batch Information

Analytical Batch: XFC11566
Analytical Method: AK103
Analyst: AYC
Analytical Date/Time: 09/15/14 19:28
Container ID: 1148457001-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 30.027 g
Prep Extract Vol: 11.5 mL

Print Date: 09/19/2014 12:50:01PM

Results of **11738-TP1S1**

Client Sample ID: **11738-TP1S1**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457001
Lab Project ID: 1148457

Collection Date: 08/29/14 14:20
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 83.1
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	2.83	U	5.65	1.70	mg/Kg	1		09/08/14 17:58
Surrogates								
4-Bromofluorobenzene	71.9		50-150		%	1		09/08/14 17:58

Batch Information

Analytical Batch: VFC12096
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/08/14 17:58
Container ID: 1148457001-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 14:20
Prep Initial Wt./Vol.: 32.45 g
Prep Extract Vol: 30.4883 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.0141	U	0.0283	0.00905	mg/Kg	1		09/08/14 17:58
Ethylbenzene	0.0283	U	0.0565	0.0176	mg/Kg	1		09/08/14 17:58
o-Xylene	0.0283	U	0.0565	0.0176	mg/Kg	1		09/08/14 17:58
P & M -Xylene	0.0565	U	0.113	0.0339	mg/Kg	1		09/08/14 17:58
Toluene	0.0283	U	0.0565	0.0176	mg/Kg	1		09/08/14 17:58
Surrogates								
1,4-Difluorobenzene	102		72-119		%	1		09/08/14 17:58

Batch Information

Analytical Batch: VFC12096
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/08/14 17:58
Container ID: 1148457001-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 14:20
Prep Initial Wt./Vol.: 32.45 g
Prep Extract Vol: 30.4883 mL

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Results of **11738-TP1S4**

Client Sample ID: **11738-TP1S4**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457002
Lab Project ID: 1148457

Collection Date: 08/29/14 14:25
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 82.2
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	12.2	U	24.3	7.54	mg/Kg	1		09/11/14 22:05
Surrogates								
5a Androstane	98.4		50-150		%	1		09/11/14 22:05

Batch Information

Analytical Batch: XFC11562
Analytical Method: AK102
Analyst: AYC
Analytical Date/Time: 09/11/14 22:05
Container ID: 1148457002-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 30.042 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	64.5		24.3	7.54	mg/Kg	1		09/11/14 22:05
Surrogates								
n-Triacontane-d62	105		50-150		%	1		09/11/14 22:05

Batch Information

Analytical Batch: XFC11562
Analytical Method: AK103
Analyst: AYC
Analytical Date/Time: 09/11/14 22:05
Container ID: 1148457002-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 30.042 g
Prep Extract Vol: 1 mL

Print Date: 09/19/2014 12:50:01PM

Results of **11738-TP1S4**

Client Sample ID: **11738-TP1S4**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457002
Lab Project ID: 1148457

Collection Date: 08/29/14 14:25
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 82.2
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.88	U	3.75	1.12	mg/Kg	1		09/08/14 18:17
Surrogates								
4-Bromofluorobenzene	101		50-150		%	1		09/08/14 18:17

Batch Information

Analytical Batch: VFC12096
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/08/14 18:17
Container ID: 1148457002-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 14:25
Prep Initial Wt./Vol.: 57.156 g
Prep Extract Vol: 35.1933 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00935	U	0.0187	0.00600	mg/Kg	1		09/08/14 18:17
Ethylbenzene	0.0187	U	0.0375	0.0117	mg/Kg	1		09/08/14 18:17
o-Xylene	0.0187	U	0.0375	0.0117	mg/Kg	1		09/08/14 18:17
P & M -Xylene	0.0374	U	0.0749	0.0225	mg/Kg	1		09/08/14 18:17
Toluene	0.0187	U	0.0375	0.0117	mg/Kg	1		09/08/14 18:17
Surrogates								
1,4-Difluorobenzene	101		72-119		%	1		09/08/14 18:17

Batch Information

Analytical Batch: VFC12096
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/08/14 18:17
Container ID: 1148457002-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 14:25
Prep Initial Wt./Vol.: 57.156 g
Prep Extract Vol: 35.1933 mL

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Results of **11738-TP2S1**

Client Sample ID: **11738-TP2S1**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457003
Lab Project ID: 1148457

Collection Date: 08/29/14 14:50
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 74.4
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	1150		268	83.2	mg/Kg	10		09/15/14 19:38
Surrogates								
5a Androstane	102		50-150		%	10		09/15/14 19:38

Batch Information

Analytical Batch: XFC11566
Analytical Method: AK102
Analyst: AYC
Analytical Date/Time: 09/15/14 19:38
Container ID: 1148457003-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 30.071 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	5340		268	83.2	mg/Kg	10		09/15/14 19:38
Surrogates								
n-Triacontane-d62	101		50-150		%	10		09/15/14 19:38

Batch Information

Analytical Batch: XFC11566
Analytical Method: AK103
Analyst: AYC
Analytical Date/Time: 09/15/14 19:38
Container ID: 1148457003-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 30.071 g
Prep Extract Vol: 1 mL

Print Date: 09/19/2014 12:50:01PM

Results of **11738-TP2S1**

Client Sample ID: **11738-TP2S1**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457003
Lab Project ID: 1148457

Collection Date: 08/29/14 14:50
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 74.4
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3.28	U	6.56	1.97	mg/Kg	1		09/08/14 18:36
Surrogates								
4-Bromofluorobenzene	65.6		50-150		%	1		09/08/14 18:36

Batch Information

Analytical Batch: VFC12096
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/08/14 18:36
Container ID: 1148457003-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 14:50
Prep Initial Wt./Vol.: 34.752 g
Prep Extract Vol: 33.9047 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.0164	U	0.0328	0.0105	mg/Kg	1		09/08/14 18:36
Ethylbenzene	0.0328	U	0.0656	0.0205	mg/Kg	1		09/08/14 18:36
o-Xylene	0.0328	U	0.0656	0.0205	mg/Kg	1		09/08/14 18:36
P & M -Xylene	0.0655	U	0.131	0.0394	mg/Kg	1		09/08/14 18:36
Toluene	0.0262	J	0.0656	0.0205	mg/Kg	1		09/08/14 18:36
Surrogates								
1,4-Difluorobenzene	102		72-119		%	1		09/08/14 18:36

Batch Information

Analytical Batch: VFC12096
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/08/14 18:36
Container ID: 1148457003-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 14:50
Prep Initial Wt./Vol.: 34.752 g
Prep Extract Vol: 33.9047 mL

Print Date: 09/19/2014 12:50:01PM

Results of **11738-TS1**

Client Sample ID: **11738-TS1**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457004
Lab Project ID: 1148457

Collection Date: 08/29/14 15:20
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 90.1
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	148		8.33	2.50	mg/Kg	100		09/17/14 18:49
2-Methylnaphthalene	85.1		8.33	2.50	mg/Kg	100		09/17/14 18:49
Acenaphthene	47.5		8.33	2.50	mg/Kg	100		09/17/14 18:49
Acenaphthylene	4.17	U	8.33	2.50	mg/Kg	100		09/17/14 18:49
Anthracene	33.5		8.33	2.50	mg/Kg	100		09/17/14 18:49
Benzo(a)Anthracene	7.94	J	8.33	2.50	mg/Kg	100		09/17/14 18:49
Benzo[a]pyrene	4.17	U	8.33	2.50	mg/Kg	100		09/17/14 18:49
Benzo[b]Fluoranthene	4.17	U	8.33	2.50	mg/Kg	100		09/17/14 18:49
Benzo[g,h,i]perylene	2.60	J	8.33	2.50	mg/Kg	100		09/17/14 18:49
Benzo[k]fluoranthene	4.17	U	8.33	2.50	mg/Kg	100		09/17/14 18:49
Chrysene	19.5		8.33	2.50	mg/Kg	100		09/17/14 18:49
Dibenzo[a,h]anthracene	4.17	U	8.33	2.50	mg/Kg	100		09/17/14 18:49
Fluoranthene	4.81	J	8.33	2.50	mg/Kg	100		09/17/14 18:49
Fluorene	43.7		8.33	2.50	mg/Kg	100		09/17/14 18:49
Indeno[1,2,3-c,d] pyrene	4.17	U	8.33	2.50	mg/Kg	100		09/17/14 18:49
Naphthalene	3.12	J	8.33	2.50	mg/Kg	100		09/17/14 18:49
Phenanthrene	102		8.33	2.50	mg/Kg	100		09/17/14 18:49
Pyrene	35.9		8.33	2.50	mg/Kg	100		09/17/14 18:49
Surrogates								
2-Fluorobiphenyl	10200	*	45-105		%	100		09/17/14 18:49
Terphenyl-d14	566	*	30-125		%	100		09/17/14 18:49

Batch Information

Analytical Batch: XMS8292
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 09/17/14 18:49
Container ID: 1148457004-A

Prep Batch: XXX31939
Prep Method: SW3550C
Prep Date/Time: 09/09/14 10:42
Prep Initial Wt./Vol.: 22.503 g
Prep Extract Vol: 15 mL

Print Date: 09/19/2014 12:50:01PM

Results of **11738-TS1**

Client Sample ID: **11738-TS1**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457004
Lab Project ID: 1148457

Collection Date: 08/29/14 15:20
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 90.1
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	122000		10200	3160	mg/Kg	10		09/15/14 19:47
Surrogates								
5a Androstane	0	*	50-150		%	10		09/15/14 19:47

Batch Information

Analytical Batch: XFC11566
Analytical Method: AK102
Analyst: AYC
Analytical Date/Time: 09/15/14 19:47
Container ID: 1148457004-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 15.025 g
Prep Extract Vol: 23 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	139000		10200	3160	mg/Kg	10		09/15/14 19:47
Surrogates								
n-Triacontane-d62	0	*	50-150		%	10		09/15/14 19:47

Batch Information

Analytical Batch: XFC11566
Analytical Method: AK103
Analyst: AYC
Analytical Date/Time: 09/15/14 19:47
Container ID: 1148457004-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 15.025 g
Prep Extract Vol: 23 mL

Print Date: 09/19/2014 12:50:01PM

Results of **11738-TS1**

Client Sample ID: **11738-TS1**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457004
Lab Project ID: 1148457

Collection Date: 08/29/14 15:20
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 90.1
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.70	J	3.35	1.00	mg/Kg	1		09/08/14 18:55
Surrogates								
4-Bromofluorobenzene	52.1		50-150		%	1		09/08/14 18:55

Batch Information

Analytical Batch: VFC12096
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/08/14 18:55
Container ID: 1148457004-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 15:20
Prep Initial Wt./Vol.: 49.606 g
Prep Extract Vol: 29.9301 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00835	U	0.0167	0.00536	mg/Kg	1		09/08/14 18:55
Ethylbenzene	0.0168	U	0.0335	0.0105	mg/Kg	1		09/08/14 18:55
o-Xylene	0.0194	J	0.0335	0.0105	mg/Kg	1		09/08/14 18:55
P & M -Xylene	0.0335	U	0.0670	0.0201	mg/Kg	1		09/08/14 18:55
Toluene	0.0121	J	0.0335	0.0105	mg/Kg	1		09/08/14 18:55
Surrogates								
1,4-Difluorobenzene	98		72-119		%	1		09/08/14 18:55

Batch Information

Analytical Batch: VFC12096
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/08/14 18:55
Container ID: 1148457004-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 15:20
Prep Initial Wt./Vol.: 49.606 g
Prep Extract Vol: 29.9301 mL

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Results of **11738-TS2**

Client Sample ID: **11738-TS2**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457005
Lab Project ID: 1148457

Collection Date: 08/29/14 16:05
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 94.3
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	623	J	848	263	mg/Kg	4		09/15/14 18:58
Surrogates								
5a Androstane	0	*	50-150		%	4		09/15/14 18:58

Batch Information

Analytical Batch: XFC11566
Analytical Method: AK102
Analyst: AYC
Analytical Date/Time: 09/15/14 18:58
Container ID: 1148457005-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 30.01 g
Prep Extract Vol: 10 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	2970		848	263	mg/Kg	4		09/15/14 18:58
Surrogates								
n-Triacontane-d62	0	*	50-150		%	4		09/15/14 18:58

Batch Information

Analytical Batch: XFC11566
Analytical Method: AK103
Analyst: AYC
Analytical Date/Time: 09/15/14 18:58
Container ID: 1148457005-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 30.01 g
Prep Extract Vol: 10 mL

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Results of **11738-TS2**

Client Sample ID: **11738-TS2**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457005
Lab Project ID: 1148457

Collection Date: 08/29/14 16:05
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 94.3
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	19.7		3.15	0.944	mg/Kg	1		09/08/14 19:14
Surrogates								
4-Bromofluorobenzene	70.6		50-150		%	1		09/08/14 19:14

Batch Information

Analytical Batch: VFC12096
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/08/14 19:14
Container ID: 1148457005-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 16:05
Prep Initial Wt./Vol.: 46.541 g
Prep Extract Vol: 27.6335 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.0396		0.0157	0.00503	mg/Kg	1		09/08/14 19:14
Ethylbenzene	1.27		0.0315	0.00982	mg/Kg	1		09/08/14 19:14
o-Xylene	0.705		0.0315	0.00982	mg/Kg	1		09/08/14 19:14
P & M -Xylene	3.62		0.0629	0.0189	mg/Kg	1		09/08/14 19:14
Toluene	1.68		0.0315	0.00982	mg/Kg	1		09/08/14 19:14
Surrogates								
1,4-Difluorobenzene	104		72-119		%	1		09/08/14 19:14

Batch Information

Analytical Batch: VFC12096
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/08/14 19:14
Container ID: 1148457005-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 16:05
Prep Initial Wt./Vol.: 46.541 g
Prep Extract Vol: 27.6335 mL

Print Date: 09/19/2014 12:50:01PM

Results of **11738-TS11**

Client Sample ID: **11738-TS11**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457006
Lab Project ID: 1148457

Collection Date: 08/29/14 15:35
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 89.1
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	87900		7020	2180	mg/Kg	10		09/15/14 19:57
Surrogates								
5a Androstane	0	*	50-150		%	10		09/15/14 19:57

Batch Information

Analytical Batch: XFC11566
Analytical Method: AK102
Analyst: AYC
Analytical Date/Time: 09/15/14 19:57
Container ID: 1148457006-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 15.341 g
Prep Extract Vol: 16 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	87100		7020	2180	mg/Kg	10		09/15/14 19:57
Surrogates								
n-Triacontane-d62	0	*	50-150		%	10		09/15/14 19:57

Batch Information

Analytical Batch: XFC11566
Analytical Method: AK103
Analyst: AYC
Analytical Date/Time: 09/15/14 19:57
Container ID: 1148457006-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 15.341 g
Prep Extract Vol: 16 mL

Print Date: 09/19/2014 12:50:01PM

Results of **11738-TS11**

Client Sample ID: **11738-TS11**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457006
Lab Project ID: 1148457

Collection Date: 08/29/14 15:35
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 89.1
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.96	J	3.62	1.09	mg/Kg	1		09/08/14 19:33
Surrogates								
4-Bromofluorobenzene	41.7	*	50-150		%	1		09/08/14 19:33

Batch Information

Analytical Batch: VFC12096
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/08/14 19:33
Container ID: 1148457006-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 15:35
Prep Initial Wt./Vol.: 46.645 g
Prep Extract Vol: 30.0922 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00905	U	0.0181	0.00579	mg/Kg	1		09/08/14 19:33
Ethylbenzene	0.0181	U	0.0362	0.0113	mg/Kg	1		09/08/14 19:33
o-Xylene	0.0181	U	0.0362	0.0113	mg/Kg	1		09/08/14 19:33
P & M -Xylene	0.0362	U	0.0724	0.0217	mg/Kg	1		09/08/14 19:33
Toluene	0.0159	J	0.0362	0.0113	mg/Kg	1		09/08/14 19:33
Surrogates								
1,4-Difluorobenzene	100		72-119		%	1		09/08/14 19:33

Batch Information

Analytical Batch: VFC12096
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/08/14 19:33
Container ID: 1148457006-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 15:35
Prep Initial Wt./Vol.: 46.645 g
Prep Extract Vol: 30.0922 mL

Print Date: 09/19/2014 12:50:01PM

Results of **11738-TS12**

Client Sample ID: **11738-TS12**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457007
Lab Project ID: 1148457

Collection Date: 08/29/14 16:30
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 94.9
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	840		105	32.5	mg/Kg	5		09/15/14 19:08
Surrogates								
5a Androstane	149		50-150		%	5		09/15/14 19:08

Batch Information

Analytical Batch: XFC11566
Analytical Method: AK102
Analyst: AYC
Analytical Date/Time: 09/15/14 19:08
Container ID: 1148457007-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 30.124 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	3280		105	32.5	mg/Kg	5		09/15/14 19:08
Surrogates								
n-Triacontane-d62	111		50-150		%	5		09/15/14 19:08

Batch Information

Analytical Batch: XFC11566
Analytical Method: AK103
Analyst: AYC
Analytical Date/Time: 09/15/14 19:08
Container ID: 1148457007-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 30.124 g
Prep Extract Vol: 1 mL

Print Date: 09/19/2014 12:50:01PM

Results of **11738-TS12**

Client Sample ID: **11738-TS12**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457007
Lab Project ID: 1148457

Collection Date: 08/29/14 16:30
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 94.9
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	26.6		3.56	1.07	mg/Kg	1		09/08/14 19:52
Surrogates								
4-Bromofluorobenzene	72.5		50-150		%	1		09/08/14 19:52

Batch Information

Analytical Batch: VFC12096
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/08/14 19:52
Container ID: 1148457007-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 16:30
Prep Initial Wt./Vol.: 39.962 g
Prep Extract Vol: 27.0278 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
o-Xylene	0.958		0.0356	0.0111	mg/Kg	1		09/08/14 19:52
P & M -Xylene	4.93		0.0712	0.0214	mg/Kg	1		09/08/14 19:52
Ethylbenzene	1.73		0.0356	0.0111	mg/Kg	1		09/08/14 19:52
Benzene	0.0591		0.0178	0.00570	mg/Kg	1		09/08/14 19:52
Toluene	2.32		0.0356	0.0111	mg/Kg	1		09/08/14 19:52
Surrogates								
1,4-Difluorobenzene	102		72-119		%	1		09/08/14 19:52

Batch Information

Analytical Batch: VFC12096
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/08/14 19:52
Container ID: 1148457007-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 16:30
Prep Initial Wt./Vol.: 39.962 g
Prep Extract Vol: 27.0278 mL

Print Date: 09/19/2014 12:50:01PM

Results of **11738-TP3S1**

Client Sample ID: **11738-TP3S1**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457008
Lab Project ID: 1148457

Collection Date: 08/29/14 16:45
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 84.3
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	11.8	U	23.6	7.32	mg/Kg	1		09/11/14 22:15
Surrogates								
5a Androstane	85.8		50-150		%	1		09/11/14 22:15

Batch Information

Analytical Batch: XFC11562
Analytical Method: AK102
Analyst: AYC
Analytical Date/Time: 09/11/14 22:15
Container ID: 1148457008-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 30.15 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	9.67	J	23.6	7.32	mg/Kg	1		09/11/14 22:15
Surrogates								
n-Triacontane-d62	90.3		50-150		%	1		09/11/14 22:15

Batch Information

Analytical Batch: XFC11562
Analytical Method: AK103
Analyst: AYC
Analytical Date/Time: 09/11/14 22:15
Container ID: 1148457008-A

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 09/11/14 14:42
Prep Initial Wt./Vol.: 30.15 g
Prep Extract Vol: 1 mL

Print Date: 09/19/2014 12:50:01PM

Results of **11738-TP3S1**

Client Sample ID: **11738-TP3S1**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457008
Lab Project ID: 1148457

Collection Date: 08/29/14 16:45
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%): 84.3
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.77	U	3.54	1.06	mg/Kg	1		09/08/14 20:11
Surrogates								
4-Bromofluorobenzene	91		50-150		%	1		09/08/14 20:11

Batch Information

Analytical Batch: VFC12096
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/08/14 20:11
Container ID: 1148457008-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 16:45
Prep Initial Wt./Vol.: 56.794 g
Prep Extract Vol: 33.9001 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00885	U	0.0177	0.00566	mg/Kg	1		09/08/14 20:11
Ethylbenzene	0.0177	U	0.0354	0.0110	mg/Kg	1		09/08/14 20:11
o-Xylene	0.0177	U	0.0354	0.0110	mg/Kg	1		09/08/14 20:11
P & M -Xylene	0.0354	U	0.0708	0.0212	mg/Kg	1		09/08/14 20:11
Toluene	0.0177	U	0.0354	0.0110	mg/Kg	1		09/08/14 20:11
Surrogates								
1,4-Difluorobenzene	99.2		72-119		%	1		09/08/14 20:11

Batch Information

Analytical Batch: VFC12096
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/08/14 20:11
Container ID: 1148457008-B

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 16:45
Prep Initial Wt./Vol.: 56.794 g
Prep Extract Vol: 33.9001 mL

Print Date: 09/19/2014 12:50:01PM

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **31-1-11738 Tanana PALP**
Lab Sample ID: 1148457009
Lab Project ID: 1148457

Collection Date: 08/29/14 14:20
Received Date: 09/06/14 10:35
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.29	U	2.59	0.776	mg/Kg	1		09/08/14 16:05
Surrogates								
4-Bromofluorobenzene	100		50-150		%	1		09/08/14 16:05

Batch Information

Analytical Batch: VFC12096
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/08/14 16:05
Container ID: 1148457009-A

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 14:20
Prep Initial Wt./Vol.: 48.346 g
Prep Extract Vol: 25 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00645	U	0.0129	0.00414	mg/Kg	1		09/08/14 16:05
Ethylbenzene	0.0130	U	0.0259	0.00807	mg/Kg	1		09/08/14 16:05
o-Xylene	0.0130	U	0.0259	0.00807	mg/Kg	1		09/08/14 16:05
P & M -Xylene	0.0259	U	0.0517	0.0155	mg/Kg	1		09/08/14 16:05
Toluene	0.0130	U	0.0259	0.00807	mg/Kg	1		09/08/14 16:05
Surrogates								
1,4-Difluorobenzene	101		72-119		%	1		09/08/14 16:05

Batch Information

Analytical Batch: VFC12096
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/08/14 16:05
Container ID: 1148457009-A

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 08/29/14 14:20
Prep Initial Wt./Vol.: 48.346 g
Prep Extract Vol: 25 mL

Print Date: 09/19/2014 12:50:01PM

Method Blank

Blank ID: MB for HBN 1635347 [SPT/9443]
Blank Lab ID: 1232407

Matrix: Soil/Solid (dry weight)

QC for Samples:
1148457001, 1148457002, 1148457003, 1148457004, 1148457005, 1148457006, 1148457007, 1148457008

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT9443
Analytical Method: SM21 2540G
Instrument:
Analyst: MJN
Analytical Date/Time: 9/8/2014 6:50:00PM

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Duplicate Sample Summary

Original Sample ID: 1144043008
Duplicate Sample ID: 1232408

Analysis Date: 09/08/2014 18:50
Matrix: Soil/Solid (dry weight)

QC for Samples:

1148457001, 1148457002, 1148457003, 1148457004, 1148457005, 1148457006, 1148457007, 1148457008

Results by **SM21 2540G**

NAME	Original ()	Duplicate ()	RPD (%)	RPD CL
Total Solids	97.4	97.3	0.06	15.00

Batch Information

Analytical Batch: SPT9443
Analytical Method: SM21 2540G
Instrument:
Analyst: MJN

Print Date: 09/19/2014 12:50:05PM

Method Blank

Blank ID: MB for HBN 1635374 [VXX/26413]
Blank Lab ID: 1232514

Matrix: Soil/Solid (dry weight)

QC for Samples:
1148457001, 1148457002, 1148457003, 1148457004, 1148457005, 1148457006, 1148457007, 1148457008, 1148457009

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene	112	50-150		%

Batch Information

Analytical Batch: VFC12096
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 9/8/2014 10:23:00AM

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 9/8/2014 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1148457 [VXX26413]
Blank Spike Lab ID: 1232517
Date Analyzed: 09/08/2014 11:20

Spike Duplicate ID: LCSD for HBN 1148457 [VXX26413]
Spike Duplicate Lab ID: 1232518
Matrix: Soil/Solid (dry weight)

QC for Samples: 1148457001, 1148457002, 1148457003, 1148457004, 1148457005, 1148457006, 1148457007, 1148457008, 1148457009

Results by **AK101**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	10.0	10.6	106	10.0	10.7	107	(60-120)	1.20	(< 20)
Surrogates									
4-Bromofluorobenzene	1.25		113	1.25		114	(50-150)	1.40	

Batch Information

Analytical Batch: **VFC12096**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX26413**
Prep Method: **SW5035A**
Prep Date/Time: **09/08/2014 08:00**
Spike Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL
Dup Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL

Print Date: 09/19/2014 12:50:09PM

Method Blank

Blank ID: MB for HBN 1635374 [VXX/26413]
Blank Lab ID: 1232514

Matrix: Soil/Solid (dry weight)

QC for Samples:
1148457001, 1148457002, 1148457003, 1148457004, 1148457005, 1148457006, 1148457007, 1148457008, 1148457009

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.00625U	0.0125	0.00400	mg/Kg
Ethylbenzene	0.0125U	0.0250	0.00780	mg/Kg
o-Xylene	0.0125U	0.0250	0.00780	mg/Kg
P & M -Xylene	0.0250U	0.0500	0.0150	mg/Kg
Toluene	0.0125U	0.0250	0.00780	mg/Kg
Surrogates				
1,4-Difluorobenzene	101	72-119		%

Batch Information

Analytical Batch: VFC12096
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 9/8/2014 10:23:00AM

Prep Batch: VXX26413
Prep Method: SW5035A
Prep Date/Time: 9/8/2014 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1148457 [VXX26413]
Blank Spike Lab ID: 1232515
Date Analyzed: 09/08/2014 10:42

Spike Duplicate ID: LCSD for HBN 1148457 [VXX26413]
Spike Duplicate Lab ID: 1232516
Matrix: Soil/Solid (dry weight)

QC for Samples: 1148457001, 1148457002, 1148457003, 1148457004, 1148457005, 1148457006, 1148457007, 1148457008, 1148457009

Results by **SW8021B**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	1.25	1.43	114	1.25	1.36	109	(75-125)	4.70	(< 20)
Ethylbenzene	1.25	1.30	104	1.25	1.23	98	(75-125)	5.20	(< 20)
o-Xylene	1.25	1.27	102	1.25	1.21	97	(75-125)	4.90	(< 20)
P & M -Xylene	2.50	2.56	102	2.50	2.43	97	(80-125)	5.10	(< 20)
Toluene	1.25	1.33	106	1.25	1.26	101	(70-125)	5.20	(< 20)
Surrogates									
1,4-Difluorobenzene	1.25		106	1.25		105	(72-119)	1.70	

Batch Information

Analytical Batch: **VFC12096**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX26413**
Prep Method: **SW5035A**
Prep Date/Time: **09/08/2014 08:00**
Spike Init Wt./Vol.: 1.25 mg/Kg Extract Vol: 25 mL
Dup Init Wt./Vol.: 1.25 mg/Kg Extract Vol: 25 mL

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Matrix Spike Summary

Original Sample ID: 1232519
MS Sample ID: 1232520 MS
MSD Sample ID: 1232521 MSD

Analysis Date: 09/08/2014 11:57
Analysis Date: 09/08/2014 12:16
Analysis Date: 09/08/2014 12:35
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1148457001, 1148457002, 1148457003, 1148457004, 1148457005, 1148457006, 1148457007, 1148457008, 1148457009

Results by **SW8021B**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	0.0159	1.17	1.42	121	1.17	1.41	119	75-125	0.97	(< 20)
Ethylbenzene	1.13	1.17	2.40	109	1.17	2.39	108	75-125	0.37	(< 20)
o-Xylene	3.77	1.17	6.23	211 *	1.17	6.26	213 *	75-125	0.39	(< 20)
P & M -Xylene	3.90	2.34	6.35	105	2.34	6.30	103	80-125	0.67	(< 20)
Toluene	0.0537	1.17	1.36	112	1.17	1.34	110	70-125	0.93	(< 20)
Surrogates										
1,4-Difluorobenzene		1.17	1.28	110	1.17	1.27	109	72-119	0.73	

Batch Information

Analytical Batch: VFC12096
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 9/8/2014 12:16:00PM

Prep Batch: VXX26413
Prep Method: AK101 Extraction (S)
Prep Date/Time: 9/8/2014 8:00:00AM
Prep Initial Wt./Vol.: 53.53g
Prep Extract Vol: 25.00mL

Print Date: 09/19/2014 12:50:14PM

Method Blank

Blank ID: MB for HBN 1635367 4[[[\31X3X/
Blank 2a] ID: 1L3LbXQ

Ma,r9l : mo9Wmol9 xi rd (s9yw,g

CS for map els8:
11b7b50QQb

h s8) l,8] d **8270D SIMS (PAH)**

Uarap s,sr	h s8) l,8	2u C\S2	D2	Rn98
10Ms,wdlnaew,walsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
L0Ms,wdlnaew,walsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
c . snaew,wsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
c . snaew,wdlsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
c n,wra. sns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
BsnKoxagc n,wra. sns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
BsnKo4a/edrsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
BsnKo4[/- l) oran,wsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
BsnKo4yzwz9esrdlsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
BsnKo4k/fl) oran,wsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
Swrd8sns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
D9 snKo4azwan,wra. sns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
- l) oran,wsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
- l) orsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
Ini sno4lzLz3Ozi / edrsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
Naew,walsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
Uwsnan,wrsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
Udrsns	QRQQ.5QR	QRQQ5QQ	QRQQ15Q	p y\Gy
Surrogates				
LQ-l) oro] 9ewsndl	01P3	b5C1Q5		%
AsrewsndlQ1b	X1P7	3QQ1L5		%

Batch Information

cnald,9al Ba,. w: [Mm7L75
cnald,9al Ms,woi : 7L0QD mlMmxUcHg
In8,r) p sn,: HU 67XQ.5X03 MmmFCc
cnald8,: hAm
cnald,9al Da,s\A9p s: XV1b\LQ1b X:QL:QQUM

Urse Ba,. w: [[[31X3X
Urse Ms,woi : mT 355QS
Urse Da,s\A9p s: XVXVLQ1b 1QbL:bbcM
Urse In99al T ,PFolP LLP5 y
Urse Wt,ra. , Fol: 1 p 2

Ur9n, Da,s: QXV1XVLQ1b 1L:5Q15UM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1148457 [XXX31939]
Blank Spike Lab ID: 1232491
Date Analyzed: 09/14/2014 21:19

Matrix: Soil/Solid (dry weight)

QC for Samples: 1148457004

Results by **8270D SIMS (PAH)**

Blank Spike (mg/Kg)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	0.0222	0.0175	79	(44-107)
2-Methylnaphthalene	0.0222	0.0155	70	(45-105)
Acenaphthene	0.0222	0.0173	78	(45-110)
Acenaphthylene	0.0222	0.0166	75	(45-105)
Anthracene	0.0222	0.0192	86	(55-105)
Benzo(a)Anthracene	0.0222	0.0204	92	(50-110)
Benzo[a]pyrene	0.0222	0.0185	84	(50-110)
Benzo[b]Fluoranthene	0.0222	0.0209	94	(45-115)
Benzo[g,h,i]perylene	0.0222	0.0224	101	(40-125)
Benzo[k]fluoranthene	0.0222	0.0228	103	(45-125)
Chrysene	0.0222	0.0218	98	(55-110)
Dibenzo[a,h]anthracene	0.0222	0.0225	101	(40-125)
Fluoranthene	0.0222	0.0197	89	(55-115)
Fluorene	0.0222	0.0184	83	(50-110)
Indeno[1,2,3-c,d] pyrene	0.0222	0.0224	101	(40-120)
Naphthalene	0.0222	0.0164	74	(40-105)
Phenanthrene	0.0222	0.0198	89	(50-110)
Pyrene	0.0222	0.0191	86	(45-125)
Surrogates				
2-Fluorobiphenyl	0.0222		79	(45-105)
Terphenyl-d14	0.0222		94	(30-125)

Batch Information

Analytical Batch: **XMS8285**
Analytical Method: **8270D SIMS (PAH)**
Instrument: **HP 6890/5973 MS SVQA**
Analyst: **RTS**

Prep Batch: **XXX31939**
Prep Method: **SW3550C**
Prep Date/Time: **09/09/2014 10:42**
Spike Init Wt./Vol.: 0.0222 mg/Kg Extract Vol: 1 mL
Dup Init Wt./Vol.: Extract Vol:

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Matrix Spike Summary

Original Sample ID: 1144338002
MS Sample ID: 1232492 MS
MSD Sample ID: 1232493 MSD

QC for Samples: 1148457004

Analysis Date: 09/14/2014 21:36
Analysis Date: 09/14/2014 21:52
Analysis Date: 09/14/2014 22:09
Matrix: Soil/Solid (dry weight)

Results by **8270D SIMS (PAH)**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	0.00184J	0.0240	0.0217	83	0.0245	0.0200	74	44-107	8.30	(< 30)
2-Methylnaphthalene	0.00222J	0.0240	0.0203	75	0.0245	0.0187	68	45-105	7.80	(< 30)
Acenaphthene	0.00275U	0.0240	0.0203	84	0.0245	0.0186	76	45-110	8.50	(< 30)
Acenaphthylene	0.00275U	0.0240	0.0190	79	0.0245	0.0180	73	45-105	5.70	(< 30)
Anthracene	0.00275U	0.0240	0.0202	84	0.0245	0.0195	80	55-105	3.40	(< 30)
Benzo(a)Anthracene	0.00275U	0.0240	0.0201	83	0.0245	0.0197	81	50-110	1.70	(< 30)
Benzo[a]pyrene	0.00275U	0.0240	0.0175	73	0.0245	0.0174	71	50-110	0.84	(< 30)
Benzo[b]Fluoranthene	0.00275U	0.0240	0.0204	85	0.0245	0.0185	76	45-115	9.70	(< 30)
Benzo[g,h,i]perylene	0.00275U	0.0240	0.0205	85	0.0245	0.0198	81	40-125	3.10	(< 30)
Benzo[k]fluoranthene	0.00275U	0.0240	0.0209	87	0.0245	0.0219	90	45-125	4.60	(< 30)
Chrysene	0.00275U	0.0240	0.0215	89	0.0245	0.0209	85	55-110	2.60	(< 30)
Dibenzo[a,h]anthracene	0.00275U	0.0240	0.0206	86	0.0245	0.0198	81	40-125	3.80	(< 30)
Fluoranthene	0.00275U	0.0240	0.0205	85	0.0245	0.0200	82	55-115	2.80	(< 30)
Fluorene	0.00275U	0.0240	0.0208	87	0.0245	0.0198	81	50-110	4.90	(< 30)
Indeno[1,2,3-c,d] pyrene	0.00275U	0.0240	0.0201	83	0.0245	0.0196	80	40-120	2.40	(< 30)
Naphthalene	0.00275U	0.0240	0.0193	80	0.0245	0.0181	74	40-105	6.50	(< 30)
Phenanthrene	0.00275U	0.0240	0.0215	89	0.0245	0.0207	85	50-110	3.60	(< 30)
Pyrene	0.00275U	0.0240	0.0196	82	0.0245	0.0190	78	45-125	3.40	(< 30)
Surrogates										
2-Fluorobiphenyl		0.0240	0.0206	86	0.0245	0.0196	80	45-105	4.60	
Terphenyl-d14		0.0240	0.0222	92	0.0245	0.0221	90	30-125	0.51	

Batch Information

Analytical Batch: XMS8285
Analytical Method: 8270D SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 9/14/2014 9:52:00PM

Prep Batch: XXX31939
Prep Method: Sonication Extraction Soil 8270 PAH SIM
Prep Date/Time: 9/9/2014 10:42:44AM
Prep Initial Wt./Vol.: 22.91g
Prep Extract Vol: 1.00mL

Print Date: 09/19/2014 12:50:18PM

Method Blank

Blank ID: MB for HBN 1637961 [XXX/31958]
Blank Lab ID: 1233082

Matrix: Soil/Solid (dry weight)

QC for Samples:
1148457001, 1148457002, 1148457003, 1148457004, 1148457005, 1148457006, 1148457007, 1148457008

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane	91.8	60-120		%

Batch Information

Analytical Batch: XFC11562
Analytical Method: AK102
Instrument: HP 6890 Series II FID SV D R
Analyst: AYC
Analytical Date/Time: 9/11/2014 8:46:00PM

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/Time: 9/11/2014 2:42:44PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1148457 [VVVX12586
Blank Spike La3 ID: 1] XXb8X
Date Analyzed: b20l1Q b14] b:59

Spike D/ pliuate ID: LCSD for HBN 1148457 [VVVX12586
Spike D/ pliuate La3 ID: 1] XXb84
s atriM Soil0Solid xdry (eiwgth

KC for SaP pleR 1148457bb1Q1148457bb] Q1148457bbXQ1148457bb4Q1148457bb5Q1148457bb9Q1148457bb7Q 1148457bb8

c eR/ ltR3y **AK102**

	Blank Spike xP w0%wh			Spike D/ pliuate xP w0%wh					
) araP eter	Spike	c eR/ lt	c eu xmh	Spike	c eR/ lt	c eu xmh	CL	c) D xmh	c) D CL
DieRel c anwe , rwaniuR	197	192	1b]	197	194	22	x75G1] 5 h	X.1b	xO] b h
Surrogates									
5a AndroRtane	X.XX		112	X.XX		1] b	x9bG1] b h	b.Xb	

Batch Information

Analytiual Batug: **XFC11562**
Analytiual s etgod: **AK102**
InRtr/ P ent: **HP 6890 Series II FID SV D R**
AnalyRt: **AYC**

) rep Batug: **XXX31958**
) rep s etgod: **SW3550C**
) rep Date0 iP e: **09/11/2014 14:42**
Spike Init < t.0Tol.: 197 P w0%w WMraut Tol: 1 P L
D/ p Init < t.0Tol.: 197 P w0%w WMraut Tol: 1 P L

Method Blank

Blank ID: MB for HBN 1637961 [XXX/31958]
Blank Lab ID: 1233082

Matrix: Soil/Solid (dry weight)

QC for Samples:
1148457001, 1148457002, 1148457003, 1148457004, 1148457005, 1148457006, 1148457007, 1148457008

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
nA riacontaneAd62	94.3	60A120		%

Batch Information

Fnalytical Batch: XVC11562
Fnalytical Method: FK103
Instrument: HP 6890 Series II VID SY D R
Fnalyst: FTC
Fnalytical Date/- ime: 9/11/2014 8:46:00PM

Prep Batch: XXX31958
Prep Method: SW3550C
Prep Date/- ime: 9/11/2014 2:42:44PM
Prep Initial Wt./Yol.: 30 g
Prep Extract Yol: 1 mL

SGS North Fmerica Inc.
200 West Potter Drive Fnchorage, FK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1148457 [VVVX12586
Blank Spike La3 ID: 1] XXb8X
Date Analyzed: b20l1Q b14] b:59

Spike D/ pliuate ID: LCSD for HBN 1148457 [VVVX12586
Spike D/ pliuate La3 ID: 1] XXb84
s atriM Soil0Solid xdry (eiwgth

KC for SaP pleR 1148457bb1Q1148457bb] Q1148457bbXQ1148457bb4Q1148457bb5Q1148457bb9Q1148457bb7Q 1148457bb8

c eR/ ltR3y **AK102**

	Blank Spike xP w0%wh			Spike D/ pliuate xP w0%wh					
) araP eter	Spike	c eR/ lt	c eu xmh	Spike	c eR/ lt	c eu xmh	CL	c) D xmh	c) D CL
c eRd/ al c anwe , rwaniuR	197	124	119	197	121	114	x9bG] b h	1.7b	xO] b h
Surrogates									
nG riauontaneGd9]	X.XX		111	X.XX		1b8	x9bG] b h	] .4b	

Batch Information

Analytiual Batug: **XFC1156H**
Analytiual s etgod: **AK102**
InRtr/ P ent: **P8 69D0 Series II FIV SR V Y**
AnalyRt: **A3C**

) rep Batug: **XXX21D59**
) rep s etgod: **SW2550C**
) rep Date0 iP e: **0D/11/H014 14:4H**
Spike Init < t.0Tol.: 197 P w0%w WMraut Tol: 1 P L
D/ p Init < t.0Tol.: 197 P w0%w WMraut Tol: 1 P L

) rint Date: b20l20 b14 1] :5b:] 4) s

1148457

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY CORD

Page 1 of 1

Laboratory SGS
Attn: JENNIFER DAWKINS

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

2705 Saint Andrews Loop, Suite A
Pasco, WA 99301-3378
(509) 946-6309

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1321 Bannock Street, Suite 200
Denver, CO 80204
(303) 825-3800

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	RRO AK103	DRO AK102	GRO AK101	BTEX EPA 8021B	PAH EPA 8270D	Total Number of Containers	Remarks/Matrix
11738-TP1S1	(1) A-B	1420	8/29			X	X	X	X			
11738-TP1S4	(2) A-B	1425	8/29			X	X	X	X			
11738-TP2S1	(3) A-B	1450	8/29			X	X	X	X			
11738-TS1	(4) A-B	1520	8/29			X	X	X	X	X		
11738-TS2	(5) A-B	1605	8/29			X	X	X	X			
11738-TS11	(6) A-B	1535	8/29			X	X	X	X			
11738-TS12	(7) A-B	1630	8/29			X	X	X	X			
11738-TP3S1	(8) A-B	1645	8/29			X	X	X	X			
*TRIP BLANK	VW8-68-10	(9) A									1	

Project Information		Sample Receipt	
Project Number:	31-1-11738	Total Number of Containers	
Project Name:	TANANA PACP	COC Seals/Intact? Y/N/NA	—
Contact:	VEW + KRF	Received Good Cond./Cold	—
Ongoing Project?	Yes ☒ No ☐	Delivery Method:	
Sampler:	JCT	(attach shipping bill, if any)	

Instructions
Requested Turnaround Time:
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature:	Signature:	Signature:
Time: 2:10pm	Time: 1430	Time:
Printed Name: VALERIE WEBB	Printed Name: BND	Printed Name:
Date: 9/4	Date: 9/5/14	Date:
Company: SHANNON+WILSON	Company: SGS	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature:	Signature:	Signature:
Time: 1410	Time:	Time: 10:35
Printed Name: Jen Dawkins	Printed Name:	Printed Name: Kayla Wagenfehr
Date: 9/4/14	Date:	Date: 9/6/14
Company: SGS	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

*TRIP BLANK IN SAME COOLER AS BTEX/GRO SAMPLES

No. 32702

SGS

1148457

SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	(Yes) No N/A (Yes) No	☐ *Exemption permitted if sampler hand carries/delivers.*
Temperature blank compliant* (i.e., 0-6°C after CF)? *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled."	Yes No Yes No N/A Yes No N/A	☐ *Exemption permitted if chilled & collected <8 hrs ago.* Samples chilled; proceed w/analysis, per client. -JAED- ***Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.***
Delivery method (specify all that apply): Client (hand carried) USPS Lynden AK Air Alert Courier UPS FedEx RAVN C&D Delivery Carlile Pen Air Warp Speed Other: _____ → *For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?*	Tracking/AB # or see attached or N/A Yes No N/A	
→ For samples received with payment, note amount ($) and whether cash / check / CC **(circle one)** was received. → For samples **received in FBKS**, ANCH staff will verify all criteria are reviewed. SRF initiated in FBKS by:		
Were samples received within hold time? Do samples **match COC*** (i.e., sample IDs, dates/times collected)? Were analyses requested unambiguous?	(Yes) No N/A (Yes) No N/A (Yes) No N/A	***Note: Refer to form F-083 "Sample Guide" for hold times.*** ***Note: If times differ <1hr, record details and login per COC.***
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other:	(Yes) No	
Were **proper containers** (type/mass/volume/preservative*) used? Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples? Were all VOA vials **free of headspace** (i.e., bubbles ≤6 mm)? Were all soil VOAs **field extracted** with MeOH+BFB?	(Yes) No N/A (Yes) No N/A Yes No (N/A) (Yes) No N/A	☐ *Exemption permitted for metals (e.g., 200.8/6020A).*
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was **pH verified and compliant**? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No (N/A) Yes No (N/A)	
For **special handling** (e.g., "MI" soils, foreign soils, lab filter for dissolved…, lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)?	Yes No (N/A)	
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No (N/A)	
For **SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP**, were containers / paperwork flagged accordingly?	Yes No (N/A)	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No (N/A)	SRF Completed by: KMW PM notified: N/A
Was **PEER REVIEW** of ***sample numbering/labeling completed?***	Yes No (N/A)	Peer Reviewed by: N/A
Additional notes (if applicable):		

Note to Client: *Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.*

SGS

1148457

SAMPLE RECEIPT FORM FOR TRANSFERS

Note: This form is to be completed by Anchorage Sample Receiving staff for all shipments received at SGS-Anchorage from SGS-Fairbanks.

Were samples received numbered with all criteria on Sample Receipt Form F0004 documented by Fairbanks Sample Receiving staff? If "No," ***Anchorage Sample Receiving staff must complete the receiving process & document pH verification, sample condition, etc. on the SRF initiated by Fairbanks staff*** (attached).	Yes (No) N/A	Use space below for additional notes…
If work was pre-logged, was the predefined comment cleared?	Yes No (N/A)	

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location:	(Yes) No N/A	1F, 1B
COC accompanied samples?	(Yes) No N/A	
Temperature blank compliant (i.e., 0-6°C after correction factor)? Cooler ID: i @ 1.4 w/ Therm.ID: 205 Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ ***Note: If non-compliant, use form FS-0029 to document affected samples/analyses.*** If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP** will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled." **If temperature(s) <0°C, were all containers ice free?**	(Yes) No N/A Yes No (N/A)	
RUSH/SHORT Hold e-mail **forwarded** to lab if applicable?	Yes No (N/A)	
Delivery method: (Lynden) Other:		
Completed by: KMW 9/6/14 10:35		

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1148457001-A	No Preservative Required	OK			
1148457001-B	Methanol field pres. 4 C	OK			
1148457002-A	No Preservative Required	OK			
1148457002-B	Methanol field pres. 4 C	OK			
1148457003-A	No Preservative Required	OK			
1148457003-B	Methanol field pres. 4 C	OK			
1148457004-A	No Preservative Required	OK			
1148457004-B	Methanol field pres. 4 C	OK			
1148457005-A	No Preservative Required	OK			
1148457005-B	Methanol field pres. 4 C	OK			
1148457006-A	No Preservative Required	OK			
1148457006-B	Methanol field pres. 4 C	OK			
1148457007-A	No Preservative Required	OK			
1148457007-B	Methanol field pres. 4 C	OK			
1148457008-A	No Preservative Required	OK			
1148457008-B	Methanol field pres. 4 C	OK			
1148457009-A	Methanol field pres. 4 C	OK			

Container Condition Glossary

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.

Laboratory Data Review Checklist

Completed by: Marcy Nadel

Title: Geologist Date: November 13, 2014

CS Report Name: 31-1-11738 Tanana PACP Report Date: September 19, 2014

Consultant Firm: Shannon & Wilson, Inc.

Laboratory Name: SGS North America, Inc. Laboratory Report Number: 1148457

ADEC File Number: ADEC RecKey Number:

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No ☒NA (Please explain.) Comments:

      Analyses were performed by SGS North America, Inc. in Anchorage, Alaska.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

      COC does not indicate that all soil samples are grab samples, the number of jars submitted with this WO, or that samples were hand delivered to the laboratory. These minor omissions do not affect data quality or usability.

   b. Correct analyses requested?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

      Temperature blanks were measured within the acceptable temperature range of 0 °C to 6 °C upon receipt at the SGS Anchorage laboratory. This range has been approved by ADEC. Temperature was not measured upon receipt at SGS in Fairbanks ("samples chilling; proceed with analysis").

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
☒Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
☒Yes ☐ No ☐NA (Please explain.) Comments:

Samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
☐Yes ☐ No ☒NA (Please explain.) Comments:

There were no discrepancies were noted by the laboratory.

e. Data quality or usability affected? (Please explain.)
Comments:

Data quality and usability are not considered affected; samples chilled in refrigerator calibrated to appropriate temperature range prior to delivery to Fairbanks laboratory.

4. Case Narrative
a. Present and understandable?
☒Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

☒Yes ☐ No ☐NA (Please explain.) Comments:

11738-TP1S1, 11738-TP1S4, 11738-TS2, and 11738-TS12:
AK102 - Diesel range organics result is biased high due to heavier hydrocarbons contributing to the middle distillate range. AK103 - The pattern is consistent with a lube oil.

11738-TP1S4, 11738-TS1 and 11738-TS11:
AK103 - Unknown hydrocarbon with several peaks is present.

11738-TS1, 11738-TS2, and 11738-TS11:
AK102/103 - 5a-Androstane and n-triacontane (surrogates) recoveries are outside QC criteria due to sample dilution.

11738-TS1 and 11738-TS11:
AK102 - The pattern is consistent with a weathered middle distillate. AK103 - Unknown hydrocarbon with several peaks is present.

11738-TS1:
8270D SIM - Surrogate (2-fluorobiphenyl and terphenyl-d14) recovery is outside of QC criteria due to sample dilution. In addition, the LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

11738-TS2:
AK102 - Sample was diluted due to dark color of extract; therefore the LOQ was elevated.

11738-TS11:
AK101 - BFB (surrogate) recovery does not meet QC criteria (biased low). Sample was analyzed twice and results confirmed.

MS/MSD:
8021B - MS recovery for o-Xylene does not meet QC criteria due to matrix interference. Refer to LCS/LCSD for accuracy.

c. Were all corrective actions documented?

☒Yes ☐ No ☐NA (Please explain.) Comments:

Samples were analyzed twice, where applicable. Results confirmed.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative notes the DRO results for 11738-TP1S1, 11738-TP1S4, 11738-TS2, and 11738-TS12 are biased high due to heavier hydrocarbons contributing to the result. The DRO result for these samples is flagged, 'JH' indicating a high bias, where DRO was detected.

Please refer to Section 6 for effects on data quality/usability for samples noted with surrogate and MS/MSD failures.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

   b. All applicable holding times met?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      ☐Yes ☒ No ☐NA (Please explain.) Comments:

LODs for benzo[a]pyrene and dibenzo[a,h]anthracene are above ADEC established soil cleanup levels for sample 11738-TS1.

   e. Data quality or usability affected?
      Comments:

We cannot determine if these analytes are present above cleanup level in sample 11738-TS1.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

Project analytes were not detected in the method blank.

      iii. If above PQL, what samples are affected?
      Comments:

N/A; project analytes not detected.

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      ☐Yes ☐ No ☒NA (Please explain.) Comments:

N/A; project analytes not detected.

v. Data quality or usability affected? (Please explain.)
Comments:

No, see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
☒Yes ☐ No ☐NA (Please explain.) Comments:

LCS/LCSD samples were analyzed for total solids, GRO, BTEX, DRO, and RRO. LCS samples were analyzed for PAH. MS/MSD samples were also analyzed for BTEX and PAH.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐Yes ☐ No ☒NA (Please explain.) Comments:

Only organics analysis was requested with this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
☒Yes ☐ No ☐NA (Please explain.) Comments:

MS/MSD %Rs for o-xylene exceed laboratory limits. LCS, LCSD, MS, and MSD %R are within laboratory limits for other analytes.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
☒Yes ☐ No ☐NA (Please explain.) Comments:

All RPD are below laboratory limits.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

The spiked MS/MSD sample is not part of the project sample set; results are unaffected by the o-xylene recovery failure. In addition, LCS/LCSD recoveries are within limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
☐Yes ☐ No ☒NA (Please explain.) Comments:

N/A; see above.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Data quality and usability were not affected; see above.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
☒Yes ☐ No ☐NA (Please explain.) Comments:

Surrogates for GRO, BTEX, PAH, DRO, and RRO are assessed in this section.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
☐Yes ☒ No ☐NA (Please explain.) Comments:

GRO surrogate %R for "TS11" was recovered below the acceptable range. The sample results is considered biased low, flagged with "JL." In addition, the DRO and RRO surrogates were recovered outside QC limits for samples "TP1S1", "TS1", "TS2", and "TS11". The PAH surrogate was also recovered outside QC limits in sample "TS1". DRO, RRO, and PAH surrogate failures were due to sample dilution; the results are unaffected.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
☒Yes ☐ No ☐NA (Please explain.) Comments:

Yes, GRO for "TS11" is flagged "JL" indicating a low bias.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Yes, see above.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
☒Yes ☐ No ☐NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

☒Yes ☐ No ☐NA (Please explain.) Comments:

iii. All results less than PQL?
☒Yes ☐ No ☐NA (Please explain.) Comments:

No analytes were detected in the TB.

iv. If above PQL, what samples are affected?
Comments:

N/A; no analytes were detected in the TB.

v. Data quality or usability affected? (Please explain.)
Comments:

No; see above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
☒Yes ☐ No ☐NA (Please explain.) Comments:

Field duplicates were submitted for DRO, RRO, GRO, and BTEX.

ii. Submitted blind to lab?
☒Yes ☐ No ☐NA (Please explain.) Comments:

Field duplicate pairs "TS1" / "TS11" and "TS2" / "TS12" were submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration
☒Yes ☐ No ☐NA (Please explain.) Comments:

RPDs were below 50% for all field duplicate analytes, where calculable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)
Comments:

Data quality was not affected; see above.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes ☐ No ☒NA (Please explain.) Comments:

Reusable sampling equipment was not used for this project, so an equipment blank was not needed or submitted with this work order.

i. All results less than PQL?

☐Yes ☐ No ☒NA (Please explain.) Comments:

N/A; see above.

ii. If above PQL, what samples are affected?

Comments:

N/A; see above.

iii. Data quality or usability affected? (Please explain.)

Comments:

N/A; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

☐Yes ☐ No ☒NA (Please explain.) Comments:

There were no other data flags/qualifiers.

APPENDIX K

STATE RECORDS REVIEW TABLES

- Table 1, Leaking Underground Storage Tanks (LUSTs) within a 0.5-Mile Radius
- Table 2, Contaminated Sites within a 1.0-Mile Radius

Table 1

Leaking Underground Storage Tanks (LUSTs) within a 0.5-mile Radius

Event ID	*Site Name	Address	Spill Date	DEC File Number	Status	*Approximate Distance from Property
24397	BLM Alaska Fire Service Tanana Station	White Alice Site Road	8/30/1993	780.38.010	Open	700 feet southeast
24820	Tanana Gas Company	First Ave	9/29/1998	780.26.002	Cleanup Complete	1,100 feet west-northwest
24600	FAA Tanana Station - VORTAC	Tanana Airport	12/1/1997	780.38.001	Cleanup Complete	1,700 feet northeast

* Names and locations taken directly from online ADEC Contaminated Sites Database

Table 2

Contaminated Sites within a 1.0-mile Radius

Hazard ID	*Site Name	Address	DEC File Number	Status	*Approximate Distance from Property
26250	Tanana Community Hall	Intersection of First Avenue & Koyukuk Street	780.57.004	Open	0 feet
3946	Tanana Power Company	2nd and Hill Streets	780.38.014	Cleanup Complete - Institutional Controls	670 feet west-northwest
3804	BLM Tanana Lot 3 Former Tank Farm	White Alice Site Road	780.38.010	Open	700 feet east-southeast
24820	Tanana Gas Company	First Ave	780.26.002	Cleanup Complete	1,100 feet west-northwest
1928	BLM AK Fire Service Housing Complex	Housing at FAA Complex	780.38.006	Open	1,200 feet west-northwest
723	FAA Tanana FABLM/AK Fire Serv.F.S.	Tanana Airport	780.38.008	Open	1,200 feet west-northwest
24397	BLM Alaska Fire Service Tanana Station	Tanana Airport	780.26.003	Open	1,200 feet northwest
2324	FAA Tanana Station	Tanana Airport	780.38.001	Open	1,700 feet northwest
4357	Tanana School	1st Avenue	780.38.012	Cleanup Complete	2,600 feet west-northwest
116	IHS Tanana Health Center	7.5 Acres on 1st Avenue	780.38.003	Open	3,200 feet west-northwest
24328	IHS Tanana - Bldg. 303	IHS Tanana Hospital Generator Building	780.26.004	Open	3,350 feet west-northwest
4375	ADOT&PF Tanana Maintenance Shop	Tanana Airport	780.38.013	Open	4,100 feet west-northwest
2648	Tanana City Drinking Water Well	Tanana	780.38.004	Informational	N/A
25454	Tanana Areawide	City of Tanana	780.57.002	Informational	N/A

* Names and locations taken directly from online ADEC Contaminated Sites Database

APPENDIX L

CONCEPTUAL SITE MODEL

- Human Health Conceptual Site Model Graphic Form
- Human Health Conceptual Site Model Scoping Form

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Community Hall Lot, Tanana, Alaska
Hazard ID 3946, ADEC File No. 780.57.003

Completed By: Kristen Freiburger of Shannon & Wilson
Date Completed: November 2014

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1)
Check the media that could be directly affected by the release.

(2)
For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.

(3)
Check all exposure media identified in (2).

(4)
*Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — check soil	☑ soil	☑ Incidental Soil Ingestion			C/F	C/F	F		
	☑ Migration to subsurface — check soil		☑ Dermal Absorption of Contaminants from Soil			C/F	C/F	F		
	☑ Migration to groundwater — check groundwater		☑ Inhalation of Fugitive Dust			C/F	C/F	F		
	☑ Volatilization — check air									
	☑ Runoff or erosion — check surface water									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — check soil	☑ groundwater	☑ Ingestion of Groundwater					F		
	☑ Migration to groundwater — check groundwater		☑ Dermal Absorption of Contaminants in Groundwater			C/F	C/F			
	☑ Volatilization — check air		☐ Inhalation of Volatile Compounds in Tap Water							
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Ground-water	☑ Direct release to groundwater — check groundwater	☑ air	☑ Inhalation of Outdoor Air			C/F	C/F	F		
	☑ Volatilization — check air		☑ Inhalation of Indoor Air			C/F				
	☑ Flow to surface water body — check surface water		☑ Inhalation of Fugitive Dust			C/F	C/F	F		
	☑ Flow to sediment — check sediment									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Surface Water	☑ Direct release to surface water — check surface water	☑ surface water	☐ Ingestion of Surface Water							
	☑ Volatilization — check air		☑ Dermal Absorption of Contaminants in Surface Water			C/F	C/F	F		
	☑ Sedimentation — check sediment		☐ Inhalation of Volatile Compounds in Tap Water							
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Sediment	☑ Direct release to sediment — check sediment	☑ sediment	☑ Direct Contact with Sediment			C/F	C/F	F		
	☑ Resuspension, runoff, or erosion — check surface water									
	☑ Uptake by plants or animals — check biota	☑ biota	☑ Ingestion of Wild or Farmed Foods			F		F	F	
	☐ Other (list):									

CSM

Print Form

Human Health Conceptual Site Model
Scoping Form

Site Name: Community Hall Lot, Tanana, Alaska

File Number: 780.57.004

Completed by: Kristen Freiburger of Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☒ ASTs
- ☒ Dispensers/fuel loading racks
- ☐ Drums
- ☒ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☐ Other:

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☒ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☒ Air
- ☒ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☐ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☐ Residents (adult or child)
- ☐ Commercial or industrial worker
- ☒ Construction worker
- ☒ Subsistence harvester (i.e. gathers wild foods)
- ☒ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☒ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

Soil samples collected at the site show contamination is present in this range.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

PAHs and DRO were detected at the site above ADEC cleanup levels.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

The groundwater has not been tested; however, DRO, RRO, benzene and several PAHs were detected above migration-to-groundwater levels in the near-surface sample collected from the test trench.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☒

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☐

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Incomplete

Comments:

This site may be used to construct community gardens in the future which would complete this pathway.

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Benzene was detected above cleanup levels in near-surface samples.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

The Tanana Community Hall is situated approximately 30 feet to the east of the property boundary. Contamination was visually noted in Test Pit 4, nearest the Tanana Community Hall building.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are assumed to be protective of this pathway.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

Groundwater data needs to be collected to determine if this pathway is complete.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are assumed to be protective of this pathway.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.
- Chromium is present in soil that can be dispersed as dust particles of any size.

Generally, DEC direct contact soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because it is assumed most dust particles are incidentally ingested instead of inhaled to the lower lungs. The inhalation pathway only needs to be evaluated when very small dust particles are present (e.g., along a dirt roadway or where dusts are a nuisance). This is not true in the case of chromium. Site specific cleanup levels will need to be calculated in the event that inhalation of dust containing chromium is a complete pathway at a site.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

Heavy hydrocarbon contamination is present in surface soils.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

Contamination is present on the surface during spring, according to community members.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

APPENDIX M

COST ESTIMATE TABLES

TABLE M-1: ROUGH ORDER OF MAGNITUDE COST ESTIMATE

Option 1: Groundwater at any depth below ground surface
Excavate and landfarm contaminated soils & groundwater sampling via temporary well/s installed via professional drill rig.

Plans Preparation (Work, Sampling and Analysis, Health and Safety)

Environmental Consultant	$10,000

Remedial Action/Excavation (Groundwater sampling via drill rig)

Environmental Consultant	$15,000
City of Tanana Excavation/Landfarm Preparation	$5,000
Drill Rig Company †	$14,000
Laboratory Testing/Confirmation Sampling	$3,000

Report

Environmental Consultant	$20,000
Contingency (15%)	$10,050
TOTAL	$77,050
Rough Order of Magnitude Cost Estimate	$80,000

† Drill rig company costs may be able to decrease by $10,000 if work is conducted when the drill rig is already mobilized to Tanana for another project

TABLE M-2: ROUGH ORDER OF MAGNITUDE COST ESTIMATE

Option 1: Groundwater shallower than 15 feet below ground surface
Excavate and landfarm contaminated soils & groundwater sampling via pre-pack well installation via excavator, portable drill rig temporary wells, or pore-water temporary wells.

Plans Preparation (Work, Sampling and Analysis, Health and Safety)

Environmental Consultant	$10,000

Remedial Action/Excavation (Groundwater sampling via alternate method)

Environmental Consultant	$15,500
City of Tanana Excavation/Landfarm Preparation	$6,000
Laboratory Testing/Confirmation Sampling	$3,000

Report

Environmental Consultant	$20,000
Contingency (15%)	$8,175
TOTAL	$62,675
Rough Order of Magnitude Cost Estimate	$65,000

APPENDIX N

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

IMPORTANT INFORMATION ABOUT YOUR ENVIRONMENTAL SITE ASSESSMENT/EVALUATION REPORT

ENVIRONMENTAL SITE ASSESSMENTS/EVALUATIONS ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

This report was prepared to meet the needs you specified with respect to your specific site and your risk management preferences. Unless indicated otherwise, we prepared your report expressly for you and for the purposes you indicated. No one other than you should use this report for any purpose without first conferring with us. No one is authorized to use this report for any purpose other than that originally contemplated without our prior written consent.

The findings and conclusions documented in this site assessment/evaluation have been prepared for specific application to this project and have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in this area. The conclusions presented are based on interpretation of information currently available to us and are made within the operational scope, budget, and schedule constraints of this project. No warranty, express or implied, is made.

OUR REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

Our environmental site assessment is based on several factors and may include (but not be limited to): reviewing public documents to chronicle site ownership for the past 30, 40, or more years; investigating the site's regulatory history to learn about permits granted or citations issued; determining prior uses of the site and those adjacent to it; reviewing available topographic and real estate maps, historical aerial photos, geologic information, and hydrologic data; reviewing readily available published information about surface and subsurface conditions; reviewing federal and state lists of known and potentially contaminated sites; evaluating the potential for naturally occurring hazards; and interviewing public officials, owners/operators, and/or adjacent owners with respect to local concerns and environmental conditions.

Except as noted within the text of the report, no sampling or quantitative laboratory testing was performed by us as part of this site assessment. Where such analyses were conducted by an outside laboratory, Shannon & Wilson relied upon the data provided and did not conduct an independent evaluation regarding the reliability of the data.

CONDITIONS CAN CHANGE.

Site conditions, both surface and subsurface, may be affected as a result of natural processes or human influence. An environmental site assessment/evaluation is based on conditions that existed at the time of the evaluation. Because so many aspects of a historical review rely on third party information, most consultants will refuse to certify (warrant) that a site is free of contaminants, as it is impossible to know with absolute certainty if such a condition exists. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas that showed no signs of contamination at the time they were studied.

Unless your consultant indicates otherwise, your report should not be construed to represent geotechnical subsurface conditions at or adjacent to the site and does not provide sufficient information for construction-related activities. Your report also should not be used following floods, earthquakes, or other acts of nature; if the size or configuration of the site is altered; if the location of the site is modified; or if there is a change of ownership and/or use of the property.

INCIDENTAL DAMAGE MAY OCCUR DURING SAMPLING ACTIVITIES.

Incidental damage to a facility may occur during sampling activities. Asbestos and lead-based paint sampling often require destructive sampling of pipe insulation, floor tile, walls, doors, ceiling tile, roofing, and other building materials. Shannon & Wilson does not provide for paint repair. Limited repair of asbestos sample locations are provided. However, Shannon & Wilson neither warranties repairs made by our field personnel, nor are we held liable for injuries or damages as a result of those repairs. If you desire a specific

form of repair, such as those provided by a licensed roofing contractor, you need to request the specific repair at the time of the proposal. The owner is responsible for repair methods that are not specified in the proposal.

READ RESPONSIBILITY CLAUSES CAREFULLY.

Environmental site assessments/evaluations are less exact than other design disciplines because they are based extensively on judgment and opinion, and there may not have been any (or very limited) investigation of actual subsurface conditions. Wholly unwarranted claims have been lodged against consultants. To limit this exposure, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses may appear in this report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

Consultants cannot accept responsibility for problems that may develop if they are not consulted after factors considered in their reports have changed, or conditions at the site have changed. Therefore, it is incumbent upon you to notify your consultant of any factors that may have changed prior to submission of the final assessment/evaluation.

An assessment/evaluation of a site helps reduce your risk, but does not eliminate it. Even the most rigorous professional assessment may fail to identify all existing conditions.

ONE OF THE OBLIGATIONS OF YOUR CONSULTANT IS TO PROTECT THE SAFETY, HEALTH, PROPERTY, AND WELFARE OF THE PUBLIC.

If our environmental site assessment/evaluation discloses the existence of conditions that may endanger the safety, health, property, or welfare of the public, we may be obligated under rules of professional conduct, statutory law, or common law to notify you and others of these conditions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland