Alaska Department of Environmental Conservation

Reuse & Redevelopment Initiative

Brownfield Assessment

Property Assessment and Cleanup Plan

Old City Shop

Elim, Alaska

Submitted to:
Department of Environmental Conservation
Reuse and Redevelopment Program

By:
OASIS Environmental Inc.
December 8, 2010

oasis ENVIRONMENTAL

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PROPERTY ASSESSMENT AND CLEANUP PLAN

OLD CITY SHOP
ELIM, AK

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Prepared for:

ALASKA
Department of
Environmental
Conservation

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TABLE OF CONTENTS

B: Current Landfill Documents
C: DEC Brownfield Assessment Request and Community Concerns
D: Stakeholder Meeting Minutes
E: Field Notes and Records of Conversation
F: Resources
G: Elim School Well Log
H: DEC Contaminated Sites Reports
I: Drinking Water Monitoring Results
J: GPS Data
K: Photo Log
L: Video Log
M: Human Health Conceptual Site Model Scoping and Graphic Forms
N: Alaska Funding Spreadsheet from the Center for Creative Land Recycling
O: Cost Estimate Table

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ACRONYMS AND ABBREVIATIONS

AAC..... Alaska Administrative Code
ADCRA..... Alaska Division of Community and Regional Affairs
ADNR..... Alaska Department of Natural Resources
AK ..... Alaska Method
ANCSA..... Alaska Native Claims Settlement Act
AST ..... aboveground storage tank
AVEC ..... Alaska Village Electric Cooperative
BEESC..... Bristol Environmental & Engineering Services Corporation
BIA ..... United States Bureau of Indian Affairs
bgs ..... below ground surface
BTEX..... benzene, toluene, ethylbenzene and xylenes
COPC..... contaminant of potential concern
DBA..... DEC Brownfield Assessment
DEC..... Alaska Department of Environmental Conservation
DOT..... Alaska Department of Transportation
DRO ..... diesel-range organics
EPA..... United States Environmental Protection Agency
°F ..... degrees Fahrenheit
ft ..... feet
GPS..... global positioning system
GRO ..... gasoline-range organics
HAZWOPER . Hazardous Waste Operations and Emergency Response
HUD ..... United States Department of Housing and Urban Development
ICDBG..... Indian Community Development Block Grants
IGAP..... Indian General Assistance Program
IRA ..... Indian Reorganization Act
MCL..... maximum contaminant level
OASIS ..... OASIS Environmental, Inc.
PACP ..... Property Assessment and Cleanup Plan
PAH..... polynuclear aromatic hydrocarbon
PHS..... United States Public Health Service
PID ..... photoionization detector
R&R..... reuse and redevelopment
RRO ..... residual-range organics
SIM..... selective ion mode
USGS..... United States Geological Survey
VOC ..... volatile organic compound
VPSO ..... Village Public Safety Officer
WELTS..... Well Log Tracking System

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EXECUTIVE SUMMARY

OASIS Environmental, Inc. (OASIS) performed a property assessment of the Old City Shop in Elim, AK, on behalf of the Alaska Department of Environmental Conservation (DEC) in September 2010. The overall project objective was to prepare a property assessment and cleanup plan that could be used to provide a basis for the landowners to develop definitive plans for site management. As part of the property assessment, OASIS performed a records review of available information sources, reviewed historical aerial photographs, and conducted a site visit and interviews with knowledgeable personnel.

Based on the information collected during the property assessment, OASIS identified potential contaminant sources and contaminants of potential concern (COPCs) at the Elim City Shop site. Soil, groundwater, and surface water sampling should be performed to help determine the risks to human health and the environment. There are currently no data regarding the impacts to groundwater and surface water resources from the property. OASIS has recommended hazardous waste identification and disposal, removal of exposed waste to eliminate physical hazards, a lined containment area for battery storage, overpacking and removing batteries through the Kawerak Backhaul Project, a double wall UL-142 listed tank plus secondary containment for used oil collection, and changes to the used oil disposal procedure when the tank reaches capacity. Potential reuse and energy recovery or recycling alternatives for the used oil include burning the used oil to heat the shop building or coordinating with the Kawerak Backhaul Project.

Estimated costs have been developed for recommended characterization and remediation activities at the site. These estimated costs can be used as a guide for the community for planning how the long-term goal of reuse of the property may be accomplished.

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1. INTRODUCTION

1.1. Purpose

Under Notice-to-Proceed 18-4002-11-020, the Alaska Department of Environmental Conservation (DEC) tasked OASIS Environmental, Inc. (OASIS) with the completion of a Property Assessment and Cleanup Plan (PACP) at the Old City Shop in Elim, AK (Figure 1), referred to as Elim Shop Old Tank Farm in 2001 Bristol Environmental & Engineering Services Corporation (BEESC) Site Reconnaissance Report (Appendix A). This PACP describes the activities performed during the site assessment and provides recommendations for the future beneficial reuse of the site.

1.2. Scope

OASIS' scope of work included researching environmental databases and historical aerial photographs, interviewing community members familiar with the sites, and performing a non-intrusive Phase I Site Assessment to evaluate current and potential hazards and environmental conditions at the site. Video documentation, photographs, and accompanying field notes including photoionization detector (PID) field screening results were collected and composed as part of the assessment. Upon completion of the records review and site assessment, OASIS's scope included summarizing the research and on-site information and developing a potential cleanup plan to allow future reuse in alignment with the City of Elim's goals for the site.

1.3. Objectives

The overall project objective was to prepare a PACP to provide a basis for the City of Elim (the landowner) to develop definitive plans for site management and reuse. As part of DEC's Brownfields Program, specific objectives included:

- Composing a historical summary of the property;
- Developing a Human Health Conceptual Site Model (CSM);
- Identifying the nature and extent of possible contamination and its potential impact on the reuse of the property;
- Identifying remaining data gaps and making recommendations for additional assessment, if necessary;
- Identifying excavation and remediation options including potential locations and details for offsite remediation of excavated soil;
- Preparing cleanup option cost estimates;
- Identifying and discussing steps to make the property suitable for reuse with available resources, labor, equipment, and data and resource gaps.

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2. COMMUNITY OVERVIEW

The following community information was derived from the Alaska Division of Community and Regional Affairs (ADCRA) Community Database Online (http://www.commerce.state.ak.us/dca/commdb/CF_COMDB.htm), Local Economic Development Plan for Elim – 2005-2010 (2004) (facilitated by Kawerak, Inc.), Community Profiles for North Pacific Fisheries-Elim (part of NOAA Technical Memorandum NMFS-AFSC-160 (2005)), and BEESC (2001) (Appendix A).

Elim is an Inupiat Eskimo village located in the Cape Nome Recording District. Elim encompasses 2.4 square miles of land and no water area. Organizations with local offices in Elim include the City of Elim, the Elim Native Corporation, and the Elim Village Council. The second-class city of Elim was incorporated in 1970. The city has a "strong mayor" form of government with a six-member council and collects a 2% sales tax.

Elim Native Corporation is the local Native corporation. The regional Native corporation is the Bering Straits Native Corporation. When the Alaska Native Claims Settlement Act (ANCSA) was passed in 1971, Elim decided not to participate, and instead opted for title to the 298,000 acres of land in the former Elim Reserve. In November 1999, the ANCSA was amended to restore certain lands to the Elim Native Corporation.

The Native Village of Elim is recognized as a traditional council by the Bureau of Indian Affairs (BIA) and consists of a seven-member Indian Reorganization Act (IRA) tribal council. A Tribal Council designee sits on the board of directors for Kawerak, a regional non-profit corporation developed by the Bering Straits Native Association to provide services throughout the Bering Straits Region.

Elim was formerly the Malemiut Inupiat Eskimo village called Nuviakchak (which means 'young woman'). Atnuk was Elim's ancestral village. Inupiak groups occupied the area and managed the territory through hunting and gathering practices. The area became a federal reindeer reserve in 1911. In 1914, Rev. L.E. Ost founded a Covenant mission and school, called Elim Mission Roadhouse. The Native culture was well developed and well adapted to the environment. Each tribe possessed a well-defined subsistence harvest territory. Today, subsistence harvesting is still a very important part of the local economy.

2.1. Location, Climate, and Geologic Setting

Elim is located on the Seward Peninsula, 96 miles east of Nome, on the northwest shore of Norton Bay. The community lies at approximately 64.617500° North Latitude and -162.260560° West Longitude. (Section 15, Township 10 South, Range 18 West, Kateel River Meridian).

Elim has a subarctic, maritime climate with cool, moist summers averaging 46 to 62 °F (degrees Fahrenheit) and cold, dry winters averaging -8 to 8 °F. Norton Sound is ice-free typically between mid-June and mid-November. The mean annual total precipitation is 99 inches, with a mean snow depth of 80 inches.

Elim is set on a rock-cored terrace on the north shore of Norton Sound. The land in Elim rises rapidly from the shoreline. The area is typified by broad, tree-covered, rolling hills. In the lowlands, seasonally frozen muck overlies frozen bedrock, fractured bedrock and sandstone.

2.2. Community Demographic Data

According to the 2000 U.S Census, Elim had 313 inhabitants. Total housing units numbered 106, and vacant housing units numbered 22. Vacant housing units used only seasonally numbered 7. About 94.2% of the population was fully, or in part, Alaska Native or American Indian. Approximately 5.1% were white and 2.2% were of two or more races.

Elim's median age (23.6 years old) was significantly younger than the national median (35.3 years in 2000): 44.7% of the population was 19 years old and under and only 9.9% was 55 years and over. A total of 7.5% of the population of Elim age 25 and over had a bachelor degree or higher, 77.4% had graduated from high school or gone on to further schooling, and 22.6% never passed high school.

U.S. Census data for Year 2000 showed 91 residents as employed. The unemployment rate during that time was 26.02 percent, although 59.01 percent of all adults were not in the work force. The median household income was $40,179, per capita income was $10,300, and 7.87 percent of residents were living below the poverty level.

Elim is a fishing and subsistence harvesting community. Cash employment is limited to fishing, the city, and school. Subsistence harvesting is still a very important part of the local economy, and is fundamental to many households. The village wants to develop a fish processing plant. Residents rely on fish, crab, seal, walrus, beluga whale, caribou, moose, berries, and home gardens for food.

2.3. Community Resources and Infrastructure

The Elim community is accessible by air and sea. Elim has a state-of-the-art airstrip, an unattended 3,401 feet (ft) long by 60 ft wide gravel runway. Elim Native Corporation also owns a private 4,700 ft paved airstrip at Moses Point. Elim does not have its own dock. Supplies are brought and lightered to shore from Nome. A cargo ship brings freight annually to Nome.

Aniguiin is the local PK-12 school, attended by approximately 196 students and 9 teachers. Public health and safety services include Yukuniaraq Yunqcarvik Clinic, police, and state Village Public Safety Officer (VPSO). Emergency Services have coastal and air access.

Electricity is provided by the city owned Alaska Village Electric Cooperative (AVEC) which provides diesel fuel-generated power as well as subsidized power. Electric and telephone lines are above ground and supported on utility poles. Water and sewer systems were built in 1974 by U.S. Public Health Service (PHS), along with housing and in-home resources including indoor plumbing, indoor water heaters, washers, and dryers provided by BIA and U.S. Department of Housing and Urban Development (HUD).

2.3.1. Public Water Supply Information

The water system is operated by the city. Water is derived from two sources, a stream (Elim Creek) which flows through an infiltration gallery northeast of the city, and a community spring located adjacent to Elim Creek (Figure 2, Photograph 1).

PHOTOGRAPH 1: DRINKING WATER SOURCE.

Water is stored in a 211,000-gallon community water storage tank, chlorinated, and piped to housing. There are no individual wells. Water lines are buried along the roads of the city with the exception of the 900 ft above ground raw water transmission line which connects the water source to the water treatment plant (Photograph 2).

PHOTOGRAPH 2: ABOVE GROUND RAW WATER TRANSMISSION LINE.

The city has as-builts showing the water distribution system which was built in the 1970's. Recent upgrades to the water distribution mains on Northwood Road, Elim Loop, and Commercial Road were completed in July 2009. The upgrades included replacing 4-inch PVC with 6-inch arctic HDPE distribution pipe.

2.3.2. Landfill Information

Elim's landfill is operated by the city. It is a Class III landfill, approved for municipal waste and permitted through December 10, 2010 (Alaska DEC Permit Number SW3A023-10). The city submitted an application for permit renewal in August 2010 (Appendix B). The landfill is approximately seven acres, five of which are designated to receive waste. Waste is collected by individuals. The landfill is also permitted to accept honey bucket waste or septage. Sludge is pumped from the city septic tanks twice a year and is disposed of in a pit adjacent to the city landfill. The location of the landfill is approximately two miles east of the city along Moses Point Road (Figure 2). An access road to the landfill is located on the south side of Moses Point Road and is about 400 ft long.

2.3.3. Current Construction/ Infrastructure Projects

The Local Economic Development Plan for Elim 2005-2010 (Kawerak 2004) outlines ten priority projects that were selected for implementation between 2005 and 2010. Current and proposed projects in Elim include new housing, a new boat harbor, and continued road construction. There are also plans to write a proposal for the development of a cultural center.

2.4. Community Involvement

According to the DEC Brownfield Assessment (DBA) request, included in Appendix C, The City of Elim is concerned with potential contamination at the Old City Shop due to the site's long term use as a landfill, tank farm, used oil and battery storage area, and equipment shop. Specific concerns include the health and safety of the two mechanics currently working at the site, and contaminant migration to the nearby drinking water source.

2.4.1. Stakeholder Meeting Summary

A stakeholder meeting was held, via teleconference, on August 23, 2010. In attendance were representatives from the City of Elim, Alaska DEC, United States Environmental Protection Agency (EPA) Region 10, and OASIS. Meeting minutes are included in Appendix D and summarize discussions among the attendees regarding the objective of the current Reuse and Redevelopment (R&R) funding and the development of a PACP for the Old City Shop site.

2.4.2. Proposed Community Development and Land Reuse

The City of Elim requests a safe and clean environment for the mechanics working in the equipment shop at the Old City Shop site. The need for an improved equipment shop was addressed in the Local Economic Development Plan for Elim 2005-2010 (Kawerak 2004); however, the site was not selected as one of the ten priority projects for implementation in the five-year plan.

The Old City Shop site is built on top of an abandoned landfill. The area surrounding the equipment shop is currently a storage area for used oil, batteries, unusable heavy

equipment, functioning heavy equipment, drums, abandoned tanks, and construction debris. Plans for continued use of the site include identifying and remediating potential contamination which poses a threat to human health and the environment, as well as removing unnecessary equipment, storage tanks, drums, lead-acid batteries, and hazardous materials. Additionally, the city would like a more robust used oil collection and battery storage area for the community.

2.4.3. Interviews

The week of September 27, 2010, OASIS conducted interviews with the following community members familiar with the Old City Shop in Elim:

- Christine Amaktoolik
- Ernest Keith and Steven Saccheus
- Edwin Kotongan
- Rodney Nagarek
- Ross Saccheus
- Steven Saccheus

The history of the Old City Shop; locations of environmental concerns; nature and extent of possible contamination; remaining data gaps; potential locations for remediation of contaminated soil; available resources, labor, and equipment for the cleanup options; and resource gaps were addressed in the interviews. The interviews are documented in the Field Notebook and Records of Conversation (Appendix E).

2.4.3.1. Christine Amaktoolik

The City of Elim City Clerk, Christine Amaktoolik, was contacted in person at the Elim city office on September 29, 2010. Ms. Amaktoolik is concerned about the health and safety of the mechanics working in the equipment shop and would like to see the Old City Shop site cleaned up. She noted that the site is also used as a battery storage and waste oil disposal facility. Ms. Amaktoolik said that two shipments of batteries have been removed from the site through a back haul program developed by Kawerak. She added that there is a fee associated with this program and provided the receipt from the last shipment (Appendix F).

Ms. Amaktoolik provided information related to logistics and resources that would be required for future clean-up efforts. Barge service is provided by Northland Marine, Alaska Logistics, and Crowley. City heavy equipment rates and a list of Hazardous Waste Operations and Emergency Response (HAZWOPER) trained individuals are presented in Appendix F. Ms. Amaktoolik said that there is one source of material for gravel fill and one source for rock in Elim. Land farming has taken place at the landfill and is currently being used to remediate contaminated soil at a site just beyond the landfill.

2.4.3.2. Earnest Keith and Steven Saccheus

Earnest Keith and Steven Saccheus were contacted in person at the equipment shop on September 28, 2010. Both men are mechanics currently employed by the city who work at the equipment shop. Mr. Keith and Mr. Saccheus identified several areas believed to be contaminated by incidental spills of petroleum products and storage of lead acid batteries, the areas include: the east side of the abandoned tank farm, the former battery storage area on the east side of the equipment lay-down area, used oil storage area, and the equipment shop. The gentlemen said that two shipments of used batteries have been removed from the area but they added that they would like to see all of the batteries, used oil drums, and abandoned equipment in the area removed and the used oil disposal area improved.

2.4.3.3. Edwin Kotongan

The City of Elim mayor, Edwin Kotongan, was interviewed in person on September 28, 2010 at the Old City Shop site. Mayor Kotongan briefly described the Kawerak Back-Haul Program under which batteries are removed from the landfill site. He said that Ms. Anahma Saito is the contact person for the program and can be reached at her office in Nome, Alaska. Mayor Kotogan said that some batteries have been removed from the Old City Shop site but added that he felt that all of the batteries, used oil, and unused equipment should also be removed. He remarked that the community should also establish a more robust recycling program.

Mayor Kontogan expressed concerns over the possibility that run-off from the site could contaminate the city's drinking water source which is located east of the property. He noted that the permit for the landfill at the Old City Shop may still be open and should be closed out while the active landfill permit is being renewed.

2.4.3.4. Rodney Nagarek

Rodney Nagarek was contacted in person on September 29, 2010. Mr. Nagarek is the city's former mechanic who worked at the equipment shop for approximately 15 years. Mr. Nagarek related his understanding of the history of the tanks and materials that had been stored at the site as he walked from the south yard to the north end of the site. He noted that the two large tanks (approximately 10,000 gallon) were relocated to the Old City Shop from a former tank farm site. The empty drums surrounding the tanks originated from a mine owned by David Gurkhes, the BLM deposited them at the equipment shop in the early 2000's. Mr. Nagarek noted that the drums once stored heating fuel but it was distributed to the elders and they are now either empty or they contain some jet fuel. He noted the green aboveground storage tank (AST) in the south yard was once used to store water.

Mr. Nagarek said that the drums in the equipment lay-down area were left over from the Moses Point cleanup and road construction in 1982, which shortly followed the burial of the previous landfill that lies below the site.

The tanks that once sat in the abandoned tank farm area were removed from the area in 2001. He commented that the orange AST in the area was formerly used to collect sludge from septic tanks.

The outside area on the east side of the equipment shop is the storage area for miscellaneous construction debris leftover from the Gurkhes mine and construction of the school. He said the land farming activity near the landfill was conducted in the early 2000's in connection with the construction of the school.

2.4.3.5. Ross Saccheus

Mr. Saccheus was contacted in person at the Old City Shop site on September 28, 2010; he is an equipment operator who works for the city. Mr. Saccheus identified the functioning heavy equipment at the site. He said that Christine Amaktoolik could provide rental rates for this equipment and organize HAZWOPER trained individuals for potential cleanup efforts. Mr. Saccheus also remarked that the two tanks previously located in the abandoned tank farm contained fuel that was believed to be contaminated with salt water.

Mr. Saccheus introduced Roy Daniels, Elim's water plant operator. Both commented that the community is concerned about the potential contaminant migration from the Old City Shop site to the drinking water source.

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3. SITE OVERVIEW

The Elim Old City Shop site is on the north side of the city between Elim Creek and Old Airport Road off Moses Point Road (Figure 2). The general area for PACP evaluation consists of the shop on the south end of the property, a large lot north of the shop used as an equipment lay-down area, and an abandoned tank farm area on the north end of the property (Figure 3). The entire property is approximately 3 acres. The site is a former landfill; in the early 1980's the landfill was buried and an equipment shop was constructed for storage and repair of the city's equipment.

3.1. Subsurface Conditions

The land surface at the Old City Shop site slopes downward toward the east. Surface water and groundwater in the area drain toward Elim Creek, toward the middle of town, and eventually empty into Norton Bay (BEESC 2001).

Soil samples were collected by BEESC at the site in 2001. On the east side of the tank farm at a depth of two ft below ground surface (bgs), soil consists of silt and large gravel. This material is likely imported fill used to construct and level the tank farm.

The 1964 well log for the Elim School well, obtained from the Alaska Department of Natural Resources (ADNR) Well Log Tracking System (WELTS), is included in Appendix G. The log lists the following soil types in the well boring:

- Frozen muck – 0 to 7 ft bgs
- Frozen bedrock – 7 to 29 ft bgs
- Fractured bedrock – 29 to 61 ft bgs
- Sandstone (no water) – 61 to 66 ft bgs
- Sandstone (with water) – 66 to 78 ft bgs

The well is screened at 72 to 78 ft bgs. The depth to groundwater in the well at the time of drilling was 63.1 ft bgs; sea level is 65 ft bgs.

3.2. Current Site Use

The Elim Old City Shop site has been used as the primary equipment shop and storage area for heavy equipment since the early 1980s. Two mechanics employed by the City of Elim currently work at the equipment shop. The site also currently serves as the community's storage area for used oil, batteries, drums, tanks, and miscellaneous construction debris.

3.3. Historical Site Use

Prior to becoming the City of Elim's equipment shop, the property was the location of the community's former landfill. Aerial photography and interviews with community members indicate the site was used as a landfill until the early 1980's. Following the burial of the former landfill, the site remained a location where construction debris was deposited. According to the city's former mechanic, Rodney Nagarek, several of the drums and

construction debris at the site are leftover from the cleanup of Moses Point and construction of Moses Point Road in 1982. Subsequent activity at the site included the construction of the city's equipment shop, a tank farm, and fire station. A site reconnaissance report prepared for Alaska DEC identifies the north end of the property as an area which served as a temporary tank farm (BEESC 2001). The report references the remnants of two tanks which can be seen as footprints within a lined bermed area (BEESC 2001). The tanks were reportedly decommissioned in 2001; the remaining heating fuel was salvaged and stored in 55-gallon drums for distribution to the community elders as they needed it. In the early 2000's, miscellaneous debris from the school construction was deposited at the site. Similarly, during that same time period, the Bureau of Land Management reportedly deposited fuel and construction debris from a nearby abandoned mine.

3.4. Ownership Information

The site (Lot 9B, Block 1, Township 10 South, Range 18 West, Kateel River Meridian, USS 2548) is currently owned by the City of Elim. The property was reportedly deeded to the city by the Alaska Department of Transportation (DOT) and Public Facilities (BEESC 2001). DOT was not able to locate any record of land interest at the site. Furthermore, the Alaska Department of Natural Resources Recorder's Office online database (http://dnr.alaska.gov/ssd/recoff/sag/PlatSearchMenu.cfm) did not reveal any deeds for this site. The site survey was recorded on April 17, 1986 in Plat No. 86-8 which dedicates the property to the Elim Native Corporation.

3.5. Records Review

A review of the available environmental records in the DEC contaminated sites database associated with Elim identified 3 sites within Elim (Appendix H). The Elim Old City Shop (File 600.57.002) was added to the database in 2010 and includes the 2010 DBA request. Contamination for the site is not on record. The Elim Old AVEC Tank Farm (File 600.57.001), added to the database in 2009, includes the 2009 DBA request and subsequent draft PACP. Stained soil in a 3 ft by 4 ft area of unknown depth was observed in 2009 during a site visit. Historical aerial photography of the former AVEC tank farm shows a time when the tanks were not confined by a liner and dikes. The Elim Aniguiin School (File 600.38.001), added to the database in 2002, includes the diesel contamination encountered and cleanup efforts for Notice of Residual Contamination and conditional site closure. 3,000 cubic yards of bedrock and soil were excavated at the school. Excavation below 15 ft was not possible. The contamination in the bedrock was capped with a liner and an air handling system was put into place beneath the school. Landfarming of the excavated soils occurred.

BEESC (2001), presented in Appendix A, described four diesel contaminated AST sites in Elim: the ANICA Native Store Old Tank Farm, the AVEC Tank Farm (Old AVEC Tank Farm), the City of Elim Tank Farm, and the City of Elim Shop Old Tank Farm (Old City Shop).

A review of the Alaska DEC Statewide Oil and Hazardous Substance Spills Database shows spills at the Elim Native Store (1995), a fuel storage area near the sump building (1998), the Elim Aniguiin School (2000, 2001, and 2005), the Elim Water Plant (2001), and on Elim Loop near the Teacher Housing (2002). No spills are recorded for the Old City Shop site.

A review of the Alaska DEC Drinking Water Program Drinking Water Watch Database shows monitoring of the Elim Water Supply (Water System AK2340345). Analytical results for all water samples collected from treated water in the public water supply are presented in Appendix I. Elim is required to test for volatile organic compounds (VOCs) annually. The only detect was in September 2001 with 0.21 ug/L for Toluene; no detects for VOCs have been reported since.

A review of the U.S. Geological Survey (USGS) Surface Water Resources shows the depth to groundwater at the Elim School in February, 1964 was 63.9 ft bgs.

A review of ADNR WELTS shows a well drilled at Elim School. Depth to groundwater in March, 1964 was 63.1 ft bgs (Appendix G).

The Alaska Department of Natural Resources Recorder's Office online database (http://dnr.alaska.gov/ssd/recoff/sag/PlatSearchMenu.cfm) did not reveal any deeds for this site. The site survey was recorded on April 17, 1986 in Plat No. 86-8 which dedicates the property to the Elim Native Corporation.

3.6. Adjoining Property Use

Adjoining property includes the Yukuniaraq Yunqcarvik Clinic, the Covenant Church, the Armory Building, residences, and a forested wetland possibly up-gradient from the municipal water supply.

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4. SITE RECONNAISSANCE

Site reconnaissance of the Elim Old City Shop was performed on September 27-29, 2010. Weather conditions were favorable, temperatures ranged between 30-40 °F and skies were clear. Fred Daniels was the primary point of contact and provided transportation and logistical support as needed. Rodney Nagarek, the former shop mechanic, had extensive knowledge of the site and its history. Overall, the site conditions were accurately described in the DBA request submitted by the City of Elim. The site is currently an active equipment shop and storage area for used oil and batteries, broken equipment, and miscellaneous construction debris. There are currently several unmarked tanks and drums stored on the property, soil staining is common throughout the site. Several hazards were observed and documented which may pose a threat to human health and the environment.

4.1. Methodology

The site inspection included several elements:

- Walking around the site to obtain a general indication of what types of materials and structures were present;
- Video documentation (a video tour of the site with corresponding narrative to identify location, data, direction of shot, and description of the video subject);
- General photography of the site and current use;
- Photography of tanks, drums, batteries, stained soil, leaking equipment, equipment storage areas, other solid waste, etc.
- Documentation of observations (field notes);
- PID field screening;
- Documenting the locations of key features using a Garmin Global Positioning System (GPS).

4.2. Observations

Observations made during the site visit are discussed in the following subsections. Field notes taken during the site visit (Appendix E) included waypoint and photograph numbers associated with key site features and descriptions of material on site. Locations of site features were estimated by collecting GPS data. GPS data were scrutinized immediately upon return from the field to ensure positional data were accurate. Photographs were reviewed to note important items that may have been overlooked during the site visit.

GPS points and associated photographs were intended to characterize the surrounding area, unless noted otherwise. The GPS coordinates and location descriptions are included in Appendix J; select photographs are provided within the text, while full-size photographs are included in Appendix K (referenced in parentheses below). Figures 2 through 4 show notable observations at the Old City Shop site.

The general area for PACP evaluation is bound by, and does not include, Moses Point Road to the south, the Elim Covenant Church to the west, the Armory Building to the east, and the forested area beyond the abandoned tank farm area to the north. The PACP area consists of the driveway off Moses Point Road, the fire department on the southwest corner of the property, the shop building on the east part of the property, a large lot north of the shop used as an equipment lay-down area, and an abandoned tank farm area which consists of a bermed area containing remnants of two tanks that have been removed (Figure 3).

Photographs 3-6 show the property from the southern edge looking north, from the western edge looking east, from the northern edge looking south, and from the eastern edge looking west, respectively. Land surface surrounding the property is swampy and slopes downward toward the east to a forested wetland area and Elim Creek.

4.2.1. The Abandoned Tank Farm Area

PHOTOGRAPH 9: ABANDONED TANK FARM FROM THE NORTHERN EDGE LOOKING SOUTH.

The abandoned tank farm area is the northern most part of the property where the remaining gravel berms are evidence of the abandoned tank farm (Figure 3). Photographs 7-10 show the area from the southern edge looking north, from the western edge looking east, from the northern edge looking south, and from the eastern edge looking west, respectively. Videos 1 and 2 begin with the area looking north and south respectively. The tank farm area has a liner beneath the surface soil and berms on three sides. The berm on the west side of the tank farm was apparently removed to provide traffic access into the tank farm area. Photograph 8 shows the berm on the southern and eastern side.

PHOTOGRAPH 8: ABANDONED TANK FARM FROM THE WESTERN EDGE LOOKING EAST.

Various types of construction debris including corrugated metal pipe, drums and abandoned ASTs are stored on the east side of the tank farm in the narrow area between the tank farm and the down gradient forest, and in the center of the tank farm area (Photograph 7, Video 1, and Video 2).

PHOTOGRAPH 7: ABANDONED TANK FARM FROM THE SOUTHERN EDGE LOOKING NORTH.

Apparent in Video 1 is the proximity of the Elim Old City Shop site to the community drinking water source. In 2001, BEESC observed several sealed 55-gallon drums resting on wooden pallets within the tank farm area that were reportedly full of heating fuel salvaged as part of the tank decommissioning. The fuel was being distributed to the community elders as they needed it. The drums have since been relocated to the south yard and are assumed by Elim residents to be empty or may contain jet fuel. A material inventory of the tank farm area is presented in Table 1. GPS data is presented in Appendix J. Photograph and video logs are included in Appendices K and L respectively. MPEG-2 format videos, playable on Windows Media Player were submitted to DEC.

4.2.2. The Equipment Lay-down Area

The equipment lay-down area is north of the shop building, but south of the abandoned tank farm area (Figure 3). Photographs 11-14 show the area from the southern edge looking north, from the western edge looking east, from the northern edge looking south, and from the eastern edge looking west, respectively. This portion of the site is a storage area for abandoned vehicles, broken equipment, drums, used batteries and miscellaneous construction debris. Several drums and construction debris stored in this area are reportedly leftover over from the

PHOTOGRAPH 11: THE EQUIPMENT LAY-DOWN AREA FROM THE SOUTHERN EDGE LOOKING NORTH.

cleanup of Moses Point and construction of Moses Point Road in 1982. Video 3 begins with the area looking west and features the former battery storage location.

The battery storage location currently consists of a space on the west side of the property where community members simply deposit their batteries on the ground (Photograph 15). The batteries are backhauled periodically through a program established by Kawerak.

PHOTOGRAPH 15: CURRENT BATTERY STORAGE AREA

A material inventory of the equipment lay-down area is presented in Table 1. GPS data is presented in Appendix J. Photograph and video logs are included in Appendices K and L respectively. MPEG-2 format videos, playable on Windows Media Player were submitted to DEC.

4.2.3. The Shop Building

PHOTOGRAPH 16: INSIDE THE SHOP BUILDING FROM THE SOUTHERN EDGE LOOKING NORTH.

The shop building area includes the equipment shop and the yard to the east of the building (Figure 3). Photographs 16-19 show inside the shop building from the southern end looking north, from the western end looking east, from the northern end looking south, and from the eastern end looking west, respectively. Photograph 20 shows the outside of the shop building on the eastern side looking south.

The shop building serves as the City of Elim's heavy equipment shop; two mechanics currently work there. The shop contains miscellaneous fluids, compressed gas cylinders, tools, and broken equipment. The shop floor is made of dirt, considerable soil staining was observed inside the building (Photograph 17).

PHOTOGRAPH 17: INSIDE THE SHOP BUILDING FROM THE WESTERN END LOOKING EAST.

The yard on the east side of the building is a storage area for miscellaneous equipment and debris that is reportedly leftover from the school construction in the early 2000's. During that same time period, the Bureau of Land Management reportedly deposited construction debris from a nearby abandoned mine.

PHOTOGRAPH 20: OUTSIDE OF THE SHOP BUILDING ON THE BUILDING'S EASTERN SIDE LOOKING SOUTH.

A material inventory of the shop area is presented in Table 1. GPS data is presented in Appendix J. Photograph and video logs are included in appendices K and L respectively. MPEG-2 format videos, playable on Windows Media Player were submitted to DEC.

4.2.4. The South Yard including the Fire Department

The south yard is bound by Moses Point Road to the south and the equipment lay-down area to the north (Figure 3); this area also includes the Fire Department. Video 4 begins with the area looking south and highlights the proximity of the Elim Old City Shop site to Norton Sound. Photographs 3 and 21-23 show the area from the southern edge looking north, from the western edge looking east, from the northern edge looking south, and

from the eastern edge looking west, respectively. The northern portion of this area serves as storage for functioning heavy equipment. The Fire Department is located on the western side of the south yard. The eastern portion of the south yard is a storage area for drums, unused AST's, and the community's used oil collection system. Video 5 begins with the area facing north, features heavy equipment, and ends with the used oil collection area.

PHOTOGRAPH 21: THE SOUTH YARD AREA FROM THE WESTERN EDGE LOOKING EAST.

The 80 55-gallon drums stored in this area and noted in Table 1 were once located in the abandoned tank farm area and were reportedly full of heating fuel salvaged as part of the tank decommissioning. The fuel was being distributed to the community elders as they needed it and the drums are now assumed by Elim residents to be empty or may contain jet fuel (Photograph 24).

PHOTOGRAPH 24: 55-GALLON DRUMS FORMERLY USED FOR THE STORAGE OF HEATING FUEL.

The used oil collection system consists of a 500 gallon AST which has been in place for storing used oil since the early 1990's (Photograph 25). The tank sits on the ground and is surrounded by stained soil. The mechanics working at the site dispose of the oil in a used oil burner when the tank reaches capacity.

PHOTOGRAPH 25: USED OIL COLLECTION AST.

One unused horizontal AST and 2 abandoned 10,000-gallon vertical ASTs can be seen in the background of Photograph 25 and are also pictured in Photograph 26. The green AST was once used to store water. The 2 vertical ASTs were relocated to the Old City Shop from a former tank farm site. Their current contents are unknown.

PHOTOGRAPH 26: 1 UNUSED AST (GREEN) AND 2 ABANDONED VERTICAL ASTs.

A full material inventory of the south yard is presented in Table 1. GPS data is shown on Figures 3 and 4 and presented in Appendix J. Photograph and video logs are included in Appendices K and L respectively. MPEG-2 format videos, playable on Windows Media Player were submitted to DEC.

TABLE 1: MATERIAL INVENTORY

Material	Quantity	Volume (cy)	Comments
Abandoned Tank Farm Area			
Above Ground Storage Tanks (ASTs)	1	15	Used to store sewer sludge
Tires/Tread	7	0.50	–
Small Household Appliance	1	0.25	–
Wood Debris	–	0.25	–
Heavy Equipment Components	5	5	–
55 gallon drums	2	0.6	–
Abandoned Heavy Equipment	1	20	–
Miscellaneous Metal Debris	–	10	–
Equipment Lay-Down Area			
ASTs	1	15	–
Abandoned Pickup Trucks	3	15	–
Abandoned Heavy Equipment	11	220	–
Lead-acid batteries	20	–	–
55 gallon drums	36	12	–
Shop Building Area			
55 gallon drums	5	1.5	Unknown fluids
Miscellaneous Metal Debris	–	30	Leftover from mine abandonment and school construction
Vehicle Tires	5	0.5	–
South Yard			
ASTs	4	60	Includes 2-10,000 gal tanks
55 gallon drums	80	24	Assumed to be empty or containing jet fuel
Miscellaneous Metal Debris	–	10	–

Note: Volume estimates are based on approximate volume of solid material. Tank and drum volumes are based on metal volumes only. A HAZCAT investigation is required to determine container contents. Most tanks and drums are assumed to be empty.

4.3. Site Sampling

Surface soil samples were collected from ten locations within the PACP evaluation area for field screening (Figure 4). Sampling locations were selected based on visual observations of staining and known storage areas for petroleum products and batteries. Photographs 15, 24-25 and 27-33 show the surface soil sampling locations.

A PID was used to conduct heated headspace analysis. The PID was calibrated according to the manufacturer's specifications and requirements. Surface soil samples were collected in accordance with DEC Field Sampling Guidance. These procedures included partially filling a re-sealable polyethylene bag one-third full, heating the sample to 40°C, and agitating the container for 15 seconds at the beginning and end of the headspace development period to assist volatilization.. Sample and site information were recorded in the field notebook (Appendix E). Field screening values and observations are presented in Table 2.

TABLE 2: FIELD SCREENING RESULTS

Location ID	Location Description	PID Reading (ppm)	Odor	Description
HS 1	Abandoned Tank Farm	44.8	None	80% fine 20% gravel
HS 2	Abandoned Tank Farm	6.2	None	Light brown fines
HS 3	Former battery storage area	52.9	None	Light brown fines
HS 4	Equipment Lay-down area stained soil	45.7	Strong fuel	Light brown fines
HS 5	Battery storage area	48.8	Moderate fuel	Light brown fines
HS 6	Shop area stained soil	44.8	Strong fuel	Light brown fines
HS 7	Fire Department	0.4	None	Light brown fines
HS 8	Used oil storage area	49.9	Strong fuel	Stained fines
HS 9	Used oil storage area	42.8	Strong fuel	Light brown fines
HS 10	Inside shop	47.0	Strong fuel	Stained fines

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5. ENVIRONMENTAL REVIEW AND SUMMARY OF FINDINGS

This section summarizes findings of the Elim Old City Shop assessment. The DEC contaminated sites database file is reviewed in Section 3.4, and interviews are summarized in Section 2.4.3.

5.1. Historical Environmental Review

The findings from the review of historical aerial photographs of the Elim Old City Shop area from 1980 and 2004 are summarized in the following subsections. The 1980 photograph was obtained from AeroMetric, Inc., and the 2004 photograph was obtained from the Alaska Department of Community Commerce and Economic Development.

5.1.1. Aerial Photograph – 1980

The 1980 aerial photograph (Figure 5) shows the community of Elim prior to development of the City of Elim equipment shop, Fire Station, Yukuniaraq Yunqcarvik Clinic, Covenant Church, Armory Building, Aniguiin School, the airstrip, and Moses Point Road. The former Elim landfill is shown in the approximate location of the current Old City Shop site. There is no permit on record with the DEC for the old Elim landfill, however, a DEC memo (File 600.15.01) dated September 18, 1981, describes a request for planning assistance for the new Elim Solid Waste site (Appendix B). It is presumed the new landfill that the memo refers to is in the current landfill location two miles east of the city along Moses Point Road. The memo date coincides with the timeframe the old landfill was reportedly buried.

5.1.2. Aerial Photograph – 2004

The 2004 aerial photograph (Figure 6) was used as a base for the figures. This photograph shows the Old City Shop site including the equipment shop, Fire Station, and abandoned tank farm. Overall, the photograph shows the site as it appears today, with the exception that more equipment and debris are now present at the site. The photo does not show the road running east of the Old City Shop (Video 1) to the expanded airstrip. The road lies between the Old City Shop and community drinking water source and may serve as a barrier to overland flow from the west into Elim Creek. This road is depicted in Google Earth imagery; however Google Earth imagery was not used as the base for the figures because the quality of the photo did not provide the detail needed for this report.

5.2. Potential Source Areas

Based on observations during the site visit and potential sources noted by local residents, the Elim Old City Shop site contains the following wastes of potential concern:

- Abandoned Tank Farm Area
  - Physical hazards associated with exposed debris
  - Diesel fuel from drums

  - Heating oil from ASTs
- Equipment Lay-down Area
  - Physical hazards associated with exposed debris
  - Lead-acid batteries (buried and exposed)
  - Diesel fuel from drums
  - Contamination associated with abandoned vehicles and vehicle parts
- The Shop Building
  - Physical hazards associated with exposed debris
  - Diesel fuel from drums
  - Contamination associated with abandoned vehicles and vehicle parts
  - Contamination associated with miscellaneous hazardous material buried beneath the site (buried refrigerators/freezers, lead-acid batteries, equipment, vehicles, fuel containers, etc.)
- South Yard
  - Physical hazards associated with exposed debris
  - Diesel fuel from drums
  - Heating oil from ASTs
  - Contamination associated with miscellaneous hazardous material buried beneath the site (buried refrigerators/freezers, lead-acid batteries, equipment, vehicles, fuel containers, etc.)

5.3. Data Gaps

Currently nothing is known about whether the Old City Shop site is leaching contaminants into the groundwater or the surface water downgradient of the site. Groundwater and surface water samples should be collected at and downgradient from the site to help determine the risk involved with the waste present at the site. Section 6.2 describes the recommended sampling strategies for the site.

BEESC collected two soil samples from the abandoned tank farm area in 2001 during a site reconnaissance (BEESC 2001). The samples were collected from a depth of approximately two ft bgs. A relatively low diesel-range organics (DRO) concentration was identified in a soil sample from the southeast corner of the abandoned tank farm. Sampling at this site was relatively shallow. BEESC recommended additional sampling beneath the area of the two tank footprints within the bermed area once the tank farm area is decommissioned. No additional sampling has occurred at the site since the tank farm abandonment. Future sampling should include soils from the native soil beneath the fill material that was imported to construct and level the tank farm.

The volume of waste potentially buried at the site is not well defined. If desired, either soil borings or geophysical techniques (electromagnetics or ground-penetrating radar) could be used to determine the volumes of waste buried at the site.

5.4. Conceptual Site Model

A preliminary CSM was prepared by OASIS before the site visit and is updated herein to include missed receptors and exposure pathways. The CSM was developed in accordance with the Alaska DEC Policy Guidance on Developing Conceptual Site Models (2005). Copies of both the Human Health Scoping and Graphic forms can be found in Appendix M.

5.4.1. Contaminants of Potential Concern

Contaminants of potential concern (COPCs) for Elim Old City Shop include fuel and associated benzene, toluene, ethylbenzene, and xylenes (BTEX), other VOCs, and polynuclear aromatic hydrocarbons (PAHs); ethylene glycol (antifreeze) from vehicles; lead from lead-acid batteries (Table 3). Additionally, 1,2-dibromoethane (EDB) may be considered a potential contaminant of concern if leaded fuel was ever stored at the site. Waste at the sites is buried to some extent. Consequently, unknown hazardous wastes may be present at the site.

TABLE 3: CONTAMINANTS OF POTENTIAL CONCERN

	COPC - Soil	COPC - Groundwater
BTEX	X	X
GRO	X	X
DRO	X	X
RRO	X	X
PAHs	X	X
VOCs	X	X
Ethylene glycol	X	X
Lead	X	X

5.4.2. Potential Receptors

Surface soils, subsurface soils, groundwater, surface water, and air could be directly affected by COPCs at the site. Human health exposure pathways are complete for the following potential receptors that currently use the site or may use the site in the future:

- Elim residents,
- Site workers,
- Site visitors,
- Subsistence harvesters and consumers.

5.4.3. Exposure Routes

The following sections discuss the possible exposure pathways as set out in the Alaska DEC CSM guidance and associated forms presented in Appendix M.

5.4.3.1. Ingestion

Ingestion of groundwater and surface water is a complete pathway for receptors. The community drinking water source on Elim Creek appears to be slightly up-gradient from

the Old City Shop site (Figure 2). However, salt-water intrusion and backwash sometimes occur at high tide and surface water runoff may enter the municipal drinking water at Elim Creek. Additionally, the hydraulic connectivity between the ground water and surface water is not understood. Groundwater migration from the Old City Shop site could conceivably be transported to surface water. While analytical results for samples collected from treated public water do not indicate the presence of VOCs or lead, potential receptors may include individuals who are not on the treated water distribution system and collect drinking water directly from Elim Creek.

Ingestion of wild foods is also a complete pathway. Lead from lead acid batteries stored at the site may have potentially entered the environment through soil or groundwater. The number of batteries stored at the Old City Shop site at any given time is limited to a small surface area. Given the relatively low volume of lead acid which has likely come into contact with the environment, the possibility that lead bioaccumulation in wild foods, including plants and animals, available currently and in the future at the site, is a low potential risk.

5.4.3.2. Direct Contact

Incidental soil ingestion is a complete pathway for Elim Old City Shop receptors because soil may be contaminated at or above 15 ft bgs. Dermal absorption of contaminants from soil is a complete pathway for Elim Old City Shop receptors because PAHs potentially present at the site can permeate the skin. Dermal exposure to contaminants in groundwater and surface water are complete pathways because currently nothing is known about whether contaminants from the Old City Shop site are leaching into the groundwater or the surface water downgradient of the site.

5.4.3.3. Inhalation

Inhalation of outdoor and indoor air are completed pathways for Elim Old City Shop receptors. COPCs at the site are volatile compounds and located at or above 15 ft bgs. The Fire Department and Shop Buildings are onsite and constructed of dirt floors. The property is 3 acres. There is a potential for the buildings to be within 100 ft, horizontally or vertically, of contaminated soil or water.

5.5. Cleanup Criteria

Applicable DEC Method Two cleanup levels for the site contaminates (Under 40 Inch Zone) are found in Table B1 of 18 AAC 75.341(c) and Table B2 of 18 AAC 75.341(d). The appropriate cleanup levels are the most stringent “Migration to Groundwater” cleanup levels. Groundwater cleanup levels are stipulated in 18 AAC 75.345 Table C and as they are based on drinking water standards, apply to all climatic (geographic) locations in the state. Surface water results for total aromatic hydrocarbons (TAH) and total aqueous hydrocarbons (TAqH) must meet cleanup levels in 18 AAC 70.20. Table 4 summarizes the applicable cleanup levels for COPCs at the site.

TABLE 4: SOIL AND GROUNDWATER CLEANUP LEVELS

Analyte	Groundwater Cleanup Level (mg/L)	Soil Cleanup Level (mg/kg)
		Migration to Groundwater
Benzene	0.005	0.025
Toluene	1.0	6.5
Ethylbenzene	0.7	6.9
Total Xylenes	10	63
GRO	2.2	300
DRO	1.5	250
RRO	1.1	11,000
EDB	.00005	.00016
Lead	0.015	--

Notes:
EPA = U.S. Environmental Protection Agency
mg/kg = Milligrams per kilogram

5.5.1. Non-Regulated Cleanup Criteria

The Old City Shop site is located on top of a buried landfill (Figure 6). There is no documentation to indicate that the former landfill was permitted or officially closed out. Since the burial of the landfill, the site continues to be used as a storage and disposal site for used oil, lead-acid batteries, vehicles, equipment, and construction debris. The site may be regulated by various sections of 18 AAC 60:

- Under 18 AAC 60.010, a person may not store accumulated solid waste in a manner that causes a litter violation under 18 AAC 64.015; the attraction or access of domestic animals, wildlife, or disease vectors; a health hazard; or polluted run-off water.
- Under 18 AAC 60.020, a person may dispose of used oil or a regulated hazardous waste only at a facility that is approved by the department for the disposal of that specific waste; or in accordance with a permit issued by the department.
- Under 18 AAC 60.035, vehicles and construction equipment, a person disposing of a vehicle or construction equipment is required to ensure that all batteries are removed, fluids are drained, the vehicle is not used to stabilize a slope, and it does not create a visual nuisance.

5.6. General Environmental Overview

Environmental concerns at the Old City Shop site include physical hazards associated with exposed debris; petroleum products or residue stored in drums and ASTs; lead-acid batteries; and contamination associated with miscellaneous hazardous materials that are buried and exposed. The volume and type of waste potentially buried under the Old City Shop site from the former landfill is not well defined.

No groundwater or surface water samples have been collected for contaminants of concern downgradient of the Old City Shop site. The community's drinking water source on Elim Creek appears to be located slightly up-gradient from the Old City Shop. However; the hydrology of the site is not understood, there is potential for contaminant migration to the surface water through hydraulically connected groundwater. Additionally, salt-water intrusion is sometimes a problem in the public drinking water supply, indicating that downgradient surface water may enter the community drinking water supply through backwash.

Treated water samples have been collected annually from the public water system and analyzed for VOCs, including the BTEX compounds. The only detected compound reported was in September 2001 with 0.21 ug/L for Toluene which is well below the DEC clean-up level; no detects for VOCs have been reported since. Lead is also analyzed for on a periodic basis, to date there have been no detections for lead which exceed drinking water standards.

Two soil samples were collected from the abandoned tank farm area at the Old City Shop site in 2001 (BEESC 2001). A relatively low DRO concentration was identified in a soil sample from the southeast corner of the abandoned tank farm. Sampling at this site was relatively shallow. No additional sampling has occurred at the site since the tank farm abandonment. Future sampling should include soils from the native soil beneath the fill material that was imported to construct and level the tank farm.

Inhalation of indoor air is a concern for the mechanics who currently work at the equipment shop. The shop is constructed on a dirt floor. The shop building itself is located in close proximity to the buried landfill (Figure 6). Soil stained with petroleum products is common inside and outside of the equipment shop. Inhalation of volatile compounds emanating from contaminated soil and the former landfill is a potential threat to human health and should be further investigated through a vapor intrusion assessment.

6. RECOMMENDED ACTIONS AND OPINIONS

6.1. General Overall Environmental Actions

The Elim Old City Shop appears to be in the same location as the community's old landfill. Since burial of the landfill in the early 1980's, the site has become the location for the city's equipment shop, fire station, and storage and disposal area for broken equipment, vehicles, used oil, lead-acid batteries, and construction debris.

Hazards associated with the site include physical hazards related to contact with exposed debris, and exposure to COPC's associated with hazardous materials stored at the site. Specific receptors include the two mechanics who currently work at the site; site visitors who deposit equipment, used oil, or batteries; and trespassers, including children who sometimes play at the site despite the warnings of the shop mechanics.

Potential exposure routes include ingestion, direct contact, and inhalation. The Old City Shop site is located slightly downgradient from the community drinking water source on Elim Creek; however, salt-water intrusion and backwash sometimes occur at high tide and surface water runoff may enter the municipal drinking water. Groundwater migration from the Old City Shop site could conceivably be transported to surface water. While the community's treated water does not appear to be impacted, potential receptors may include individuals who are not on the treated water distribution system and collect drinking water directly from Elim Creek. Exposure via inhalation of indoor air is a real concern; the equipment shop where the two mechanics work is constructed on a dirt floor. If soil contamination exists below or adjacent to the shop, then vapor intrusion is a potential threat to human health.

Overall, environmental actions at the Old City Shop site should include removal of solid and hazardous waste, development of a comprehensive plan to manage storage and disposal of future waste, and a site characterization to determine the extent of contamination in groundwater, surface water, and soil.

6.2. Recommended Remedial Actions

OASIS's recommendations are based on filling data gaps and keeping costs under control. OASIS recommends a chemical characterization using a HazCat kit to identify and segregate potentially hazardous materials stored on the property in abandoned tanks, drums, vehicles, and equipment. Tanks, drums, vehicles, and equipment that are determined to be inert should be demolished using heavy equipment available on site. The city's 2011 landfill permit application currently does not include disposal of inert construction and debris waste. If the landfill declines acceptance of this waste, then a one-time disposal of inert waste permit may be applied for through the DEC Solid Waste Program for less than 1000 cubic yards of debris. Hazardous waste identified at the site should be transported for disposal at a hazardous waste collection facility.

After the waste is removed, OASIS recommends collecting soil samples from the subsurface below where the waste was removed and within the abandoned tank farm

area to determine whether the soil has been contaminated. The soil sampling will determine whether contaminants are present in the soil that may migrate to groundwater or surface water, or to indoor air through vapor intrusion.

The land surface at the Old City Shop site slopes downward toward the east. Surface water and groundwater in the area drain toward Elim Creek. OASIS recommends sampling the surface water in Elim Creek and groundwater downgradient, within and upgradient, of the Old City Shop for COPCs and for other more highly mobile constituents of landfills to determine whether these contaminants may be leaching into the groundwater or connected surface water from waste buried at the site. Presence of the COPCs in the groundwater downgradient would suggest that these contaminants have leached from the site. Chloride, nitrate, and sulfate are common, highly mobile, constituents that often leach from landfills and quickly move into the groundwater. Analyzing for these three parameters would be an inexpensive way to determine whether there is leachate from the buried landfill moving into the groundwater. The most beneficial sampling plan would involve collecting groundwater samples upgradient, within, and downgradient of the Old City Shop site to determine if the concentrations of chloride, nitrate, or sulfate (or COPCs) are being introduced by the site. Chloride, sulfate, and nitrate can be measured with inexpensive field test kits (such as Hach Test Kits [http://www.hach.com/]). The maximum contaminant level (MCL) for nitrate in drinking water [AAC 80.300(b)(1)(A)] is 10 milligrams per liter (mg/L) and naturally occurring nitrate rarely exceeds 3-4 mg/L (Lamond et al., 1999) . The MCL for sulfate and chloride is 250 mg/L. If the concentration of these three analytes is near to or above the MCLs within the site boundaries or downgradient of the site but not upgradient of the site, landfill leachates are likely affecting the groundwater.

Soil and water samples should be submitted for laboratory analysis of the following analytes:

- Diesel-range organics using Alaska Method (AK) 102
- Gasoline-range organics using AK 101
- BTEX using EPA Method 8021B
- PAH using EPA Method 8270C in Selective Ion Mode (SIM)
- Total lead using EPA Method 6010 or 6020

The water samples should also be tested for the following analytes:

- Chloride
- Nitrate
- Sulfate

If the water samples suggest that leachate is not affecting the groundwater or surface water, then the buried waste should not be disturbed. If any contaminants are above cleanup criteria, the buried waste should be removed, segregated, and disposed of accordingly, or institutional controls may be considered for the site.

6.2.1. Soil Management Strategies

Contaminated soil encountered during or after waste removal should be transported offsite to a suitable location for treatment. There are a variety of treatment options for petroleum-contaminated soil, including landspreading, landfarming and thermal treatment. Thermal treatment is considerably more expensive than the other two options and is probably not a good choice for Elim.

Landspreading and landfarming treatments use natural processes of soil remediation to reduce hydrocarbon levels in the soil. Naturally-occurring microbes in the soil use the hydrocarbons as a food source and reduce the contaminant concentrations by “eating” the fuel. These microbes require oxygen to thrive, and landspreading and landfarming provide this oxygen in slightly different ways.

Landspreading involves spreading the soil in a thin layer. The hydrocarbons in the thin layer of soil will not be oxygen depleted as all the soil is close to the surface. This treatment option can only be used if the hydrocarbons cannot leach into the subsurface. If children are likely to play in these areas, this may not be a suitable treatment option.

Landfarming involves creating a shallow stockpile that can be tilled on a regular basis during the summer months. The tilling process provides oxygen to the microbes. Fertilizer can also be added to the soil, as the microbes also need nitrogen and phosphates to grow. Landfarming may be a good option for Elim.

A clear, relatively flat area owned by the Elim Native Corporation is present beyond the current landfill approximately two miles east of the city along Moses Point Road (Photograph 34).

PHOTOGRAPH 34: POTENTIAL SITE FOR LANDFARMING.

This area may be suitable for landfarming any petroleum-contaminated soil. The Elim Native Coporation requires a letter of request to use the land. Land use approval is likely given the objective to remediate contaminated soil. Surface hydrology in the vicinity of the proposed landfarming area is nominal. There are no obvious drainage channels

through the site. It is expected that surface hydrology flows from west to east eventually reaching Norton Bay.

Lead-contaminated soil must be transported to a landfill permitted to accept lead contamination. Supersacks™ could be used to contain the soil, and it could be barged to an appropriate location. If the soil contains both lead and petroleum hydrocarbons above cleanup criteria, it still must be managed as lead-contaminated soil.

6.2.2. Water Management Strategies

It is currently unknown if groundwater or surface water near each site are being impacted by landfill leachate or surface water runoff. Surface waters potentially affected include Elim Creek which lies east of the Old City Shop site. If hazardous material or contamination is discovered in the water samples, water management strategies should be addressed at that time.

6.2.3. Other Materials Management

The Old City Shop site is currently a storage and disposal area for lead-acid batteries, used oil, broken vehicles and equipment, and construction debris. The city has shipped out two loads of lead-acid batteries through the Backhaul Project developed by Kawerak. The receipt for the last shipment is included in Appendix F. Several batteries still remain on the ground in the battery storage area within the equipment lay-down section of the

PHOTOGRAPH 15: CURRENT BATTERY STORAGE AREA.

property. Existing batteries should be bundled in overpacks and prepared for transport during the next backhaul shipment. A more robust battery storage area should be developed to store batteries deposited at the site in the future. The containment area should be easily accessible, enclosed, and impervious to battery acid.

The used oil storage area located on the southern edge of the property in the south yard consists of a 500 gallon AST which sits on the ground. The area around the tank is surrounded by drums, debris, and stained soil. The used oil collection area should be

upgraded to include a double wall UL-142 listed tank and secondary containment. OASIS recommends reuse or recycling used oil and a departure from the current used oil disposal procedure when the tank reaches capacity. Potential reuse and energy recovery or recycling alternatives for the used oil include burning the used oil to heat the shop building or coordinating with the Kawerak Backhaul Project.

PHOTOGRAPH 25: USED OIL COLLECTION AST.

OASIS recommends a chemical characterization using a HazCat kit to identify and segregate potentially hazardous materials stored on the property in abandoned tanks, drums, vehicles, and equipment. Hazardous waste identified at the site should be transported for disposal at a hazardous waste collection facility. Tanks, drums, vehicles and equipment that are determined to be inert should be demolished and transported to a monofill. A one-time disposal of inert waste permit may be applied for through the DEC Solid Waste Program for less than 1000 cubic yards of debris.

6.3. Community Resources

6.3.1. Available Resources, Labor, and Equipment

Two pits are used as borrow sources in the Elim area, both along Moses Point Road, east of the city:

- One pit is near the landfill on the north side of the Moses Point Road
- The other is a few miles beyond the landfill.

A list of Elim residents who received initial 40-hour HAZWOPER training in 2009 was obtained from the city office and is provided in Appendix F.

The City of Elim owns the following pieces of heavy equipment (Photographs 35-43):

- International S1900 Double Axle Dump Truck
- Hitachi EX200 Excavator
- Caterpillar 950F Front End Loader
- Caterpillar 972H Front End Loader

- Case 621B Front End Loader
- Caterpillar 140G Grader
- International 7300 Septic Pump Truck
- Double-Axle Trailer
- Triple-Axle Trailer.

6.3.2. Resource Leveraging Opportunities

The City of Elim owns the equipment necessary to crush drums and transport solid and hazardous waste to an off-loading site. Current and proposed projects in Elim include new housing, a new boat harbor, and continued road construction. These projects may not provide additional equipment since the city currently has a diverse fleet, but the projects may increase the frequency of marine transport to and from Elim via barge, which will allow for more flexibility in planning the transport of hazardous waste.

6.3.3. Funding Sources

Several funding sources are available to help remove solid waste from rural communities. The EPA offers funding for solid waste removal programs in rural communities through its (Indian General Assistance Program) IGAP program. Funding for a solid waste backhaul project may be available this fiscal year under IGAP's unmet needs provisions if the village council can demonstrate that the project will benefit multiple tribes, otherwise the funding must be procured under IGAP's base allotment for the community (http://yosemite.epa.gov/R10/TRIBAL.NSF/Grants/IGAP/).

The Department of Housing and Urban Development (HUD) may offer funding for solid waste backhaul programs through Indian Community Development Block Grants (ICDBG) provided that the waste removal is conducted in conjunction with the construction, expansion, or renovation of a public facility and 70 percent of the project's expenditures are used to benefit low to middle income persons (http://www.hud.gov/offices/pih/ih/grants/icdbg.cfm).

The HUD department may also offer funding through its more general Community Development Block Grants provided that the projects pass HUD's environmental review process and can be demonstrated to contribute to the economic development of the community (http://www.hud.gov/offices/cpd/communitydevelopment/programs/).

The US Department of Agriculture offers Solid Waste Management Grants to assess and improve the management of solid waste in rural communities particularly when it may pose a threat to the community's water resources (http://www.usda.gov/rus/water/SWMG.htm).

A spreadsheet provided by the Center for Land Recycling (http://www.cclr.org) lists other potential funding opportunities and is included as Appendix N.

6.4. General Remedial Requirements

Table 5 presents a general listing of potential remedial actions for each source area.

TABLE 5: POTENTIAL REMEDIAL ACTIONS BY SOURCE AREA

Source Area	Potential Remedial Action
Abandoned Tank Farm Area	• Remove exposed waste to mitigate physical hazards. • Segregate waste into potentially hazardous waste (batteries, petroleum hydrocarbons) and non-hazardous waste. • Collect soil samples below the fill material in the tank farm area to evaluate the condition of the natural soil. • Collect groundwater samples up-gradient, down gradient and within source area. • Collect surface water samples from Elim Creek. • Transport contaminated soil off-site to a suitable location for treatment. • Dispose of waste appropriately.
Equipment Lay-down Area	• Remove exposed waste to mitigate physical hazards. • Segregate waste into potentially hazardous waste (batteries, petroleum hydrocarbons) and non-hazardous waste. • Collect soil samples from beneath potentially hazardous waste. • Collect groundwater samples up-gradient, down gradient and within source area. • Dispose of waste appropriately. • Transport contaminated soil off-site to a suitable location for treatment. • Install battery containment area.
Equipment Shop	• Remove exposed waste to mitigate physical hazards. • Segregate waste into potentially hazardous waste (batteries, petroleum hydrocarbons) and non-hazardous waste. • Collect soil samples from beneath potentially hazardous waste. • Collect groundwater samples up-gradient, down gradient and within source area. • Transport contaminated soil off-site to a suitable location for treatment. • Dispose of waste appropriately.
South Yard	• Remove exposed waste to mitigate physical hazards. • Segregate waste into potentially hazardous waste (batteries, petroleum hydrocarbons) and non-hazardous waste. • Collect soil samples from beneath potentially hazardous waste. • Collect groundwater samples up-gradient, down gradient and within source area. • Dispose of waste appropriately. • Install used oil collection system. • Transport contaminated soil off-site to a suitable location for treatment.

6.5. General Cost Estimate Information

Remediation costs, broken out by project task, are summarized in Table 6. Detailed cost breakdowns are shown in Appendix O. These costs are considered rough order of magnitude costs based on limited data and only include removal of exposed waste.

TABLE 6: REMEDIATION COST SUMMARY

Old City Shop	Cost
HAZCAT Identification	$24,550
Waste removal (inert debris and hazardous waste)	$277,400
Monofill Development	$90,525
Used oil storage and battery improvements	$55,150
Site Characterization (soil, groundwater, and surface water)	$100,000
Excavate contaminated soil (Assumes 2000 cy)	$344,000
Landfarming (3 yrs-includes labor, equipment, samples, & reporting)	$42,000

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7. CONCLUSIONS

OASIS performed a non-intrusive property assessment at the Old City Shop site in Elim, Alaska. The overall project objective was to prepare a PACP to provide a basis for the landowners to develop definitive plans for site management and continued use. As part of the DEC's Brownfield Program, specific objectives included the following:

- Determining whether an environmental hindrance exists at the site;
- Identifying the nature and extent of contamination and its potential impact on the reuse of the property;
- Proposing recommendations for additional assessment, if necessary; and
- Identifying cleanup options and providing an estimate of cleanup costs for the site.

As part of the property assessment, OASIS performed a records review of available information sources, reviewed historical aerial photographs, and conducted a site visit and interviews with knowledgeable personnel.

Based on the information collected during the property assessment, OASIS identified the following potential contaminant sources and hazards at each landfill:

- Physical hazards from exposed debris;
- Toxic and corrosive materials from lead-acid batteries;
- Potential fuel residue from empty fuel containers;
- Potential fluid leaks from equipment, drums, and storage tanks; and
- Potential hazardous materials associated with disposed vehicle parts.

There are limited data to currently characterize the site and sources, and OASIS recommends removing the exposed debris from the site to mitigate physical hazards, remove lead-acid batteries from the battery storage area, a new containment area for battery storage, a double wall UL-142 listed tank plus secondary containment for used oil collection, and changes to the used oil disposal procedure when the tank reaches capacity. OASIS also recommends collecting samples of groundwater and surface water to help determine the risks to human health and the environment. The results from these samples should help determine the need for removal of the remaining buried waste.

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8. QUALIFICATIONS OF QUALIFIED PERSONNEL

All staff working on this project have experience working in Alaska and are qualified to perform the work. A list of OASIS' qualified personnel is included in the 2009 Term contract with ADEC.

OASIS personnel active on this project meet the Alaska definition of qualified person (18 AAC 75.990(100)).

A list of OASIS' qualified personnel is included in the 2009 Term contract with ADEC.

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9. LIMITATIONS

Any opinions and/or recommendations presented apply to site conditions existing at the time of performance of services. OASIS is unable to report on or accurately predict events that may impact the site following performance of the described services, whether occurring naturally or caused by external forces. OASIS assumes no responsibility for conditions that OASIS is not authorized to investigate, or conditions generally recognized as environmentally unacceptable at the time services are performed. OASIS is not responsible for changes in applicable environmental standards, practices, or regulations following performance of services.

The site investigation activities were conducted in accordance with ASTM International's Standard E 1527-05 for Phase I environmental site assessments with generally accepted practices and procedures. OASIS's professional judgment to assess the potential for contamination is based on limited data; no other warranty is given or implied by this report.

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10. REFERENCES

Bristol Environmental & Engineering Services Corporation (BEESC), 2001. Site Reconnaissance Report Elim, Alaska Draft. December 2001.

Kawerak, Inc, 2004. Local Economic Development Plan for Elim – 2005-2010. February 2004.

Sepez, J.A. et al. National Oceanic and Atmospheric Administration (NOAA) Technical Memorandum NMFS-AFSC-160, 2005. Community Profiles for North Pacific Fisheries—Alaska. December 2005.

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FIGURES

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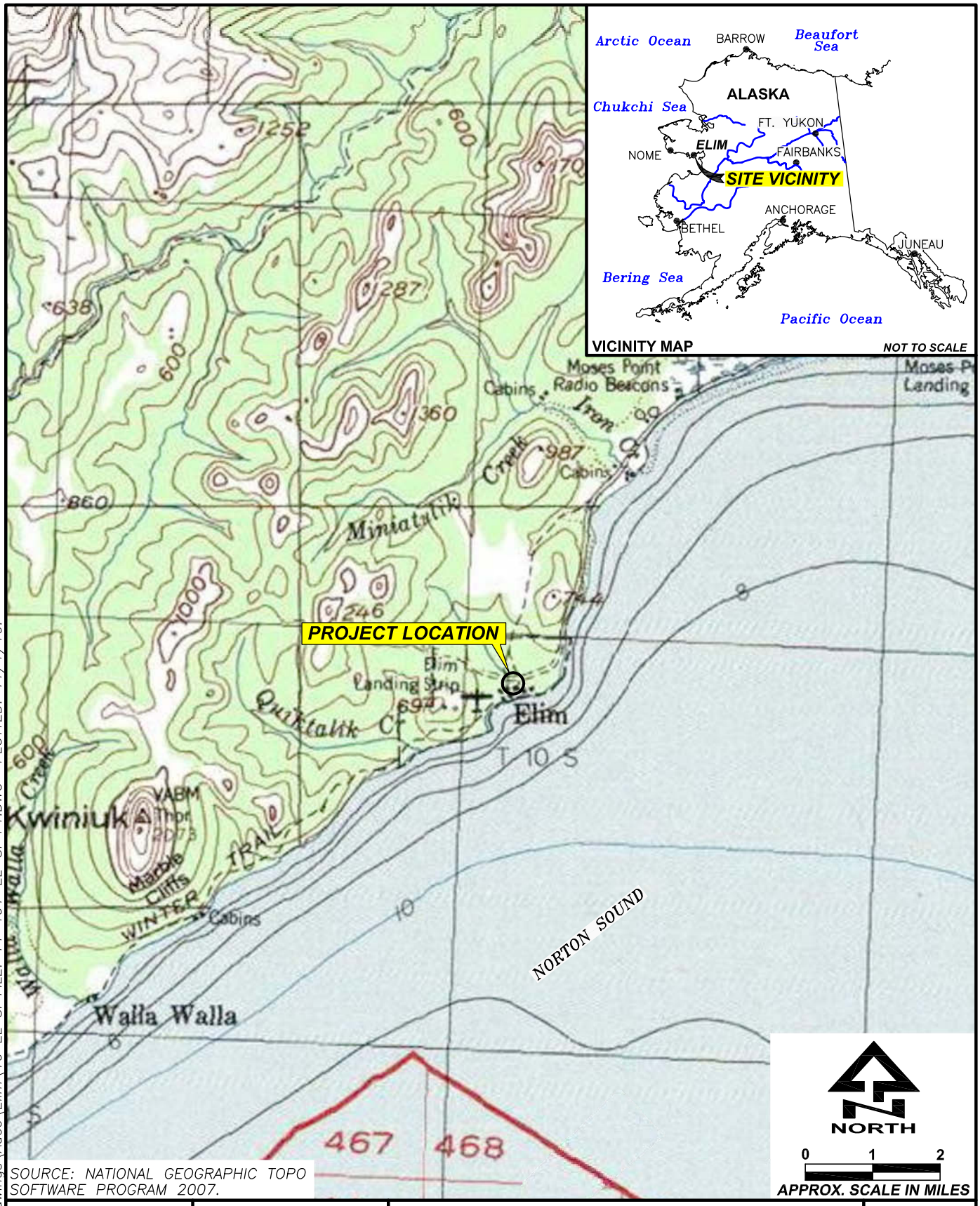

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oasis ENVIRONMENTAL

DATE: NOV. 2010
CHKD: L.C.M.
DRAWN: C.E.H
PROJ. No.: 14-191

825 W. 8th Ave., Anchorage, AK 99501, (907) 258-4880

SITE LOCATION MAP

OLD CITY SHOP
SITE INVESTIGATION
Elim, Alaska

FIGURE

1

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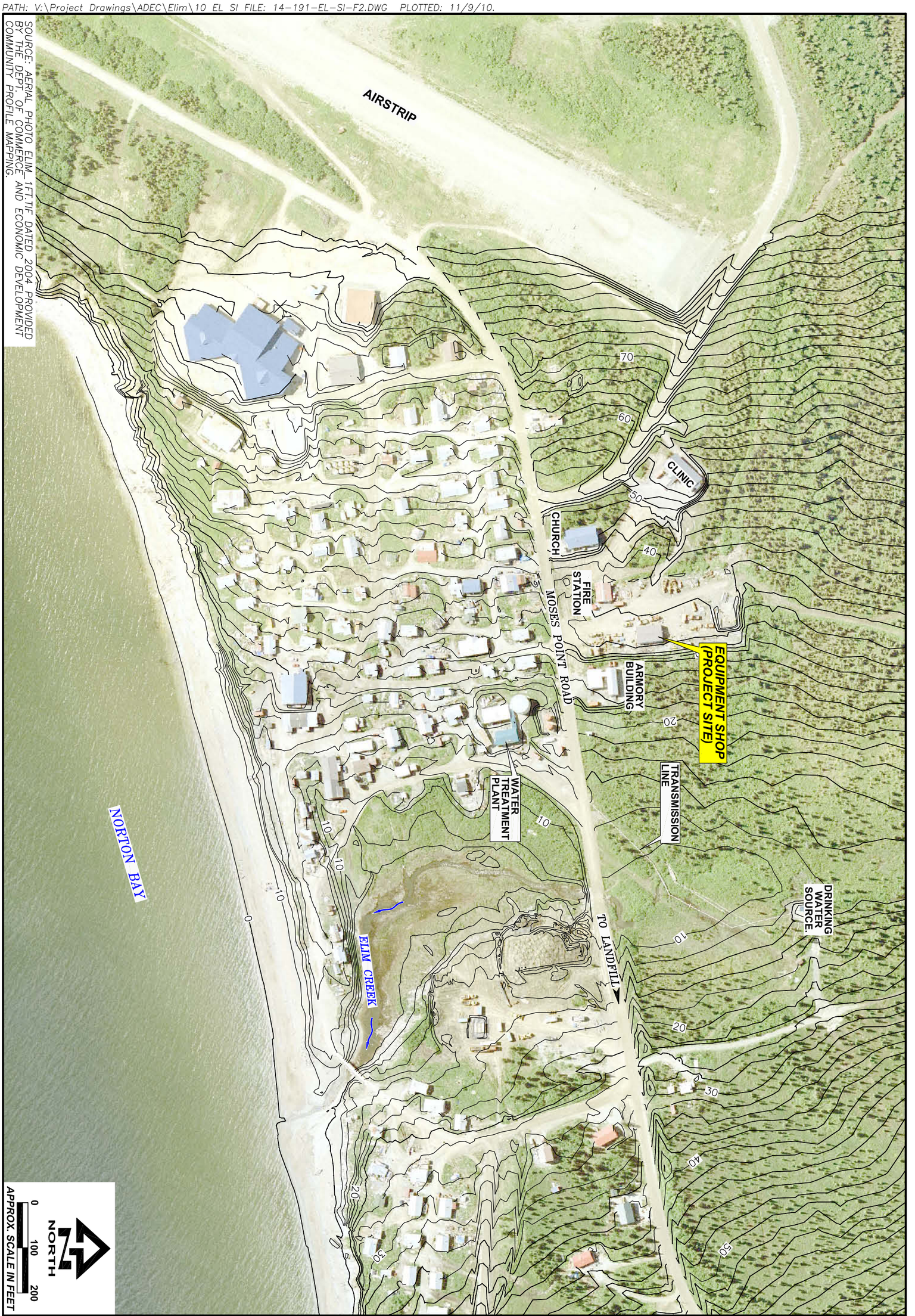

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DATE: NOV. 2010
CHKD: L.C.M.
DRAWN: C.E.H
PROJ. No.: 14-191

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SITE PLAN

OLD CITY SHOP
SITE INVESTIGATION
Elim, Alaska

FIGURE

2

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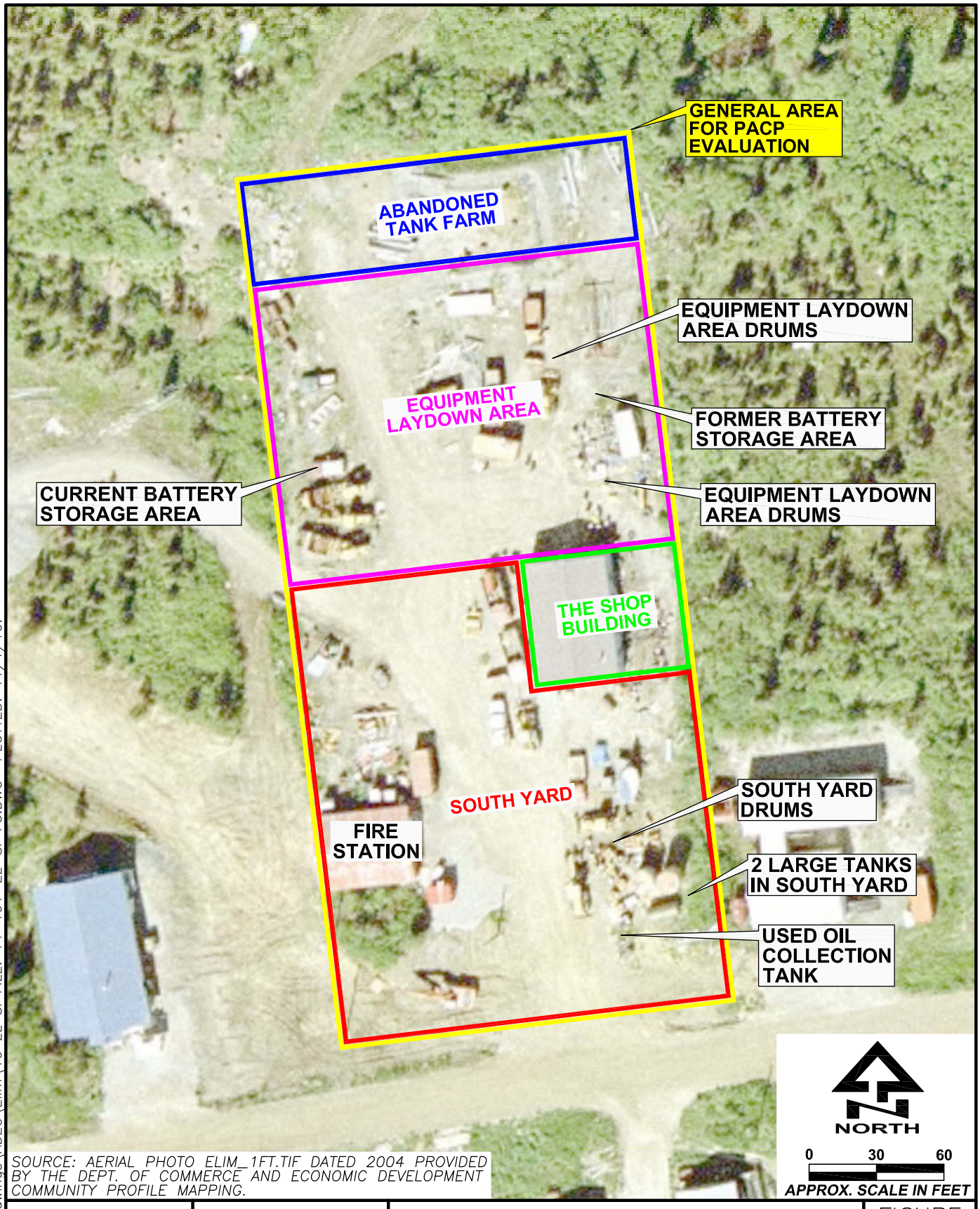

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DATE: NOV. 2010
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DRAWN: C.E.H.
PROJ. No.: 14-191

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PACP EVALUATION

OLD CITY SHOP
SITE INVESTIGATION
Elim, Alaska

FIGURE

3

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EXPLANATION

HS-1 (44.8) ⊠ PHOTOIONIZATION (PID) DETECTOR READING AND RESULTS (ppm)

SOURCE: AERIAL PHOTO ELIM_1FT.TIF DATED 2004 PROVIDED BY THE DEPT. OF COMMERCE AND ECONOMIC DEVELOPMENT COMMUNITY PROFILE MAPPING.

NORTH

0 25 50

APPROX. SCALE IN FEET

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PID SAMPLE LOCATIONS AND RESULTS

OLD CITY SHOP
SITE INVESTIGATION
Elim, Alaska

FIGURE

4

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CHKD: L.C.M.
DRAWN: C.L.H.
PROJ. No.: 14-191

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HISTORIC 1980 PHOTOGRAPHY

OLD CITY SHOP
SITE INVESTIGATION
Elim, Alaska

FIGURE

5

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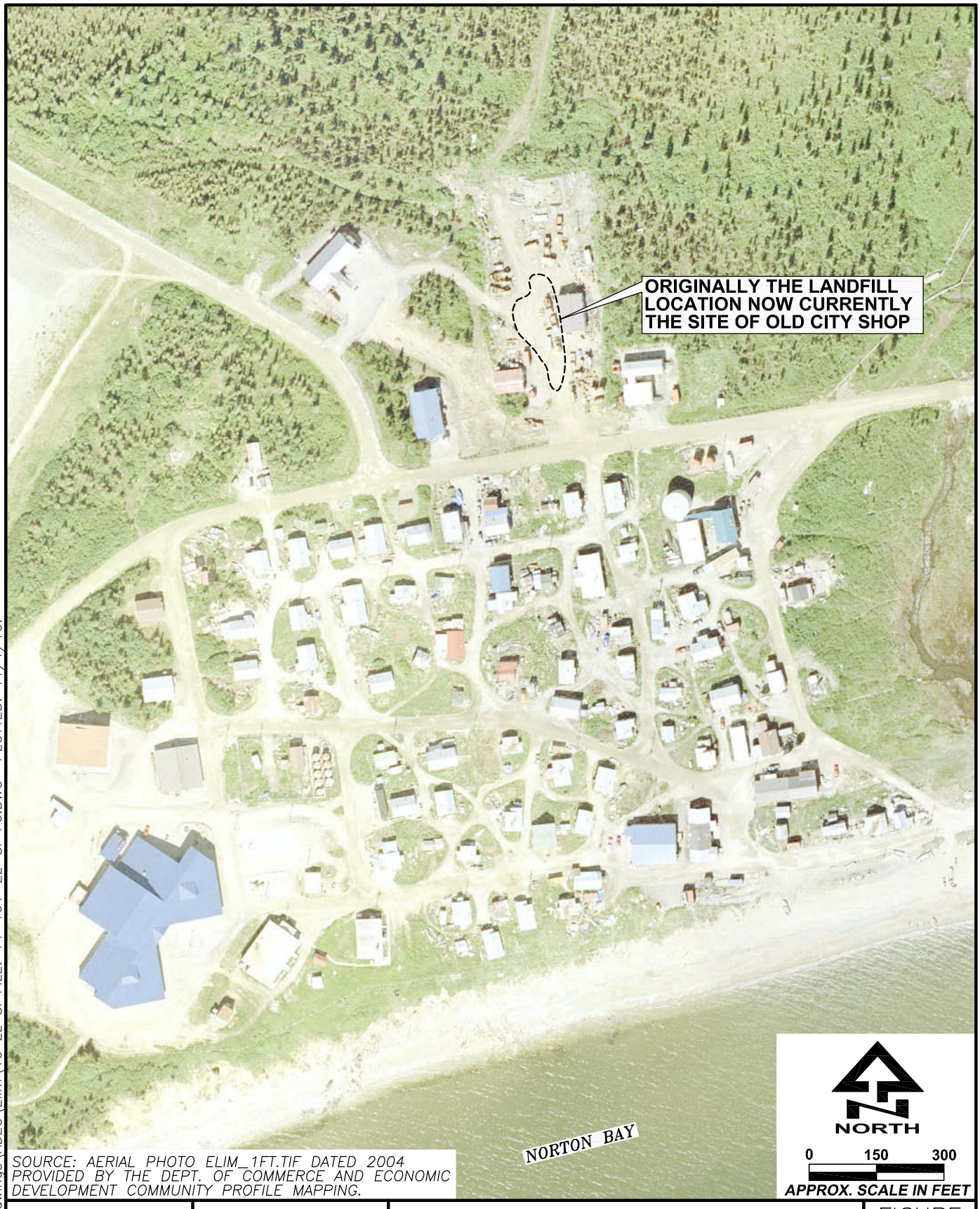

SOURCE: AERIAL PHOTO ELIM_1FT.TIF DATED 2004 PROVIDED BY THE DEPT. OF COMMERCE AND ECONOMIC DEVELOPMENT COMMUNITY PROFILE MAPPING.

oasis ENVIRONMENTAL

DATE: NOV. 2010
CHKD: L.C.M.
DRAWN: C.L.H.
PROJ. No.: 14-191

825 W. 8th Ave., Anchorage, AK 99501, (907) 258-4880

HISTORIC 2004 PHOTOGRAPHY

OLD CITY SHOP
SITE INVESTIGATION
Elim, Alaska

FIGURE

6

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APPENDIX A

2001 Bristol Environmental & Engineering Services Corporation Site Reconnaissance -- Elim, AK

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SITE RECONNAISSANCE REPORT

ELIM, ALASKA

DRAFT

Contract No. 18-5001-10
Project No. 22041

Prepared for:
Alaska Department of Environmental Conservation
Aboveground Storage Tank Program
410 Willoughby Avenue, Suite 105
Juneau, Alaska 99801-5207

Prepared by:
Bristol Environmental & Engineering Services Corporation
2000 W. International Airport Road, #C-1
Anchorage, Alaska 99502
(907) 563-0013

December 2001

TABLE OF CONTENTS

Section **Page**

Tables

Figures

Appendices

ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
AST	aboveground storage tank
AVEC	Alaska Village Electric Cooperative
BEESC	Bristol Environmental & Engineering Services Corporation
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
DRO	diesel-range organic
F	Fahrenheit
GPS	global positioning system
GRO	gasoline-range organic
mg/kg	milligrams per kilogram
PID	photoionization detector
ppm	parts per million
°	degree
′	minute
″	second

1.0 EXECUTIVE SUMMARY

1.1 Summary

The Alaska Department of Environmental Conservation (ADEC) tasked Bristol Environmental & Engineering Services Corporation (BEESC) with conducting a site reconnaissance at the following four aboveground storage tank (AST) sites in Elim, Alaska:

- ANICA Native Store Old Tank Farm Site;
- Alaska Village Electric Cooperative (AVEC) Tank Farm;
- City of Elim Tank Farm; and
- City of Elim Shop Old Tank Farm Site.

The fieldwork for this site reconnaissance was performed on September 20 and September 21, 2001, and involved the collection of 12 surface and subsurface soil samples. By selecting soil sampling locations and relying on the observation, field judgment, and field instrumentation, an effort was made to identify potential contamination from the four tank farm sites in Elim. Of the several samples that were collected, none exceeded the cleanup levels for the particular parameters described in the ADEC cleanup criteria, and no volatile organics were identified from the abandoned gasoline tank farm.

ANICA Native Store Old Tank Farm Site. Sampling at this site indicated the presence of diesel-range organics (DRO) at a concentration below the cleanup level. It is recommended that a search of the ADEC records be performed to determine the extent of reported gasoline contamination and cleanup at this site. Surface soil in the area appeared to be similar throughout, and it was not evident that clean fill had been imported to replace contaminated soils that reportedly had been removed from the site during remediation.

AVEC Tank Farm. One soil sample from an area near the fence had a relatively low DRO concentration, and the sample collected downgradient from the area had no detectable DRO concentration. No further site investigation is recommended for this site until the site is decommissioned. Additional sampling is recommended in areas beneath the tanks, when the tanks are removed, to identify the presence of any localized contamination.

City of Elim Tank Farm. The fueling tank associated with the City of Elim Tank Farm appears to be leaking fuel as part of its operations. Although analytical results indicated the presence of DRO below cleanup levels, field techniques indicated the presence of contamination 50 feet downgradient from the fueling tank in an area approximately 20 feet wide. The depth of the contamination has not been identified. It is recommended that good housekeeping methods be established and implemented to avoid further spills.

City of Elim Shop Old Tank Farm. At the City of Elim Shop Old Tank Farm site, a relatively low DRO concentration was identified in a soil sample from the southeast corner of the abandoned tank farm. Sampling at this site was relatively shallow, and additional sampling should be performed beneath the area of the two tank footprints within the bermed area when the tank farm area is decommissioned and the liner is removed. Sampling should include soils from the native soil beneath the fill material that was imported to construct and level the tank farm.

1.2 Introduction to Project

1.2.1 Project Manager

The BEESC project manager is Michael F. Torpy, P.E.

1.2.2 Field Personnel

Mr. Torpy and Larry Pederson conducted the site reconnaissance at Elim.

1.2.3 Logistics of Project

Access to the site is by air or sea. Flights to Elim are with routine commercial air service from Nome. Alaska Airlines offers commercial flights between Anchorage and Nome on a daily basis, and Bering Air, Hageland Aviation Services, and other area airlines offer commercial flights between Nome and Elim 7 days per week during the summer.

Northern Air Cargo and Alaska Airlines can ship equipment between Nome and Anchorage. Equipment can be flown between Nome and Elim with Bering Air, Hageland Aviation, or other local airlines. There is no guarantee that the equipment will get on the flight, however, and the project needs to be managed accordingly.

Compressed gas for photoionization detector (PID) calibration and methanol for sample preservation cannot be shipped on commercial flights. These items can be shipped by Northern Air Cargo and then transferred to Bering Air, Hageland Aviation, or other area airlines. The methanol and compressed gas must be checked as cargo for Bering Air and Hageland Aviation, but may be transported on the plane with passengers.

Once in Elim, lodging can be found with the Elim City Office. The rental rate is $75 per night per person. The city facilities include living amenities such as shared stove, refrigerator and freezer, shower, and telephone. Food can be purchased at the Elim ANICA Native Store.

When staying in Nome, the Aurora Inn may be used for hotel accommodations, and several other lodging facilities are available. Vehicle reservations can be made through Stampede Car Rentals in Nome. The Aurora Inn and Stampede Car Rentals are located in the same place. A vehicle in Elim may be rented from somebody in the city if the city administrator is notified ahead of time. The availability and rental rates of vehicles vary.

For the site reconnaissance to Elim, the trip was combined with site reconnaissance trips originating in Anchorage and overnight stops in Nome between trips to Teller, Brevig Mission, Golovin and Elim, and Koyuk. Although a continuous trip that included Koyuk from Elim would have been feasible, arrangements could not be made to leave Koyuk without a delay of 2 or 3 days. For this reason, the trip to Elim from Nome was combined only with the site reconnaissance to Golovin.

1.3 Objective of Investigation

1.3.1 Purpose

The purpose of the site reconnaissance at the City of Elim was to determine the potential for environmental contamination from fuel tank farms of the city. The objective was accomplished by gathering information through interviews and environmental sampling. The information

from the site reconnaissance is used to develop an understanding of the potential extent of contamination and to assess the potential threat of the contamination to human health and the surrounding environment.

1.3.2 Work Plan

The work followed the work plan prepared for the site reconnaissance to the City of Elim in August 2001. The work plan included a Site Safety and Health Plan.

1.3.3 ADEC Cleanup Levels Used (and Justification)

Cleanup levels for the following sites are based on Method Two, in Title 18, Chapter 75, of the Alaska Administrative Code, as amended through October 28, 2000. The cleanup levels selected for Elim are based on Method Two, Under 40-Inch Zone migration to groundwater pathway. This selected method and its scenario is the most restrictive of the three scenarios included in Method Two. The selected method is appropriate for the physical conditions of the site, and may be used as an initial basis of comparison for evaluating the environmental conditions of the site. The Method Two cleanup levels are shown in Table 1-1.

Table 1-1 Method Two Cleanup Levels

Cleanup Level in Milligrams per Kilogram (mg/kg)					
GRO	DRO	Benzene	Toluene	Ethylbenzene	Xylenes
300	250	0.02	5.4	5.5	78

2.0 CITY SUMMARY

2.1 General Information

The information provided in this section was obtained from the Alaska Department of Community and Economic Development Web site (http://www.dced.state.ak.us/mra/CF_BLOCK.cfm). This information was last updated in 2001.

Elim is on the northwest shore of Norton Bay on the Seward Peninsula, 96 miles east of Nome. It lies 460 miles northwest of Anchorage at approximately 64 degrees (°) 37 minutes (′) North Latitude, 162° 15′ West Longitude (Section 15, Township 010S, Range 018W, Kateel River Meridian). Elim is located in the Cape Nome Recording District. The area encompasses 2.4 square miles of land and zero square miles of water.

The settlement of Elim was formerly the Malemiut Inupiat Eskimo Village of Nuviakchak. The Native culture was well developed and well adapted to the environment. Each tribe possessed a well-defined subsistence harvest territory. The area became a federal reindeer reserve in 1911. In 1914, Reverend L.E. Ost founded a Covenant mission and school, called Elim Mission Roadhouse. The city was incorporated in 1970. When the Alaska Native Claims Settlement Act was passed in 1971, Elim decided not to participate, and instead opted for title to the 298,000 acres of land in the former Elim Reserve. The Iditarod Sled Dog Race passes through Elim each year.

Elim is an Inupiat Eskimo community with a fishing and subsistence lifestyle. The sale and importation of alcohol is banned in the city.

The Elim economy is based on subsistence harvests; cash employment is limited to fishing, the city, and the school. Unemployment is high, and seasonal part-time employment in nearby Nome has declined recently because of a depressed gold market. Thirty-nine residents hold commercial fishing permits. The city would like to develop a fish processing plant. Residents rely on fish, seal, walrus, beluga whale, reindeer, moose and garden harvests.

Water is derived from a well and is treated. Housing built by the U.S. Bureau of Indian Affairs and Housing and Urban Development and water and sewer systems built by the Public Health Service 1974 have provided residents with piped water and sewer, indoor water heaters and plumbing, and in-home washers and dryers. Wastes flow to a sewage treatment plant with ocean outfall. The landfill is not permitted through the state. The city needs a new water source because of occurring water shortages and plans to replace cracked polyvinyl chloride pipes.

Elim is reached by air travel on a routine schedule by at least two different commercial services. Recent improvements have made the state-owned airport one of the best and most modern in the region. The airport offers a 3,000-foot gravel runway. Elim Native Corporation also owns a private 4,700-foot paved airstrip with a 1,390-foot crosswind runway at Moses Point. Because the city does not have a dock, a company operating from Nome must lighter supplies to shore. Plans are being made to develop a harbor and dock, and an access road is under construction.

Elim has a subarctic climate with maritime influences. Norton Sound is ice-free generally between mid-June and mid-November. Summers are cool and moist; winters are cold and dry. Summer temperatures range between 46 degrees (°) Fahrenheit (F) and 62°F; winter temperatures range between -8°F and 8°F. Average annual precipitation is 19 inches, including approximately 80 inches of snowfall.

2.2 City Contacts

The following city contacts were made:

Darla Jemewouk, City Administrator, (907) 890-3441

Luther Nagaruk, City Clerk, (907) 890-3441

James Keef, School Principal, (907) 890-3041

Christine Amaktoolik, ANICA Store Manager, (907) 890-3281

Bob Dickens, Bering Straits School District Maintenance Manager, (907) 624–3611

2.3 Equipment in City

The City of Elim owns 11 pieces of heavy equipment, including a D8-K bulldozer, D8 bulldozer, dump truck, 410E backhoe, fuel truck, flatbed truck, Davis trailer, and various other heavy equipment. Arrangements may be made to rent the equipment, depending on availability. The city has a published fee sheet for the equipment. Most of the equipment appeared to be in working order, and three items were being repaired at this time of the visit.

2.4 Residents with 40-hour Training

Five or 6 individuals who are residents the city reportedly have current Hazardous Waste Operations and Emergency Response training. In addition, as many as five more individuals are believed to have received the initial training, but may not be current in their training requirements.

2.5 Buried Utilities

Water and sewer lines are buried along the roads of the city, and the city has as-builts showing their locations and depths. Electric and telephone lines are above ground and supported on utility poles.

2.6 Tank Farm Locations

The locations of the four tank farm in the City of Elim are shown in Figure 2-1.

2.7 Water Supply Locations

Water is obtained from a small spring and stream northeast of the city. The water is pumped from the spring, and in dry times, from the surface stream (referred to as Elim Creek) to a water storage tank where it is distributed to the residents of Elim.

2.8 Landfill Location

The Elim landfill is approximately 2 miles east of the City of Elim along the Moses Point Road. An access road to the landfill is located on the south side of the Moses Point Road and is about 400 feet long.

2.9 Source Material Site Locations

Two pits are used as borrow sources in the Elim area, both along the Moses Point Road, east of the city. One pit is near the landfill on the north side of the Moses Point Road; the other pit is a few miles beyond the landfill. Several other potential borrow sources are reported to exist and to be available for use if the existing sites are not adequate.

2.10 Subsistence and Recreational Areas

The Elim area is generally a subsistence region. Caribou are said to migrate along the Moses Point Road about 2 miles east of the city, and are hunted for subsistence use. Subsistence hunting occurs in the region surrounding Elim, with the people hunting moose, fox, rabbit, wolverine, wolf, bear, and squirrel. In the winter, ice fishing occurs in the area, often not more than one-quarter to one-half mile off the south side of the city shoreline. In addition, the ocean is used to hunt whale and waterfowl in the spring and fall. Recreation occurs throughout the area of Elim, and people use four-wheelers and snow machines for recreation year-round. A camp used for subsistence hunting and fishing and for recreation lies outside the city about 8 to 10 miles in an area called Moses Point.

3.0 SITE INFORMATION AND FINDINGS

The location of the soil samples was selected by evaluating the condition of the tank farm and the slope of the terrain surrounding the tank farm. Locations where soil samples were collected for laboratory analysis were selected with the following approach:

- Judging where contamination may most likely travel from a fuel release, based on the site terrain;
- Identifying where obvious contamination is present (soil staining, odor, etc.) or would be most likely to have traveled downgradient from the tank farm; and
- Locating a specific site or area, based on information from an interview.

The physical site investigation consisted of walking around the tank farm and its surrounding area. Staining, slope of the surface, stressed vegetation, and the condition of the tank farm and its tanks were observed. In areas where the presence of contamination was believed to be possible, a metal detector was used to determine the absence of buried metal (and utility lines). After digging into the ground, the appearance of the soil was observed, and the PID meter was used to determine whether volatile hydrocarbons could be detected.

In locations having the highest likelihood for potential contamination, a soil sample was collected and tested with use of the PID meter. A portion of each sample was saved in a Ziplock bag for subsequent PetroFlag testing. The soil samples were placed into the appropriate glass jars, labeled, and kept within eyesight during the site investigation. The soils were prepared for shipment under chain of custody, and sent by cargo transport to CT&E Analytical Laboratory in Anchorage, Alaska, for laboratory analysis. It should be noted that there was no attempt made to maintain the samples on ice. This approach to handling the samples is consistent with the objectives of the site reconnaissance.

As a matter of record, the location of each sample site was recorded with a hand-held global positioning system (GPS) unit. The averaging function was used, and at least 100 counts were made before the position was recorded. The accuracy of the data was read from the GPS unit and recorded in the field notes (Appendix B).

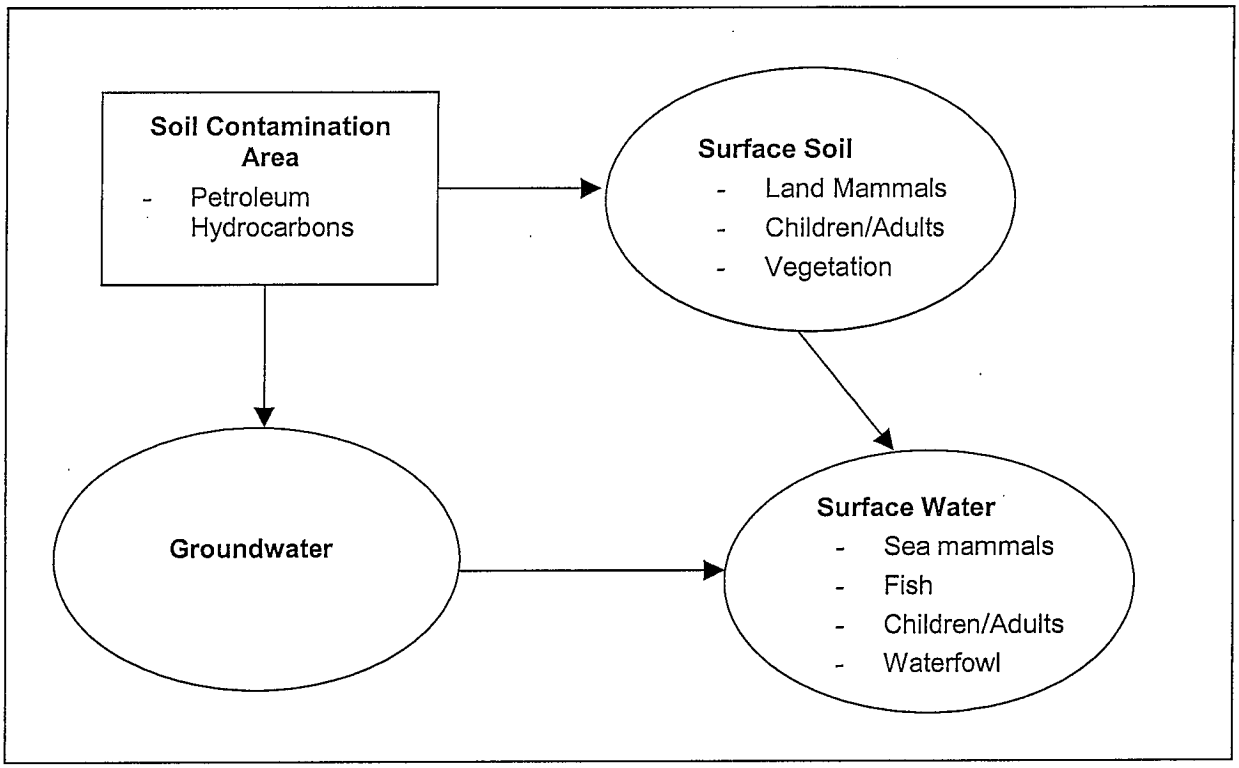
Typical sampling included exposing a soil sample area by removing any vegetation cover with the use of a shovel, then using a hand auger to reach a particular soil depth. In some cases, a deeper sample could not be collected; for example, when large rocks or bedrock were encountered and when loose gravel collapsed into the sample hole.

The records of activities associated with this site reconnaissance are provided in the photographs in Appendix A. Copies of the field notes are provided in Appendix B. Appendix C contains the chain-of-custody form for the samples and the analytical report. Appendices D and E are not used.

The land surface of Elim generally slopes southward to Norton Bay. A construction worker involved with the construction of the new school indicated that the Elim area is underlain with a basalt-like material that is relatively shallow in some areas (less than 10 feet). Surface runoff in the area generally flows south to Norton Bay, and any groundwater would likely also flow in the same direction. A creek, referred to as Elim Creek, runs through the city area and into Norton Bay.

A general conceptual site model, shown in Figure 3-1, identifies the potential fate of any contaminants in the area. In general, surface and groundwater contaminants of Elim tank farms would eventually reach Elim Creek and finally Norton Bay, where exposure of fish and wildlife to the contaminant could cause secondary exposure to human health. Other potential routes of exposure to contaminants in Elim include inhalation of volatile contaminants and ingestion of surface soil contaminants such as berries and other foods.

Figure 3-1 General Site Conceptual Model for the Elim Tank Farm Sites



3.1 ANICA Native Store Old Tank Farm Site

3.1.1 Site Description

Located at GPS coordinates North 64° 36′ 57.3 seconds(″) West 162° 15′ 34.6″, this site (Photograph 1 and Figure 2-1) is an empty gravel lot where a gasoline tank farm reportedly had been located. According to interviews, a fuel release occurred in the area before the tank was removed, and the U.S. Coast Guard and ADEC had been involved with the spill response. The city clerk and a village elder, Luther Nagaruk, who maintains and oversees the operations of city sites, indicated that the spill reached the Norton Bay waters and required extensive remediation. It was reported that the contaminated soil was removed and the area was filled with clean soil.

3.1.2 Site Reconnaissance

The site is located at the edge of an area at approximately the same elevation as the nearby buildings. The area is on the edge of a minor sea bluff, raised approximately 10 to 15 feet above the nearby beach and sea, south of the site. The ANICA store is located across the road that runs adjacent to the site and is north of the abandoned site. At the time of the visit, minor amounts of debris were observed at the site, but no apparent staining or noticeable petroleum odor was noted. Vegetation was growing sparsely throughout the area, but signs of stresses vegetation were not identified.

Soil Sample Collection. After the property was visually examined and PID readings were taken at the surface, one soil sample was collected at the north edge of the property at a depth of approximately 2 feet below ground surface (bgs). The sample was tested with a PID meter. The soil was a sandy material with large pebbles.

3.1.3 Laboratory Analytical Results

Results of analysis are summarized in Table 3-1. As indicated, the soil has no detected concentration of gasoline-range organics (GRO) and a DRO concentration of 152 milligrams per kilogram. In addition, the soil contained no detectable concentration of volatile organic hydrocarbons (see Table 3-2).

Table 3-1 ANICA Native Store Old Tank Farm Site Sampling Results

Sample Number	GPS Coordinates	Sample Core Depth (feet)	PID Reading (ppm)	PetroFlag Reading (ppm)	GRO (mg/kg)	DRO (mg/kg)
ELM-S-001	North 64° 36' 57.3" West 162° 15' 34.6"	2	0	N/R	U (3.7)	152

N/R = not recorded

ppm = parts per million

U (##) = undetected at the limit value amount

Table 3-2 BTEX Analytical Results for Soil Sample ELM-S-001 at the ANICA Native Store Old Tank Farm Site

Analytical Results in Milligrams per Kilogram (mg/kg)				
Benzene	Toluene	Ethylbenzene	o-Xylene	p&m-Xylene
U (0.0019)	U (0.037)	U (0.037)	U (0.037)	U (0.075)

BTEX = benzene, toluene, ethylbenzene, and xylenes

U (###) = undetected at the limit value amount

3.1.4 Discussion and Conclusions

Table 3-3 summarizes sample types, general sample locations, and rationale based on the site conceptual model shown in Figure 3-1. Limited information indicates that the soil of the area contains relatively minor concentrations of DRO material. No further assessment of this area is

recommended until after a search is performed to determine the history of the site and what actions were taken to remove reported contamination of the site soil. If it is found that no cleanup has been performed, the reasons should be evaluated to determine whether additional site investigation is required to identify extent and location of contamination. No further site investigation is recommended, based on the available information.

Table 3-3 Future Sampling Rationale for the ANICA Native Store Old Tank Farm Site

Sample Media	Location	Rationale or Action
Groundwater	Downgradient from suspected source area	No action is recommended.
Surface Soil	Various locations within the tank pit	Contaminants possibly leaching from surface soil into groundwater and surface water. No sampling is recommended. Review of historical files is recommended
	Area surrounding tank	No action is recommended.
Subsurface Soil	In tank farm and surrounding area	No action is recommended.
Surface Water	Downgradient from suspected source area	No action is recommended.

3.2 AVEC Tank Farm

3.2.1 Site Description

This site (Photographs 2 and 3 and Figure 2-1) is located at GPS coordinates North 64° 36′ 59.3″ West 162° 15′ 46.8″. It consists of nine vertical tanks that are reportedly used to store diesel fuel for the power plant.

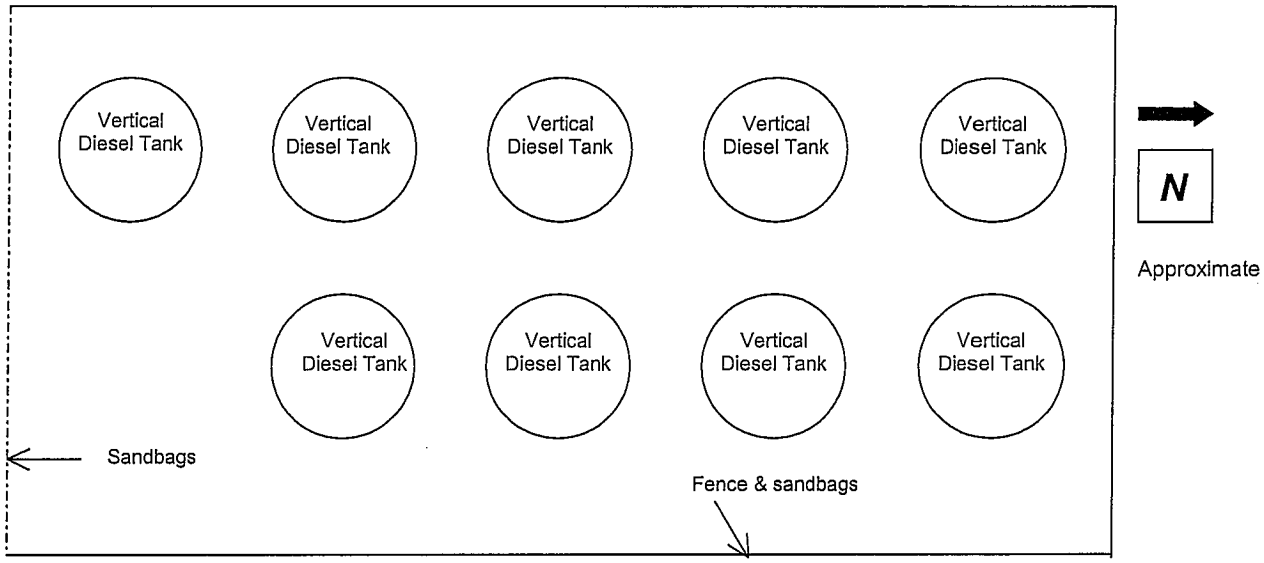
The information about this tank farm was derived from discussions with Mark Tietzel of AVEC in Anchorage. Mr. Tietzel provided as-builts of the facility and referred the field crew to one of the plant operators who mentioned that he was unaware of any historical spills at the tank farm.

The power plant (south of the tank farm) and tank farm are surrounded by a fence, and sandbags surround the tank farm within the fence. The fenced area is bordered on each of its four sides by roads, and the terrain slopes eastward. East and across the road from the tank farm is a residential house, and additional houses are located farther east.

3.2.2 Site Reconnaissance

The tank farm is surrounded by fencing, and contains several 55-gallon fuel drums and other smaller containers. The fuel tanks appeared to be in good condition, with the southern tanks being in the best condition. The surface of the northern tanks showed signs of rust. The tanks rested on wooden platforms. The wooden platforms and sand bags appeared to be in good condition. No liner was observed. Vegetation was noted surrounding the fenced area. Figure 3-2 shows the relative position of the various tanks.

Figure 3-2 Layout of the Alaska Village Electric Cooperative (AVEC) Tank Farm



Note: Figure is not to scale.

Soil Sample Collection. Soil sample ELM-S-002 was screened with a PID and submitted for laboratory and PetroFlag analysis. The sample was collected at approximately 2 feet bgs, on the east side of the tank farm, approximately 30 feet north of its southeast corner and approximately 3 feet east of the fence. The soil was a sandy gravel-like material and included a slate-like shale material. As indicated in Table 3-4, the soil had a relatively low reading from the PID meter, and contained a relatively low concentration of DRO.

A soil sample was also collected in the ditch on the east side of the road adjacent to the east side of the tank farm. The ditch was downgradient from the tank farm, adjacent to a residential yard, and contained soil that was a sandy loam-like material. Sample ELM-S-003 was collected at a point approximately 30 feet east of the tank farm fence and approximately 2 feet deep. Another sample, ELM-S-003a, was collected at 4 feet bgs.

3.2.3 Laboratory Analytical Results

Table 3-4 summarizes the results of analysis. As indicated, the soil contains relatively low concentrations of DRO material at a depth of 2 feet bgs near the tank farm (on its downgradient east side), and no contamination was identified across the road and down gradient from the tank farm (near the neighboring residence).

Table 3-4 AVEC Tank Farm Sampling Results

Sample Number	GPS Coordinates	Sample Core Depth (feet)	PID Reading (ppm)	PetroFlag Reading (ppm)	GRO (mg/kg)	DRO (mg/kg)
ELM-S-002	North 64° 36' 59.3" West 162° 15' 46.8"	2	0.8	330	N/A	212
ELM-S-003	North 64° 36' 59.4" West 162° 15' 46.3"	2	N/R	0	N/A	U(12.4)
ELM-S-003a	North 64° 36' 59.4" West 162° 15' 46.3"	4	N/R	0	N/A	N/A

N/A = no analysis requested
N/R = not recorded
ppm = parts per million

3.2.4 Discussion and Conclusions

According to the site conceptual model shown in Figure 3-1 and results of analysis, it is apparent that any petroleum contamination from the site would be limited to the soils immediately beneath the tank farm. When the tank farm is decommissioned, additional sampling should be conducted to determine whether any contamination is present beneath the tank farm. While the AVEC Tank Farm is in operation, no additional site investigation is recommended. Table 3-5 summarizes the rationale for any additional sampling for the site.

Table 3-5 Future Sampling Rationale for the AVEC Tank Farm

Sample Media	Location	Rationale or Action
Groundwater	Downgradient from a suspected source area	No additional sampling is recommended.
Surface Soil	Various locations within the tank farm	Define immediate extent of potential contamination when tank farm is decommissioned.
Subsurface Soil	In tank farm and surrounding area	No additional sampling is recommended.
Surface Water	Downgradient from a suspected source area	No additional sampling is recommended.

3.3 City of Elim Tank Farm

3.3.1 Site Description

The City of Elim Tank Farm site (Photographs 4 through 6 and Figure 2-1), located at GPS coordinates North 64° 37′ 04.0″ West 162° 15′ 33.7″, consists of four vertical fuel tanks. The tank farm is adjacent to city roads on its north and east sides, and is approximately 50 feet north of the city water tank (Photograph 5). There is no fence or berm around the tanks, which are connected by a piping system that lies near the ground surface. The two western tanks have a relatively small, lined gravel diking system, and are upgradient from the adjacent area immediately south of the west tanks. The area of the two eastern tanks slopes eastward and has no diking or berms around it. The tanks in the east area appeared to be resting partially on the ground and partially on lumber. The four tanks are rusted and reportedly store heating fuel (diesel #1). Between the east and west tanks is a skid-mounted fueling station. Figure 3-3 shows the relative positions of the tanks and the piping arrangement among the tanks.

3.3.2 Site Reconnaissance

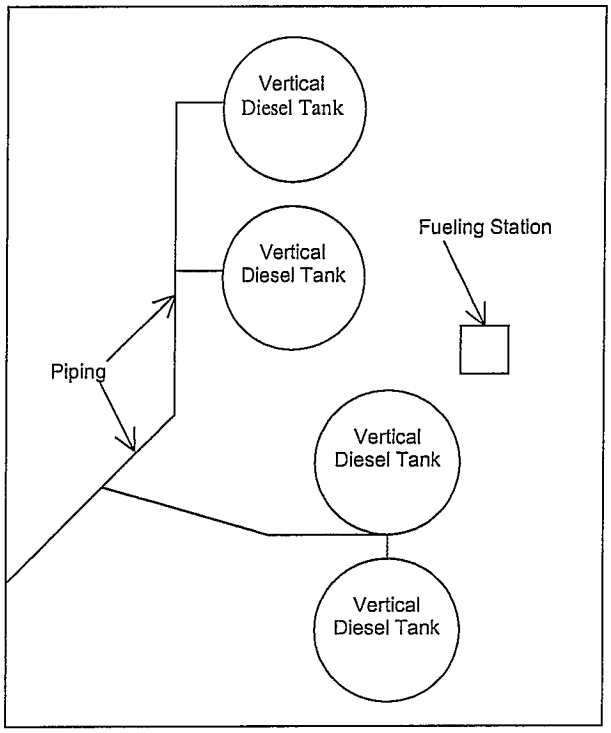
The soil in the tank farm area was similar to its surroundings in the area south of the tank farm. Surface material on the north side of the tanks appeared to be a fill material, with no vegetation, and obviously supporting vehicle traffic. A city resident indicated that the fueling station is active.

The general terrain of the area slopes downward primarily toward the east. Surface and groundwater would travel eastward toward nearby Elim Creek, which empties into the Norton Bay on the south side of the city.

Soil Sample Collection. Sample ELM-S0004 was collected at approximately 5 feet bgs. The soil was a sandy-loam containing small pebbles. The sample was taken in an area downgradient from the west tanks on their south side.

Sample ELM-S-005 was collected approximately 5 feet east of the bermed area and south of the fueling station, at a location where the surface material had the same appearance as the nearby road. The soil was highly compacted, consistent with that of the road material. Because an odor was noted in the soil at various locations south of the bermed area, additional samples were collected and subsequently analyzed at an analytical laboratory and with

Figure 3-3 Layout of the City of Elim Tank Farm



Note: Figure is not to scale.

PetroFlag kits. As the sampling progressed, it became evident through the level of the odor that the odor probably originated from the fueling station, not the tank farm tanks. Sample ELM-S-005a was taken 20 feet east of the berm and east of the fuel station. Sample ELM-S-005b was taken approximately midway between the north and south ends of the east berm, and approximately 3 feet from the east berm. Sample ELM-S-005c was collected 40 feet from the east side of the berm, and sample ELM-S-005d was taken approximately 50 feet from the east berm at a downgradient location east of the fueling station, where drainage flows directly to Elim Creek. Sample ELM-S-005e was collected near the southeast corner of the bermed area.

3.3.3 Laboratory Analytical Results

The results of analysis and testing are summarized in Table 3-6.

Table 3-6 City of Elim Tank Farm Sampling Results

Sample Number	GPS Coordinates	Sample Core Depth (feet)	PID Reading (ppm)	PetroFlag Reading (ppm)	GRO (mg/kg)	DRO (mg/kg)
ELM-S-004	North 64° 37' 03.9" West 162° 15' 34.3"	5	0	0	N/A	U (11.8)
ELM-S-005	North 64° 37' 04.0" West 162° 15' 33.7"	1	N/R	N/R	N/A	176
ELM-S-005a	N/R	1	N/R	1,996	N/A	N/A
ELM-S-005b	N/R	1	N/R	N/R	N/A	N/A
ELM-S-005c	N/R	1	N/R	1,657	N/A	N/A
ELM-S-005d	N/R	1	N/R	579	N/A	N/A
ELM-S-005e	N/R	1	N/R	49	N/A	N/A

N/A = no analysis requested
N/R = not recorded
ppm = parts per million

3.3.4 Discussion and Conclusions

Soil contamination in the area appears to be associated with the fueling station. Although nobody contacted recollected spills from the tanks of the tank farm, it was evident from the

appearance of the soil around the fueling station that leaks have occurred at the fueling station. The extent of contamination is apparently limited to an area approximately 50 feet east of the fueling tank and in a plume probably less than 20 feet wide immediately in front of the fueling tank. The depth of contamination is not known.

Until the soil at the City of Elim Tank Farm can be further evaluated, it is recommended that, good housekeeping methods should be established and implemented to avoid further spills from operating the furling tank. Table 3-7 summarizes the reasoning for any additional sampling at the site.

Table 3-7 Future Sampling Rationale for the City of Elim Tank Farm

Sample Media	Location	Rationale or Action
Groundwater	Downgradient from suspected source area	No additional sampling is warranted or recommended.
Surface Soil	Various locations east of the fueling tank	Define extent of contamination for purpose of potential remedial activities. No additional sampling is warranted or recommended.
Subsurface Soil	Various locations throughout the tank area and along pipeline appear clean, except downgradient from the fueling tank	Contaminants possibly migrating downward. Extent of depth of DRO contamination is undefined. No additional sampling recommended if good housekeeping methods are established and implemented.
Surface Water	Downgradient from suspected source area	No effect likely, and additional sampling not warranted or recommended.

3.4 City of Elim Shop Old Tank Farm Site

3.4.1 Site Description

The site is on the north side of the city (Figure 2-1) in an area that had reportedly been owned by the Alaska Department of Transportation and Public Facilities, which had deeded the property to the city. The area consists of a shop on the south part of the property, a large lot behind (north of) the shop used as an equipment lay-down area, and an abandoned tank farm area (in the farthest northeast corner) where the remaining flattened, raised gravel area is evidence of the abandoned tank farm. The tank farm area (Photograph 7) is upgradient to a forested area on the east side of the tank farm and at a level with the forested area adjacent to the north side of the tank farm.

The open area between the shop and the tank farm held various types of building debris and abandoned vehicles and equipment, some of which appeared to be under repair. There was noticeable surface soil staining within the equipment lay-down area.

The tank farm appears to have a liner beneath the surface soil within the bermed tank farm area. Several sealed 55-gallon drums were resting on wooden pallets within the tank farm area, which had berms on three of its sides. The berms were probably built as part of the tank farm. The berm on the west side of the tank farm was apparently removed to provide traffic access into the tank farm area. Remnants of two tanks can be seen as footprints within the bermed

area. Various types of debris are piled on the east side of the tank farm in an area that separates the tank farm from the downgradient forest.

The 55-gallon drums in the area were reportedly full of heating fuel salvaged as part of the tank decommissioning. The fuel is being distributed to the community elders as they need it, and will eventually be gone from the site. There is no history of spills from tanks that had been at the site.

3.4.2 Site Reconnaissance

The land surface in the area slopes downward toward the east. Any surface water from the area drains toward Elim Creek toward the middle of town, and eventually empties into Norton Bay. Groundwater in the area likely drains similarly.

Soil Sample Collection. Sample ELM-S-006 was collected on the east side of the tank farm, approximately 20 feet from the berm, midway along the length of the berm. The sample was collected from a depth of approximately 2 feet bgs and consisted of large gravel and silt-like material. The material was most likely part of the fill used to prepare and level the equipment lay-down yard.

Samples ELM-S-007 and its duplicate ELM-S-008 were collected at the southeast corner berm, approximately 10 feet east of the corner. The samples were collected at approximately 2 feet bgs and consisted of large gravel and silt-like material. The material was most likely imported fill used to level the equipment lay-down yard.

3.4.3 Laboratory Analytical Results

The results of analysis are summarized in Table 3-8.

Table 3-8 City of Elim Shop Old Tank Farm Site Analytical Results

Sample Number	GPS Coordinates	Sample Core Depth (feet)	PID Reading (ppm)	PetroFlag Reading (ppm)	GRO (mg/kg)	DRO (mg/kg)
ELM-S-006	North 64° 37' 07.9" West 162° 15' 38.6"	2	N/R	0	N/A	U(11.6)
ELM-S-007	North 64° 37' 07.8" West 162° 15' 38.6"	2	N/R	286	N/A	15.4
ELM-S-008	Duplicate of -007	N/R	N/R	N/R	N/A	12.7

N/A = no analysis requested
N/R = not recorded
ppm = parts per million

3.4.4 Discussion and Conclusions

As indicated in Table 3-8, relatively low concentrations of DRO are present in the soil on the east side of the tank farm. Sampling in the area was difficult because of the nature of the soil, and because of the debris in areas where samples may have been collected. The surface of the forested area downgradient from the tank farm was inspected and did not appear to have

staining. The absence of visual signs of spills and the results of analysis indicate that petroleum contamination from the tank farm is probably limited. When the tank farm berms are demolished, the area beneath the tanks farm should be examined to confirm the absence of contamination. Whenever the site is further evaluated, additional samples should be collected below the fill material in the yard to evaluate the condition of the natural soil. Future sampling recommendations are shown in Table 3-7.

Table 3-7 Future Sampling Rationale for the City of Elim Shop Old Tank Farm Site

Sample Media	Location	Rationale
Groundwater	Downgradient from suspected source area	No groundwater was found to be affected, and no sampling is warranted or recommended.
Surface Soil	Various locations throughout the tank farm area	Contaminants are possibly present beneath liner. Confirmation sampling is recommended when the tank farm is demolished.
Subsurface Soil	Various locations throughout the tank area and along pipeline	Confirmation sampling is recommended when the tank farm is demolished.
Surface Water	Downgradient from suspected source area	Surface water runoff does not likely contain contaminants from the tank farm. No additional sampling is recommended.

4.0 SUMMARY OF SITE FINDINGS

Table 4-1 summarizes pertinent information for the four tank farms in Elim where site reconnaissance activities were performed.

Table 4-1 Site Summaries

Site Name	Status	Owner/ Operator	Spill Summary	Identified Spills/ Observations	Point of Contact/ Phone Number
ANICA Native Store Old Tank Farm Site	Abandoned	ANICA	A large spill in 1994. Coast Guard. ADEC reportedly responded	No stained soil or stressed vegetation observed at this site.	Christine Amaktoolik (907) 890-3281
AVEC Tank Farm	Active	Alaska Village Electric Cooperative	No spills identified	No stained soil or stressed vegetation observed at this site.	Mark Teitzel (907) 561-1818 or (800) 478-1818
City of Elim Tank Farm	Active, and pending consolidation.	City of Elim	No spills identified	Some staining observed near the pump station. Slight leaking around the valve of one of the tanks	Luther Nagaruk (907) 890-3441
City of Elim Shop Old Tank Farm Site	Abandoned. Berm, liner, and soil fill remain.	City of Elim	No spills identified.	No stained soil was observed in tank farm area, but stained soil was observed in equipment lay-down area.	Luther Nagaruk (907) 890-3441

5.0 SUMMARY OF ASSESSMENT AND REMEDIATION RECOMMENDATIONS

The site reconnaissance evaluated the soil conditions at four sites. By selecting soil sampling locations and relying on the observation, field judgment, and field instrumentation, an effort was made to identify potential contamination from four different tank farms in Elim. None of the several samples collected exceeded the cleanup levels for the particular parameters described in the ADEC cleanup criteria, and no volatile organics were identified from the abandoned gasoline tank farm.

ANICA Native Store Old Tank Farm Site. Sampling at this site indicated the presence of DRO at a concentration below the cleanup level. It is recommended that a search of the ADEC records be performed to determine the extent of reported gasoline contamination and cleanup at this site. Surface soil in the area appeared to be similar throughout, and it was not evident that clean fill had been imported to replace contaminated soils that reportedly had been removed from the site during remediation.

AVEC Tank Farm. One soil sample from an area near the fence had a relatively low DRO concentration, and the sample collected downgradient from the area had no detectable DRO concentration. No further site investigation is recommended for this site until the site is decommissioned. Additional sampling is recommended in areas beneath the tanks, when the tanks are removed, to identify the presence of any localized contamination.

City of Elim Tank Farm. The fueling tank associated with the City of Elim Tank Farm appears to be leaking fuel as part of its operations. Although analytical results indicated the presence of DRO below cleanup levels, field techniques indicated that presence of contamination 50 feet downgradient from the fueling tank, and in an area approximately 20 feet wide. The depth of the contamination has not been identified. It is recommended that good housekeeping methods be established and implemented to avoid further spills.

City of Elim Shop Old Tank Farm. At the City of Elim Shop Old Tank Farm site, a relatively low DRO concentration was identified in a soil sample from the southeast corner of the abandoned tank farm. Sampling at this site was relatively shallow, and additional sampling should be performed beneath the area of the two tank footprints within the bermed area when the tank farm area is decommissioned and the liner is removed. Sampling should include soils from the native soil beneath the fill material that was imported to construct and level the tank farm.

6.0 SUMMARY OF ACCIDENTS AND INCIDENTS

No accidents or incidents occurred during or as part of the site reconnaissance.

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APPENDIX B

Current Landfill Documents

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CITY OF ELIM
ELIM CITY COUNCIL
P.O.BOX 39009
ELIM, ALASKA 99739

PH: (907)890-3441
FAX: (907)890-3811

I, Christine Amaktoolik, certify under penalty of perjury, that all of the information and exhibits in this cover letter and application are true, accurate and complete.

Christine Amaktoolik — Applicant's Signature

August / 24 / 2010 — Month / Day / Year

City Clerk — Applicant's Title

CITY OF ELIM
ELIM CITY COUNCIL
P.O.BOX 39009
ELIM, ALASKA 99739
PH: (907)890-3441
FAX: (907)890-3811

1.0 Facility Description

Facility Name: Elim Landfill

Facility Location: Mile 2 Moses Point Road, Township 10 South, Range 18 West, Section 11 Kateel River Meridian, Alaska.

Facility Area: 7 acres, up to 5 acres of which is designated to receive waste.

Facility Owner: City of Elim
PO Box 39009
Elim, AK 99739
Phone (907) 890-3441

August 20,2010

The City of Elim is requesting a permit for a Class 111 landfill.

The City of Elim is a second class city. The population in 2010 is 337 people. The city boundaries encompass 2.3 square miles. Figure 8.5 presents a map of the area and Table 1 presents waste generation rates.

Topography. The land in Elim rises quite rapidly from the shoreline. The steep hills and mountains directly inland restrict development into creek valleys and into relatively gently sloping ground within one-half mile of the shore. Mount Kwiniuk, located 5 miles west, is 2,023 feet high.

Geology. Elim is set on a rock-cored terrace on the north shore of Norton Sound. The Bendelben Mountains to the north have been glaciated but glacial and glacio-fluvial terrain features do not extend to the coast. Instead, the area is typified by broad, tree-covered, rolling hills. The hills in the Elim area are composed of sedimentary and meta-sedimentary rocks of Devonian age. This rock has weathered in place and locally derived rock and silt colluvial deposits are common on the lower slopes. The soil profile consists of a foot or less of living organic mat, 1 to 3 feet of silt over 5 to 7 feet of colluvium. Hard fractured rock is present at a depth of 8 to 9 feet. The silt mantle ranges from a dark brown organic silt near the top to a lighter silt or sandy silt at depth. The colluvium also grades with depth from a gravelly silt to a silty gravel. Near the top the rock fragments are sometimes subangular indicating some colluvial action. At depth, however, all rock pieces are angular and quite fresh indicating that they are locally derived by in place weathering. The upper silt deposits and the upper, colluvial portions of the underlying material can probably be used for cover material (Duane Miller & Associates, November 18, 1998).

Climate. Located in a subarctic climate on the shore of Norton Sound, Elim experiences maritime effects from the Sound during ice-free periods. When the Sound freezes, the climate changes to a colder, more continental climate. As a result, summers are cool and wet, and winters are cold and dry. Mean monthly temperatures range from 46° to 62° Fahrenheit in the summer and -8° to 8° Fahrenheit in the winter. Reported temperature extremes for Nome are -47°F and 84°F, and for Unalakleet they are -50°F and 87°F. The average annual precipitation is 19 inches, which includes 80 inches of snowfall.

Surface Hydrology. Surface hydrology in the vicinity of the landfill is nominal. There are no obvious drainage channels through the proposed landfill site. The forested nature of the site helps to buffer the site from erosion caused by surface water runoff. It is expected that surface hydrology flows from west to east eventually reaching Norton Bay.

Ground Water. Near the landfill, no groundwater was observed during a geotechnical investigation conducted in November of 1998 (Duane Miller & Associates 1998). Fractured bedrock was encountered at 8 feet below the surface and apparently vertical drainage is good. There are no wells in the vicinity of the landfill.

The City of Elim is aware of applicable local ordinances, zoning requirements and the Alaska Coastal Zone Management Program requirements of 11 AAC 110.

Table 1: Elim Estimated Waste Generation
(Assumes 5.0 lbs./cap/day)

Design Criteria	Unit of Measure	Phase I	Phase II	Phase III
Year		2000-2010	2010-2020	2020-2030
Population[1]		305	338	375
Waste Generation Rate	Lbs./capita/day	5.0	5.0	5.0
50% Burn Reduction	Ton/yr.	140	154	170
Waste at 250 lbs./cubic yard uncompacted	cy/yr.	1120	1232	1360
Interim Cover @ 15%	cy/yr.	168	185	204
Waste volume per year	cy/yr.	1300	1400	1600
Waste volume per phase	cy.	13000	14000	16000

[1] Source: Elim Sanitation Master Plan (HDR Alaska, Inc. 1998)

Waste Collection System and Description of Proposed Landfill

The City of Elim has recognized that improvements are needed to existing waste management facilities and practices. A landfill with regular operating hours, an incinerator and regular upkeep will keep the expanded landfill operating more clean and efficient.

The new landfill will be located directly to the north of the existing landfill. Residents will continue to self-haul their garbage to the new landfill. During Spring Cleanup week, the City may provide a truck for residents to place their garbage in. Once full, this truck would then drive to the landfill to dump its contents. Residents not connected to the existing sewer system or a septic tank would be required to self-haul their honeybucket waste to the landfill. (*Please refer to the Facility Operations Procedures section for more detail*).

Part Three: Contact Information

✓	#	Requirement:	Regulatory Citation
	1	Fill out form completely and attach it to the cover letter.	18 AAC 60.210(b)(2)

APPLICANT

Name: City of Elim
Contact name: Christine Amaktoolik, City Clerk
Mailing address: P.O. Box 39009
City/State/Zip: Elim, Alaska 99739
Telephone Number: (907) 890-3441
FAX Number: (907) 890-3811
Email Address: cityofelim@yahoo.com

Type of entity
- Individual ☐
- Partnership ☐
- City Council ☐
- Village Council ☐
- Corporation ☐
- Other _____

State of incorporation or registration _____
Alaska business license number _____
IRS tax identification number _____

FACILITY OWNER

Name: City of Elim
Mailing address: P.O Box 39009
City/State/Zip: Elim, Alaska 99739
Telephone Number: (907) 890-3441
FAX Number: (907) 890-3811
Email Address: cityofelim@yahoo.com

Part Three: Contact Information (continued)

LANDOWNER

Name	Elim Native Corporation
Mailing address	P.O. Box 39010
City/State/Zip	Elim, Alaska 99739
Telephone Number	(907) 890-3741
FAX Number	(907) 890-3091
Email Address	

OPERATOR

Name	City of Elim
Mailing address	P.O. Box 39009
City/State/Zip	Elim, Alaska 99739
Telephone Number	(907) 890-3441
FAX Number	(907) 890-3811
Email Address	city of elim @ yahoo.com

AGENT/CONSULTANT

Name	HDR Alaska, Inc
Mailing address	2525 C. Street Suite 305
City/State/Zip	Anchorage, Alaska 99508
Telephone Number	(907) 274-2000
FAX Number	
Email Address	

Class III MSWLF
Solid Waste Permit Application

Alaska Department of
Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part Four: Waste Handling and Processing Information

✓	#	Requirement:	Regulatory Citation
	1	Fill out the form completely and submit as part of the application.	18 AAC 60.210(b)(2) 18 AAC 60.210(b)(3)(B) 18 AAC 60.210(b)(4)

1 Check the type(s) of waste you expect to receive at the site:

- [x] Animal Waste
- [ ] Asbestos (Regulated Asbestos Containing Material - RACM)
- [x] Ash
- [ ] Contaminated Soils/Polluted Soils
- [ ] Fish Waste
- [x] Municipal Solid Waste
- [ ] Non-RACM
- [x] Honey Bucket Waste or Septage
- [x] Woodwaste
- [ ] Inert or C&D Waste

2 Check the type(s) of waste processing done at the landfill before waste is disposed of:

- [ ] Baling/Compacting
- [x] Shredding
- [ ] Salvage/Reuse
- [ ] Freon Removal
- [ ] Backhaul:
  - [ ] Scrap Metal?
  - [ ] Vehicles?
- [x] Burning:
  - [ ] Is Waste Segregated Prior to Burning?
  - [x] Burn Barrel?
  - [ ] Burn Cage?
  - [ ] Burn Box?
- [ ] Incinerator; list model _____
- [ ] Other _____
- [ ] Separation/Segregation
- [ ] Composting
- [ ] Dewatering
- [ ] Junk Vehicles – Fluids Removed?
- [x] Recycling:
  - [x] Aluminum?
  - [x] Batteries?

3 Check the types of waste that are collected or stored on site, but not disposed of in the landfill:

- [x] Scrap metal
- [ ] Household hazardous waste
- [ ] Used oil
- [ ] Batteries
- [x] Junk Vehicles
- [x] Other white goods
- [ ] Other _____

02-001B (Rev. 10/76)

STATE of ALASKA

MEMORANDUM

TO: Dennis Ward
Ecologist
Fairbanks

DATE: 18 Sept. 81

FILE NO: NEW FILE 600.15.01

TELEPHONE NO:

FROM: Clark A. Pearson
NW District Sanitarian
Nome

SUBJECT: Request for Solid Waste Site Planning

On this date Vic Goldsberry, Local Government Assistance Office (443-5457), contacted this office regarding planning assistance for the new Elim Solid Waste Site. The City is receiving Federal money for the construction of a landfill there.

Maybe you could assist the City of Elim with their planning, as I will be out of the area when construction commences (3-4 weeks).

The City Clerk of Elim is Fred Bradley, City of Elim, General Delivery, Elim, Alaska 99739.

cc: Vic Goldsberry, Local Government Assistance, P.O. Box 41, Nome, Ak. 99762

APPENDIX C

DEC Brownfield Assessment Request and Community Concerns

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600.57.002

DEC's Reuse and Redevelopment Program

DEC Brownfields Assessment Request Form – 2010
(Print Version)

recv'd 2/19

Please check the appropriate box for each question at the top of this page, and then answer questions 1–7 by inserting text in the blank area under each question, using as much space as you need. Attach additional sheets if needed.
Forms with questions left blank will be returned to the applicant.
The deadline for receipt of requests is February 19, 2010.

Site Name: City of Elim – Old City Shop

Eligibility Determination—General Questions:

Is the site federally owned?

☐ Yes ☒ No

Has the site or facility received funding for remediation from the Leaking Underground Storage Tank (LUST) Trust Fund?

☐ Yes ☒ No ☐ Unknown

Is the applicant in any way responsible for the potential contamination at the site, or related to those who may be responsible?

DOT and BIA & other contractors

☐ Yes ☒ No

If you answered "yes" to any of the above questions, we recommend that you please call DEC to discuss the specifics of your eligibility determination.

To the best of your knowledge, is the *owner* of the property in question:

☐ Private ☒ City/Public ☐ State ☐ Native Corp ☐ Tribe ☐ Unknown

Known or suspected contaminant(s) (check one):

☐ Hazardous Substances ☐ Petroleum Only ☒ Hazardous Substances and Petroleum

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

☐ Yes ☒ No ☐ Unknown

If yes, please list the project name:

RANKING CRITERIA

1. **Project Summary** - Explain in your own words what you are hoping to obtain through this effort (what would you like to see *in place* of the site for which you are requesting assessment, and how will this project help you achieve your goals for the site?):

clean-up the site for a clean environment. We would like to have a clean looking shop area for our heavy equipment and our mechanic to work in a safe environment.

RECEIVED
MAR 0 1 2010
CONTAMINATED SITES
FAIRBANKS

2. **Applicant/Owner**

a) ***Applicant*** - Who is applying for this service? Provide the name and address of the **organization** applying for the DBA, the name of the contact person, email, telephone, and fax numbers.

City of Elim
P.O. Box 39009
Elim, Alaska 99739
cityofelim@yahoo.com

Christine Amaktodik- City Clerk
or
Edwin Kotongan- Mayor
Phone # 1-907-890-3441
fax # 1-907-890-3811

b) ***Property Owner*** - The owner of the property must allow DEC access to the site. If the applicant is different from the owner, include *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.*)

The shop is under the city and there is no problem with access to the site.

If Applicant is IGAP staff, please provide name and contact of EPA Project Officer:

3. **Project Team** - We request that you form a *project team* (three or more individuals or organizations) to ensure continuity beyond this DBA 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, tribal council members, environmental managers, elders or other community leaders, local non-profit or community development organizations, and other interested parties.)

Resolution from the city of Elim is enclosed

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 any areas of known or suspected contamination (for Question 5). Identify approximate property boundaries.

attached - under 3 acres

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

This site was swampy area and it was a dump site before it became a shop area for Heavy Equipment in the late 1970's. The site was used for a tank farm for storing heating fuel also where people brought their used batteries and waste oil. Also some broken down equipment is sitting at this site. BLM brought some drums with diesel and placed them at this site, also some pumps and generators and scrap metal and pipes plus misc. Through the clean-up we want to see a clean environment shop yard for our heavy equipment. Better work place for the heavy equipment mechanics. Safer spring thaws run-off into the creek without this funding the city has no other source of income that could pay for the project.

5. **Environmental Information**

a) ***Prior Environmental Assessments*** - Please describe any prior site assessment or cleanup activities at the site and briefly state what you know about the findings of that work. Provide an electronic copy of the report if possible, or the summary or conclusion sections of the reports if available. If reports are not available, provide the consultant, client, approximate date of the study, and any other pertinent information.

no assessment or clean-up activities were done at the site

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

the place is getting to contaminated with the old batteries and used oil and old equipment laying around. It is a health hazard to our mechanic and environment.

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

This area is in a bad need of clean-up / This work should start as soon as funding is available and would take a summer season to get it cleaned up.

6. **Community Planning and Reuse**

a) ***Reuse or Redevelopment Plans*** - Does the community have well defined plans for reuse of this site if it were not for the environmental problems? Is this site affecting the use of adjacent properties, subsistence habitat, or other resources? Do reuse plans include the incorporation of greenspace or sustainable, green building practices? If so, please describe.

Once cleaned up it would be used as a shop and an area to store our heavy equipment

b) ***Other Community Plans or Projects*** - It is helpful to know if other state or federal agencies are planning work in your community. List any community *plans* that may exist or are in development, such as: economic development plans, hazard mitigation plans, or erosion studies. 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 farms, new housing, or other facilities.

New housing and barge landing and roads

7. **Public Involvement**

a) ***Public Benefit*** - Briefly discuss how your proposed reuse or redevelopment plans for the property will provide a benefit to the public. Why is this important to your community? (Things to consider: creation of jobs, preservation of historically or culturally significant property, preservation of subsistence habitat, reuse or recycling of materials or infrastructure, cost savings to the community, or increased property values.)

Place to store the loader and the loader is a big help to our subsistence way of life. Our other heavy equipment also come in handy for the projects that are going on.

b) ***Community Support and Resources*** - Is the community strongly *supportive* of this project? Have resolutions been approved by city or tribal councils in support of it? Our assessment often requires local assistance with site visits, lodging, excavation equipment, and local transportation. Describe local *resources* that are available to assist with this project. (It is helpful to include copies of resolutions or community letters of support, as well as cost-sheets for equipment and labor that may be needed.)

The community is strongly supportive of this project

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? Can this DBA be used to leverage other funding or services for the project?

the city has equipment as in Kind service

The selection of a site for a DBA in no way implies that DEC is accepting 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.

Submit Completed Forms by February 19, 2010, to:

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

Or by regular mail:

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

If you have questions, call Sonja Benson at (907) 451-2156, Deborah Williams at (907) 451-5174, or John Carnahan at (907) 451-2166.

CITY OF ELIM
ELIM CITY COUNCIL
P.O.BOX 39009
ELIM, ALASKA 99739
PH: (907)890-3441
FAX: (907)890-3811

CITY OF ELIM

ELIM CITY COUNCIL

RESOLUTION #10-10

A RESOLUTION SUPPORTING THE CITY SHOP CLEAN-UP FROM THE DEC BROWNFIELDS ASSESSMENT:

WHEREAS: The Elim City Council is the governing body of the City of Elim, Alaska and,

WHEREAS: The DEC BROWNFIELDS is willing to develop an assessment to clean-up the city shop area,

WHEREAS: The DEC Reuse and Redevelopment Program will move forward with the clean-up of the city shop area,

NOW THEREFORE BE IT RESOLVED; That the council hereby requests the DEC BROWNFIELDS to move forward with this issue.

Passed and approved by a duly constituted quorum of the City Council for the City of Elim on this 2nd day of February 2010.

VOTE: 6 YEAS 0 NAYS

Edwin Kotongan

Mayor- Edwin Kotongan

Christine Amaktoolik

City Clerk- Christine Amaktoolik

APPENDIX D

Stakeholder Meeting Minutes

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Elim Old City Shop
Stakeholder Scoping and Planning Meeting
Final Meeting Summary
August 23, 2010
Teleconference

Stakeholder Members

Christine Amaktoolik	City of Elim, City Clerk
Sonja Benson	ADEC, Brownfield Project Manager
Fred Daniels	Native Village of Elim, Grant Writer
John Carnahan	ADEC, Brownfield Project Manager
Mary Goolie	USEPA Region 10, Brownfield Project Officer
Lisa Minnear	OASIS Environmental, Project Manager
Leigh Takak	Native Village of Elim, Watershed Project Assistant
Deborah Williams	ADEC, Brownfield Project Manager

INTRODUCTIONS

The meeting began at 11:00 AM as stakeholders introduced themselves.

OBJECTIVES OF ADEC's REUSE AND REDEVELOPMENT (R&R)/BROWNFIELD PROGRAM

Mr. Carnahan described the R&R/Brownfield program and how its objectives relate to the Elim Old City Shop site. The program is focused on revitalizing communities and is possible because of a grant provided by the EPA. The Elim Old City Shop is one of seven funded R&R/Brownfield projects in the state of Alaska. The Alaska Department of Environmental Conservation (ADEC) is grateful for the funding available and appreciates the initiative taken by the community of Elim to apply for it. Mr. Carnahan acknowledged Christine Amaktoolik for submitting the Brownfield application. Mr. Carnahan explained the R&R/Brownfield program is not necessarily a cleanup program, but is designed to revitalize contaminated properties. This project is focused on trying to remedy the environmental concerns that exist at the Old City Shop site to prevent it from becoming an underused property, or Brownfield site. Mr. Carnahan described the Elim Old City shop as an active site and reiterated the community's concerns are related to the impacts of long term use of the site. Mr. Carnahan described the objective of the Property Assessment and Cleanup Plan (PACP) document is to identify the existing site conditions, recognize potential problems, address the environmental concerns, and provide recommendations of how to remedy the problems at the Old City Shop. ADEC expects the community will provide support and assistance whenever possible to facilitate the project.

COMMUNITY INPUT

Ms. Amaktoolik spoke on behalf of the community of Elim, she described the general nature of the project and vision for the community. Ms. Amaktoolik stated that the Old City Shop site is located in a swampy area and was a dump before becoming a heavy equipment shop in the late 1970's. The site consists of former tanks that were used to store heating fuel; a storage area of used batteries and waste

oil; and a storage area for broken down equipment and drums of diesel fuel. The vision for the community of Elim is a safer and cleaner work area for the heavy equipment mechanics. The city depends on the R&R/Brownfield funding to revitalize the site. Ms. Benson inquired if there is a nearby surface water body such as a river, lake, or pond that runoff from the site may be affecting. Ms. Amaktoolik stated that runoff is currently entering a nearby stream; she described the source of city water as being a groundwater well located up-gradient of the site, but salt-water intrusion is sometimes an issue, therefore during periods of high tide, run-off from the Old City Shop site may enter drinking water as backwash. Mr. Daniels stated that he requested sampling from the nearby stream, but the watershed grant he was operating under did not provide enough funding for water samples.

Ms. Benson inquired if in addition to providing a safer and cleaner work environment at the site there were any plans for re-use. Mr. Daniels described his vision for the site which includes creating a better used oil collection area for the community. The current used oil collection system consists of a 500 gallon tank which has been in place for storing used oil since the early 1990's. Mr. Daniels suggested a new used oil recycling area consisting of a cement pad would allow for easier cleanup. Ms. Benson inquired if the hazardous waste backhaul program developed in 2007 for the Seward Peninsula was active in Elim. Ms.Amaktoolik confirmed that the first shipment of batteries and fluorescent light bulb ballasts were removed a few months ago.

Ms. Benson addressed the scope of the project to ensure the group shared the same level of expectations. Mr. Carnahan explained the project funding is not a cleanup grant, therefore the goal is to summarize and document the issues and concerns at the site so that the contractor and DEC may provide recommendations and plan a course of action to rectify the problems. The plan will identify best management practices and outline individual steps that can be accomplished at the site, as well as identify additional funding sources. Mr.Carnahan stated that understanding how the site is currently being used and managed is important for putting together a cleanup plan to remedy the site.

CONTRACTOR SCOPE OF WORK

Ms. Minnear described the scope of work required for developing a PACP for the Old City Shop site. She explained that her work will begin by conducting online research from Fairbanks to collect all available information pertaining to the site, including environmental data, property records, and aerial photographs. Ms. Minnear will conduct a site visit the week of September 27th to fill in site specific data gaps. During the site visit Ms. Minnear will conduct interviews with community members familiar with the Old City Shop, create a video tour and photograph the site, use a GPS to locate the observed environmental concerns, and collect field screening samples at contaminated areas to measure for vapors emitted from contaminated soil. Specific items that Ms. Minnear will pay attention to during the site visit include: locations of petroleum storage tanks, containers and drums, batteries, stained soil, leaking equipment, equipment storage areas, and other solid waste at the Old City Shop. Ms. Minnear will also identify potential locations for remediation of contaminated soil, the potential for contaminant migration to water bodies, and locate the current landfill and dump.

LOCAL SUPPORT

Ms. Amaktoolik confirmed that community members who are knowledgeable of the Old City Shop should be available for interviews and assistance with the site work during the week of September 27th. Ms.Minnear requested the use of a shovel, transportation, and lodging during her stay in Elim. Ms. Amaktoolik and Mr. Daniels stated that the heavy equipment shop would have a shovel available for use. Elim is a small community and most destinations are within walking distance. Additionally, a vehicle is available through the IRA for travel to the landfill site. Rooms are available at the city office for $100/night and may be coordinated through Ms. Amaktoolik. The city offers a small kitchen for preparing food; additionally the school provides breakfast and lunch for a small fee. Ms. Minnear will coordinate with Ms. Amaktoolik regarding additional logistical details and to schedule interviews with community members during her visit to Elim.

CLOSING COMMENTS

Mr. Carnahan closed the meeting by stating the success or failure of these types of projects is dependent on the communication between the community and the contractor. He emphasized that communication is key to understanding a site so a comprehensive report may be developed and subsequent funding can be allocated. Mr. Carnahan concluded by acknowledging the support the community has provided and is encouraged the project will be a success.

The team adjourned the meeting at 11:40 AM Alaska Time.

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APPENDIX E

Field Notes and Records of Conversation

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CONTENTS

PAGE	REFERENCE	DATE

LISA. MINNEAR
14-191

ELIM PACP

9/27/2010
SUNNY 40°F

1600 ARRIVED IN ELIM, FRED DANIELS & LEIGH TAKAK MET ME @ AIRPORT & DROVE ME TO THE CITY ROOM

1630 WENT TO OLD CITY SHOP SITE TO BECOME FAMILIAR W/LOCATION

1640 DROVE TO LANDFILL APPROX 3 MILES OUT OF TOWN
PHOTO 100-0017 LANDFILL - EROSION CONTROL DEBRIS & SOLID WASTE
MOVIE 100-0018 LANDFILL - EROSION CONTROL DEBRIS & SOLID WASTE
MOVIE 100-0019 BURN PIT - F. DANIELS NOTED THAT TRASH IS SOMETIMES BURNED IN THE PIT THOUGH THEY ARE NOT SUPPOSED TO
PHOTO 100-0020 BURN PIT
PHOTO 100-0021 SEWAGE TREATMENT Sludge Disposal (~~SEPTIC FIELD~~) ADJACENT TO LANDFILL
MOVIE 100-0022 ~~SEPTIC FIELD~~ (Sludge Disposal)

1656 DROVE TO WATER SOURCE
PHOTO 100-0023 WELL HOUSE (ABOVE GROUND PIPING
PHOTO 100-0024 Surface Water Source

1700 RETURNED TO CITY ROOM

1 OF 1

Lisa Minnear 9/27/10 the Rain

Lisa Minnear 9/28/10

14-191 Elim PACP Sunny 30°F

0830 Fred Daniels picked me up at the City office and escorted me to ERA cargo pickup location, Isobutylene has not arrived, may be in at 0930

0845 Went to shop site to meet mechanics Ernest Kleith & Steven Zaccheus walked down the site with Fred & the mechanics to discuss areas of concern

0900 Began identifying soil sample locations & taking photos

Image/Movie	Description
100-0029	Abandone tank farm looking N
100-0030	Abandoned tank farms looking E
100-0031	" " looking N
100-0032	" " looking W
100-0033	" " looking W
100-0040	" " looking S
100-0041	" " looking S (pups)
100-0047	Equipment laydown area looking W
100-0048	" " looking E
100-0049	" " looking N
100-0052	" " looking S
100-0053	" Movie

L. Minnear 9/28/10

"Rite in the Rain"

L. Minnear 9/28/10

L. Minnear 9/28/10 2 of 7

LISA MINNEAR Elim PACP 9/28/10

14-191 Sunny 30°F

IMAGE / MOVIE	DESCRIPTION
100-0054	INSIDE SHOP LOOKING S
100-0055	" " LOOKING E
100-0056	" " LOOKING W
100-0057	" " LOOKING N
100-0058	Outside Shop on E side looking S

1100 Mayor Edwin Kotongan arrived on-site discussed use of site and future goals See "Record of Conversation" form

1120 Ross Saccheus arrived on-site Ross is a 40-hr Hazwoper trained operator, he is also the Village Patrol Officer (VPO) & wastewater treatment operator. Ross showed me the equipment available for use. Christine.A has a rental sheet for equipment. See "Record of Conversation" form for conversation with Ross. Ross introduced me to Roy Daniels the Water Plant Operator. Roy expressed concern regarding the location of the Old City Shop in relation to the drinking water source. Water from an underground spring and surface water from the creek which is treated through an infiltration gallery

L. Minnear 9/28/10 3 of 7

"Rain in the Rain"

Serve as the city drinking water source. A 900' above ground transmission line runs from the source to the water treatment plant. From the plant, water is distributed below ground. Salt water intrusion is sometimes a problem.

Ross showed me where the septic tanks are located. Underground sewer lines run from buildings to one septic field located approximately 500' from the ocean.

Ross pumps sludge from the tanks twice a year and disposes of it in the pit located adjacent to the landfill.

1215 Stopped for lunch

Image / Movie	Description
100-0059	Front End Loader 972H
100-0060	" " 950F
~~Dump Tr~~ 100-0061	Dump Truck S1900
100-0062	Septic Pump Truck
100-0063	Excavator EX 200
100-0064	Trailer
100-0065	Trailer
100-0066	Front End Loader 621B
100-0067	

L. Minnear 9/28/10

Lisa Minnear
14-191

Elim PACP

9/28/10
Sunny 30F

Image/Movie	DESCRIPTION
100-0068	Grader 140G
100-0070	Septic field
100-0075	Southyard facing N
100-0076	" "
100-0077	Southyard facing W
100-0078	Southyard facing E
100-0079	Southyard facing S
100-0080	" "
100-0081	Site facing S
100-0082	Site facing E
100-0083	Site facing W

1330 Returned to site to continue taking photos & sample

1430 Walked down site w/ mechanics See "Record of Conversation"

Image	Description
100-0084	HS1 Abandoned Tank Farm Looking E
100-0085	HS2 West Side of Abandoned Tank Farm
100-0086	HS3 Former battery storage area
100-0087	HS4 Staining E side of Equip Layout
100-0088	HS5 Battery Storage Area
100-0089	HS6 Staining Shop Area
100-0090	HS7 Fire Dept

L. Minnear 9/28/10 6 of 7

Lisa Minnear
14-191

Elim PACP

9/28/10
Sunny 30°F

Image	Description
100-0091	HS8 Used Oil Storage Area
100-0092	HS9 Used Oil Storage Area
100-0093	Abandoned Tanks
100-0094	HS10 Inside Shop

1540 Began Soil Collection for Headspace Screening

Location ID	Time	PID	Odor	Description
HS10	1540	47.0	Strong	Stained Fines
HS9	1548	42.8	Strong	Light Brown Fines
HS8	1551	49.9	Strong	Stained Fines
HS7	1552	0.4	None	Light Brown Fines
HS6	1559	44.8	Strong	Light Brown Fines
HS5	1557	48.8	Moderate	Light Brown Fines
HS4	1606	45.7	Strong	Stained Fines
HS3	1609	52.9	None	Light Brown Fine
HS2	1613	6.2	None	Light Brown Fines
HS1	1615	44.8	None	80% Fine 20% Gravel

1700 DEPARTED SITE

L. Minnear 9/28/10 7 of 7

"Kite in the Rain"

Lisa Minnear 14-191 | Elim PACP | 9/29/10 Sunny 35°F

0900 Interviewed Christine Amaktoolik at City Office. See "Record of Conversation" form.

1100 Departed for site to GPS locate headspace sample locations and other site features.

1200 GPS located drinking water source

Description of site

Abandoned Tank Farm: Contains footprint of old tanks, berm exists on North, East, and South sides, West side removed. Contents include tires, conexes, 1 used AST, 2 drums, rusty metal, & misc. tools & equipment

Equipment "Laydown Area": Abandoned equipment includes: 3 pickup trucks, 11 pieces heavy equipment, cluster of 14 drums on East side, 1 tank, and another cluster of 17 drums on east side. Fencing material, tires, shack

Used battery storage area on West side, 5 drums on west side

Shop Building East side of shop contains 5 un-used drums, tires, rusty equipment

Lisa Minnear 9/29/10 Page 1 of 2

Lisa Minnear 14-191 | Elim PACP | 9/29/10 Sunny 35°F

Southyard: Contains 8 pieces of good working heavy equipment. 3 overpacks for battery shipment. Used oil collection area on East side contains 80 drums, 1 used oil collection tank, and 1 above ground storage tank (unused), 2 large vertical ASTs

1500 Met with Rodney Nagaruk the old shop mechanic to discuss history of the site, see "Record of Conversation" form.

1700 Went to landfill and landfarming site with Fred Daniels to GPS locate them.

Lisa Minnear 9/29/10

Lisa Minnear 9/29/10 Page 2 of 2 "Kite in the Rain"

oasis
ENVIRONMENTAL

Record of Conversation / Meeting

Phone call: O Placed by OASIS O Received	**Date:**	**Time:**	
Meeting location: Elim, AK	**Date:** 9/28/10	**Time:** 1430	
OASIS employee: Lisa Minnear	**Project #:** 14-191		
Subject: Elim Old City Shop PACP			
Other party: Ernest Keith & Steven Saccheus (Mechanics)	**Representing:** Old City Shop		
Contact information:			

Notes:

Walked down Old City Shop site with the two shop mechanics currently working at the site. They identified several areas believed to be contaminated from battery storage & used petroleum products. Ernest noted that two backhaul shipments of batteries have gone out. The mechanics identified the abandoned tank farm area, used battery storage area (former) on the East side of the Equipment Laydown area, used oil storage area, and equipment shop as potential contaminated areas. Keith noted they would like to see the batteries, used oil drums, and abandoned equipment removed. The site is currently used as an active shop & used oil / battery storage. They would also like to see an improved used oil disposal area.

Action(s) required:

oasis ENVIRONMENTAL

Record of Conversation / Meeting

Phone call: O Placed by OASIS O Received	**Date:**	**Time:**	
Meeting location: Elim, AK	**Date:** 9/28/10	**Time:** 1120	
OASIS employee: Lisa Minnear	**Project #:** 14-191		
Subject: Elim Old City Shop PACP			
Other party: Ross Saccheus	**Representing:** City of Elim		
Contact information:			

Notes:

Ross Saccheus described and pointed out the heavy equipment available through the city. Christine Amaktoolik can provide rental rates and Hazwoper trained individuals. The following equipment is located at the Old City Shop: Front End Loaders: 972H, 950F, 621B; Dump Truck, Excavator, and 2 trailers. Ross escorted me to meet Roy Daniels, the Water Plant Operator. All parties are concerned with drain off from the Old City Shop Site to the Community drinking water source. Ross then proceeded to show me where the community septic field is located (approx 500' from the ocean). Ross described the two tanks that once sat in the abandoned tank farm area of the site as once containing fuel which was contaminated with saltwater.

Action(s) required:

oasis
ENVIRONMENTAL

Record of Conversation / Meeting

Phone call: O Placed by OASIS O Received		**Date:**	**Time:**
Meeting location: City Office Elim, AK		**Date:** 9/29/10	**Time:** 0900
OASIS employee: Lisa Minnear		**Project #:** 14-191	
Subject: Old City Shop			
Other party: Christine Amakteolik		**Representing:** City of Elim	
Contact information: 907-890-3441			

Notes:

Met with Christine to fill in some data and informational gaps in the PACP report. Christine informed me the City was formed in 1971, but was not aware if or when the Old City Shop site was deeded to the city by DOT. Christine is concerned about the health and safety of the mechanics at the site and would like to see it cleaned up. Currently two shipments of batteries have left the site via the Kawerak Backhaul program. There is a fee associated with the program. Barges that operate out of Elim include: Northland Marine, Alaska Logistics, & Crowley. There is one source of material for gravel fill and one source for rock in Elim. Landfarming has taken place at the landfill and is currently occuring just beyond the landfill. Currently the Old City Shop site is used for battery storage and waste oil disposal, as well as the primary equipment shop. Waste oil is burned at the site. Fuel is no longer distributed from the site. Christine will provide equipment rates and Hazwoper trained individuals. Christine referred me to Rodney for more historical information.

Action(s) required:

oasis ENVIRONMENTAL

Record of Conversation / Meeting

Phone call: O Placed by OASIS O Received	**Date:**	**Time:**	
Meeting location: Elim, AK	**Date:** 9/28/10	**Time:** 11:00 AM	
OASIS employee: LISA MINNEAR	**Project #:** 14-191		
Subject: Elim Old City Shop PACT			
Other party: Mayor Edwin Kotongan	**Representing:** City of Elim		
Contact information:			

Notes:

Mayor Edwin Kotongan described the Kawerak Back-Haul program currently in place to remove batteries from landfill sites. One shipment of batteries has already left the Old City Shop site. Anahma Saito is the contact for the program, she is located in Nome.

The mayor noted he would like to see all batteries, used oil, & unused equipment removed. He would also like to see a more robust recycling program. He is concerned about runoff from the site to the drinking water source, just to the East of the property. The mayor noted that the permit for the Old City Shop landfill should be closed out, the active landfill permit is being renewed. He suggested the landfill as a good spot for potential landfarming

Action(s) required:

oasis ENVIRONMENTAL

Record of Conversation / Meeting

Phone call: O Placed by OASIS O Received		**Date:**	**Time:**
Meeting location: Equipment Shop Elim, Ak		**Date:** 9/29/10	**Time:** 1500
OASIS employee: Lisa Minnear		**Project #:** 14-191	
Subject: Elim Old City Shop PACP			
Other party: Rodney Nagarek		**Representing:** City of Elim Equipment Shop	
Contact information:			

Notes:

Rodney was the mechanic at the shop for approximately 15 years. We began in the South yard area and walked North through the site. He described the history of the materials and tanks stored at the site as he knew it.

South Yard - Two large (approx 10,000 gal) empty fuel tanks were relocated to the shop property for disposal. The empty drums originated from BLM in early 2000's when they were removing equipment from the David Gurkhes Mine. The drums once stored heating fuel, but it was given to the elders as needed. The drums are now empty. Some may contain jet fuel. Water was stored in the green AST. Equipment Laydown Area - Empty drums leftover from the Moses Pt. Cleanup & construction of Moses Pt. road in 1982. The site was once a landfill, but was filled over around 1982. Abandoned Tank Farm - Tanks were removed around 2001, Orange AST was used to collect sludge from sewer. Shop - The outside area on the East side of shop contains a generator leftover from school construction & equipment from the Gurkhes Mine.

~~Action(s) required~~:

Rodney informed me that landfarming activity from the school construction has been in place since the early 2000's just beyond the landfill.

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APPENDIX F

Resources

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The Backhaul Project
c/o Kawerak, Inc.
P.O. Box 948
Nome, Alaska 99762
(907) 443-4249

City of Elim
P.O. Box 29009
Elim, AK 99739

Invoice: 10-0005
Invoice Date: 08/26/10

Date	Inv. Reference	Description	Weight	Rate/lb	Balance
8/9/2010	104536	118# non-PCB ballasts, recycling	118	0.2	$23.60
8/9/2010	2805-2706	118# non-PCB ballasts, transport	118	0.12	$14.16
8/9/2010	2805-2695	3260# Lead-Acid batteries, transport	3260	0.12	$391.20
8/9/2010	2805-2695	Transport fuel surcharge (FSC)			$46.95
8/9/2010	2805-2695	Transport tax			$27.39

Total Owed: $503.30

KAWERAK, INC.

CITY OF ELIM
ELIM, ALASKA 99739
Effective June 27, 2001

Equipment Rental Rates:

Equipment	Hr Rate (Short term) (With fluids w/o fuel	Wet Rate (With Fluids and Fuel)	Wet w/op (With fluids fuel and operator)		
1. Dump Truck	75.00	82.04	107.04	225/day	1,000/week
2. Hitachi ex-200	150.00	157.04	182.04	300/day	1,200/week
3. 950F	150.00	158.44	183.44	300/day	1,200/week
4. 140G	150.00	158.44	183.44	300/day	1,200/week
5. 450JD	75.00	77.81	102.81	225/day	1,000/week
6. 410E B	100.00	104.23	129.23	250/day	1,100/week
7. D4	100.00	104.00	127.00	250/day	1,100/week
8. Flat Bed/Gee-	50.00	175.00/day			
9. Freight Trailer	25.00/day				

Note:

*1. For Daily and Weekly dry rates renters shall be responsible for operator's wages, maintenance, fueling repair, and replacement of parts while equipment is under their control. (CHAPTER 39, SECTION 3)
2. Day rate is based on an 8 hour day, then prorated.
3. Weekly rate is based on a 40 hour week, then prorated.
4. Rates are subject to change at any time.
5. Deposit on estimated rental will be required unless credit has been established.
6. City approved operators only or CLD certified.
7. The City reserves the right to refuse to rent equipment.
8. Must use City Equipment Logs and submit figures daily.

Haz-Wopper Class 2009

1. Joseph R. Nassuk
2. Christine Murray
3. Richard A. Nassuk Jr.
4. Larry Daniels ?
5. Martin Saccheus
6. Bill Baxter
7. Roy Daniels
8. Ross Saccheus Sr.
9. Rodney Nagaruk
10. Morris Nakarak Jr.
11. Robert Bacon
12. Ryan Ivanoff
13. Kerry Nakarak
14. Steven Saccheus
15. Andrew Amaktoolik
16. Joni Saccheus

Hilmer Kiser 362-1022

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APPENDIX G

Elim School Well Log

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2772

MARCH-5-1964

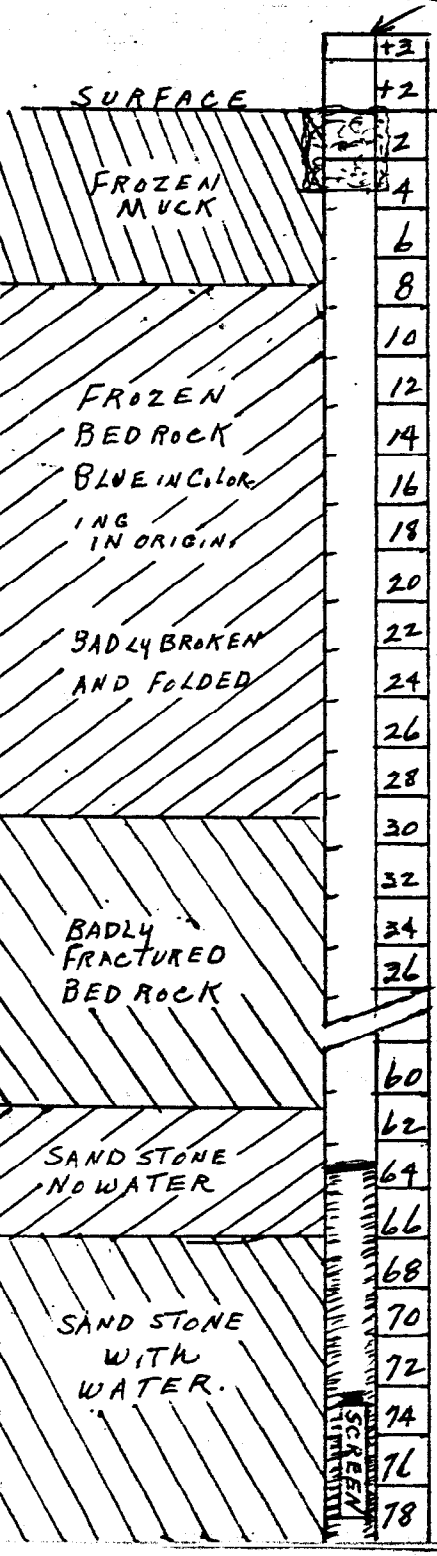
h W. DONELSON
ONST SUPT.
ANCHORAGE, ALASKA.

ELIM WATER WELL P.D.C.

MOB- 1-25-64 TO 2-10-64
DRILLING- 2-10- 2-27-64

DRILLED BY- Roy LONGBOTHAM
& L. SWINDLE

SCALE.
VERT- 1 SQ 2'
HORIZ- 1 SQ 4"



CEMENTED DOWN 3'

THIS WELL SHOULD BE CEMENTED DOWN TO 20 FT AFTER THAW.

STATIC LEVEL 63' 10
SEA LEVEL 65'

TOP SCREEN 72'
BOTTOM CASING 73'
TOTAL CASING 76'
INCL. 3' ABOVE SURFACE.

SCREEN.

1.5 FT 20 SLOT
COOKS STRAINER
SILICON BRONZE

DEVELOPEMENT

20-G.P.M. 3 FT DRAW D.
60,000 GAL NO CHANGE
IN WATER

COLOR- CLEAR
TASTE GOOD
SLIGHT- SALT? TASTE

CHECKED BY

SAM COTTEN
FOREMAN #

KC 10-18-15 CCCA 1-1

9472

BUREAU OF INDIAN AFFAIRS
RECEIVED
MAR 18 1964
BRANCH OF
PLANT DESIGN & CONSTRUCTION

2GW

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER ANALYSIS

Location Bureau of Indian Affairs at Elim, Alaska, on Norton Sound County
Source Depth (ft) Diam (in.)
Cased to (ft) Date drilled Point of coll.
Owner
Treatment Use
WBF WL Yield
Temp (°F) Appear. when coll.
Collected February 1964 By Sam Cotton
Remarks

	ppm	epm		ppm	epm
Silica (SiO_2)	8.0		Bicarbonate (HCO_3)	255	4.18
Aluminum (Al)			Carbonate (CO_3)		
Iron (Fe)	0.05				
Manganese (Mn)	0.03		Sulfate (SO_4)	72	1.50
			Chloride (Cl)	479	13.50
			Fluoride (F)	0.0	0.00
Calcium (Ca)	80	4.00			
Magnesium (Mg)	40	3.30	Nitrate (NO_3)	14	0.22
Sodium (Na)	270	11.74			
Potassium (K)	12	0.31			
Total		19.35	Total		19.40

	ppm		
		Specific conductance (micromhos at 25° C)	2350
Dissolved solids:			
Calculated	1100	pH	7.7
Residue on evaporation at 180° C			
		Color	5
Hardness as $CaCO_3$	146		
Noncarbonate	00		

Lab. No. Col 7935 Field No. Project

PC 10-18-15CCCA1-1

2772

UNITED STATES
DEPARTMENT OF INTERIOR
BUREAU OF INDIAN AFFAIRS

PROJECT NO. BU — SHEET NO. 1 OF 1

ELIM SCHOOL
ELIM ALASKA
SITE PLAN
WELL LOCATION

DRAWING NO. — DATE

BRANCH OF PLANT DESIGN & CONSTRUCTION
ALBUQUERQUE, NEW MEXICO.

N

1500 GAL SEPTIC TANK

GENERATOR BLDG

FO

3000 GAL
GASOLINE TANK

FO

BULK OIL STOR

SCHOOL

NEW 1¼ W

W

2 GR SCHOOL

157'

WELL

¾" IRON PIPE

69'

UTILITY

PUMP

40 X 60'
CONCRETE
PLAY AREA.

35'

NEW & RELOCATED.

KC-18-15 CCCA 1-1

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APPENDIX H

DEC Contaminated Sites Reports

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New Database Search

Printer Friendly Version

Alaska Department of Environmental Conservation

Contaminated Sites Database

Cleanup Chronology Report for Elim Old City Shop

File Number	600.57.002	Hazard ID	25510
SiteName	Elim Old City Shop	Staff	Deborah Williams - 9074515174
Address 1	Old City Shop	Status	Informational
Address 2		Landowner	City of Elim
City/State/Zip	Elim, AK 99739		
Latitude	64.618000	Meridian	Kateel River
Longitude	-162.261000	Range	18
Section	15	Township	10
Institutional Controls Report	No ICs exist for this site.	Location	View site on map

Problem/Comments	The City of Elim submitted a DEC Brownfield Assessment Request Form for 2010 for the Old City Shop in Elim. The site was swampy area and it was a dump site before it became a shop area for heavy equipment in the late 1970's. The site has been used for storing heating oil, batteries, and waste oil. There is a potential for contamination from all of these potential sources. The community would like to clean up this site and construct new housing and a barge landing.

Glossary/Acronyms

Action Date	Action	Description	DEC Staff
04/28/2010	Site Added to Database	A new site has been added to the database	Williams, Deborah
04/28/2010	Brownfield Inventory	The City of Elim submitted a DBA Request for 2011.	Williams, Deborah
07/09/2010	Update or Other Action	DEC received a response from the Alaska State Historic Perservation Office (SHPO) for the assessment work planned for FY2011 that there is "No Historic Properties Affected."	Williams, Deborah

New Database Search

Printer Friendly Version

Alaska Department of Environmental Conservation

Contaminated Sites Database

Cleanup Chronology Report for Elim Old AVEC Tank Farm

File Number	600.57.001	Hazard ID	25432
SiteName	Elim Old AVEC Tank Farm	Staff	Deborah Williams - 9074515174
Address 1	Center of town - Former AVEC Tank Farm	Status	Active
Address 2		Landowner	Elim Native Corporation
City/State/Zip	Elim, AK 99739		
Latitude	64.616070	Meridian	
Longitude	-162.263670	Range	18
Section	16	Township	10
Institutional Controls Report	No ICs exist for this site.	Location	View site on map

Problem/Comments	The Native Village of Elim submitted a 2009 DEC Brownfield Assessment Request for the Former AVEC Tank Farm is Elim. The AVEC tank farm has been relocated, but the tanks still remain in the old tank farm.

Glossary/Acronyms

Action Date	Action	Description	DEC Staff
07/13/2009	Site Added to Database	A new site has been added to the database	Williams, Deborah
07/13/2009	Brownfield Inventory	This site was identified during the 2009 Brownfield Assessment Request period.	Williams, Deborah
08/13/2009	Update or Other Action	DEC received a response from the Alaska State Historic Perservation Office (SHPO) for the assessment work planned for FY2010 that there is "No Historic Properties Affected."	Williams, Deborah
08/14/2009	Brownfield Confirmed	Notice to proceed was awarded to SLR through SPAR term contract. Project managed under Reuse and Redevelopment Program.	Williams, Deborah
09/24/2009	Meeting or Teleconference Held	DEC held a stakeholder meeting for the Old AVEC Tank Farm in Elim. Participants of the meeting included representatives from AVEC, the community of Elim, DEC and SLR (consultants for the project). The purpose of the meeting was to provide the objective for the work planned for the site (Property Assessment and Cleanup Plan) and give the consultant and the community to ask any questions regarding the field visit.	Williams, Deborah
10/06/2009	Site Visit	SLR, consultant for DEC, conducted a site visit for two days to collect information for the property assessment and cleanup plan.	Williams, Deborah
12/31/2009	Update or Other Action	DEC received the draft PACP for the Old AVEC Tank Farm in Elim. No sampling was completed during the site visit so the presence or absence of the contamination was not confirmed. One area of stained soil was noted during the site visit in 2009. The area identified is approximately 3 feet by 4 feet and the depth of the contamination is unknown.	Williams, Deborah

		No other areas of stained soil were observed, however review of aerial photographs indicated that the ASTs have not always been inside a lined and diked containment.	
09/01/2010	Exposure Tracking Model Ranking	Initial ranking with ETM completed for source area id: 78943 name: Former AVEC tank farm	Williams, Deborah

New Database Search

Printer Friendly Version

Alaska Department of Environmental Conservation

Contaminated Sites Database

Cleanup Chronology Report for Elim School

File Number	600.38.001	Hazard ID	3828
SiteName	Elim School	Staff	Bill O'Connell - 9072693057
Address 1	Aniquiin School	Status	Cleanup Complete - Institutional Controls
Address 2		Landowner	
City/State/Zip	Elim, AK 99739		
Latitude	64.616780	Meridian	Fairbanks
Longitude	-162.260760	Range	
Section	15	Township	
Institutional Controls Report		Location	View site on map

Problem/Comments	Diesel-contaminated soil was encountered while preparing the foundation for the new high school in Elim. 3,000 cubic yards of bedrock and soil were removed but up to 12,000 ppm DRO still remained in a small part of the excavation. Further excavation was not possible below 15 feet. Contamination was in fissures in the bedrock. A liner was placed over the soil beneath the new building and secondary air handling under the building was incorporated in the design incase vapors should breach the liner. the contaminated soil was placed on a liner in a gravel pit and awaits remediation.

Glossary/Acronyms

Action Date	Action	Description	DEC Staff
07/15/2001	Site Characterization Report Approved		Conn, Jeff
08/31/2001	Update or Other Action	Letter of State Interest Sent to John Davis of Bering Straits School District.	Conn, Jeff
02/10/2002	Update or Other Action	Letter received from AVEC noting that Denali Commission has approved funding for tank farm upgrade in Elim.	Jaynes, Mike
04/10/2002	Update or Other Action	John Torpy of Bristol Environmental complained about liner being torn on soil stockpile.	Conn, Jeff
04/11/2002	Site Added to Database	Diesel contamination.	Conn, Jeff
	Update or Other	Sent letter to John Davis requiring that liner be placed on stockpile and plan for	

04/12/2002	Action	remediating soil be developed by 6/1/0.2	Conn, Jeff
05/28/2002	Update or Other Action	Letter from Bob Dickens to ADEC received discussing possible plans for TAPL funded remediation of soils during Denali Commission tank farm upgrades.	Jaynes, Mike
06/19/2002	Update or Other Action	Note: complaint letter received about stockpile from school being placed w/o permission on Elim Native Corporation land. Stockpile may be leaching contamination into nearby stream. Apparent location in gravel pit about 5 miles out of town.	Jaynes, Mike
02/05/2004	Update or Other Action	Site may have potential for CIP funds to remediate soil pile. Contacted school principal (Mr. Eide) who will find appropriate school contacts and facts then call me back.	Jaynes, Mike
02/06/2004	Update or Other Action	Elim principal referred me to Rick Reid at BSSD main office. Rick will let me work with Bob Dickens at BSSD on coordinating this. Rick believes the soil pile is about 600 cubic yards. I proposed that we would landspread or use a biocell to remediate soils, then use treated soils as landfill cover. Emailed Rick my contact information.	Jaynes, Mike
02/10/2004	Update or Other Action	Email inquiry sent to Bob Dickens at BSSD to gather information for CIP RFP for this site.	Jaynes, Mike
04/12/2004	Update or Other Action	Call to John Davis, Superintendent Bering Strait School District. Soil is still there, covered and stockpiled. DICKENS, Bob facilities person is the contact, 624-4249. Samples taken when it was stockpiled but nothing since. Contact Eddy Packie of Travis Petterson 455-7225 took samples (Osborne Construction). Spot where the soil is is 3-4 miles out of town towards Mosse's Point on Elim Native Corp. Land, Contact Luther Nagaruk, City Manager 890-3441or Pres. Elim Native Corp. Joe Murray.	Pikul, David
04/13/2004	Update or Other Action	Call Anchorage office Travis Petterson - 522-4337 - Per Kendra (Fairbanks)/ - talked with Jim Durkin in Anchorage and he will check it out and call me back with soil data. Call to Luther - Village went up and spread it out (to 1-2 feet thick) 2 years ago for the school district and covered the soil with clear plastic (twice). D8K, D4, grader, Dump truck in the village with operators. Native corps authorized use of the land to land spread. Need to sample and rework soil. Document location and surrounding setting to ensure no migatory impacts.Call from Edie, Sub to a general contractor during excavation. PID screening 3000-4000 numbers. Sampling done side walls and bottom. DRO 500 to 1900 ppm in general. Most of the excavation rotten rock (Schist). Benzene really lower to non existent across the site. 1/3 of the material was beach gravel. Bottom liner is 10-mil visquene. Material put in a borrow pit of which bottom was bedrock, fairly competent bedrock. Run off would be contained in the pit. Down-gradient is a road and then a bluff on the ocean. 1/4 mile away down the road to the nearest creek. Addressed during redesign - Commercial vapor barrier put down in school crawl space and active ventilation system installed. No evidence of seepage along bluff under the school. HOT spots were very small along preferential flow paths. Fuel in the rock is locked in the rock. Edie estimates 2500 to 3000 cubic yards. Osborne should have most accurate estimate. Go back in aerial photos there were tanks on the school site. The site of the soil spreading is outside of the drainage pattern for the village surface water drinking water system.	Pikul, David
04/15/2004	Update or Other Action	RFP submitted to management.	Pikul, David
04/20/2004	Site Ranked Using the AHRM	Changed the Quantity Value from 2.1 to 4 based on the Problem Statement.	No Longer Assigned,
05/07/2004	Meeting or Teleconference Held	Meeting this day with Michael Foster and Traci Bradford regarding Elim soil land farming. SOW explained and proposal expected mid next week.	Pikul, David
05/18/2004	Update or Other Action	Completed proposal review. Proposal approved dated 5/18/04 for $12K.	Pikul, David
05/18/2004	Update or Other Action	NTP Approval form recieved from contracting, completed and forwarded on to managment for Elim Landfarming & Sampling project	Pikul, David
05/18/2004	Update or Other Action	LC 14130360 established for the site.	Pikul, David
05/20/2004	Update or Other	NTP # 18700022-01 was issued and signed yesterday, May 19th, for the Elim School Landfarming and Sampling project. The contractor is Michael L. Foster & Associates and	Pikul,

	Action	the not-to-exceed amount is $12,037.79 with an end date of 6/30/04.	David
06/28/2004	Update or Other Action	DEC completed review of the report titled: Draft Landfarming and Sampling Activities Report Elim, Alaska dated June 25, 2004. DEC approves the report to go final with inclusion of minor comments.	Pikul, David
07/14/2005	Update or Other Action	Funding request completed and sent for approval.	Pikul, David
01/30/2007	Exposure Tracking Model Ranking	Intitial Ranking Complete for Source Area: 74803 (Autogenerated Action)	
02/02/2007	Conditional Closure Approved	The Department of Environmental Conservation, Contaminated Sites Program, (ADEC) reviewed the environmental records associated with the Elim School. This site had been contaminated by the release of a hazardous substance; however, based on the information provided to date, ADEC has determined that the cleanup efforts were effective in removing the majority of the contamination and the residual contamination remaining does not pose an unacceptable risk to human health or the environment.	O'Connell, Bill
02/02/2007	Institutional Control Record Established	The cleanup actions conducted at the Elim School were effective in removing the majority of impacted soil. There is contamination remaining above established cleanup levels but ADEC determined there is no unacceptable risk to human health or the environment, and this site will be conditionally closed. This decision is subject to the following conditions: 1. A Notice of Residual Contamination will be recorded on the ADEC database to document cleanup efforts to date and the residual contamination remaining on site and at the landfarm area above the most stringent ADEC cleanup levels; 2. Any proposal to transport the contaminated soil off site from either the school or the landfarm requires ADEC approval in accordance with 18 AAC 75.325(i). This determination is in accordance with 18 AAC 75.380(d) and does not preclude ADEC from requiring additional assessment and/or cleanup action if future information indicates that this site may pose an unacceptable risk to human health or the environment. Site closure (without conditions) can be achieved when soil sampling confirms that all soil meets the most stringent ADEC cleanup levels.	O'Connell, Bill
09/05/2008	Exposure Tracking Model Ranking	Updated Ranking Complete for Source Area: 74803 (Autogenerated Action)	

New Database Search

Printer Friendly Version

Alaska Department of Environmental Conservation

Contaminated Sites Database

Institutional Control Details for Elim School

Site Name	Elim School	Staff	O'Connell, Bill
Address	Aniquiin School	Staff Phone	9072693057
	Elim, AK 99739	Staff Email	bill.oconnell@alaska.gov
File Number	600.38.001	Location	View site on map
Site Report			

***Definitions are available for some terms by scrolling over the text.

Section I: Contaminant Information

Name	Level Description	Media	Comments
DRO	> Healthbased Ingestion/Inhalation	Soil	

back to top

Section II: Control Type

Type	Details
CS Database Notation And Letter To Landowner/RP	

back to top

Section III: Requirements

Description	Details
Off-Site Soil & Water Transport Notification	

back to top

Section IV: Miscellaneous Information

Is there a potential future use of the groundwater for drinking purposes?

Yes

Is there a current use of the groundwater for drinking purposes?

No

Is offsite contamination impacting soil on neighboring properties?

No

Is contaminated groundwater impacting offsite properties?

No

back to top

Section V: Site Related Documents

	Document Title
View	Conditional closure letter

back to top

APPENDIX I

Drinking Water Monitoring Results

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Public Water System Summary For

ELIM WATER SUPPLY AK2340345

Public Water System Information

Local Name	City Served	County Served	Active	Primary Source	Facility Count	PWS Type	Service Connections
	ELIM	NOME	A	SW	5	C	83

Sanitary Survey Date: 01/18/2010 **Surveyor:** **Last CCR:** 2009

Comments

Estimated Use by Population Type for

AK2340345 ELIM WATER SUPPLY

Average Daily Count	Population Type	Annual Operating Period Starts	Annual Operating Period Ends	Effective Begin Date	Effective End Date
10	NT	1 / 1	12 / 31	01/01/1997	
294	R	1 / 1	12 / 31	01/01/1997	

Public Water System Facilities for

AK2340345 ELIM WATER SUPPLY

Facility Name	Facility Code	Active	Water Type	Available
DS ELIM WATER SUPPLY	DS001	A	SW	P
IN ELIM CREEK GALLERY	IN001	A	SW	P
ST 210000 GALLON TANK	SF001	A	SW	P
SS ELIM WATER SUPPLY	SS001	A	SW	P
TP FOR ELIM WATER SUPPLY	TP001	A	SW	P

Facility Treatment Information for

AK2340345 ELIM WATER SUPPLY

PWS Facility: TP001

Objective: DISINFECTION

Treatment Process

HYPOCHLORINATION, POST

Objective: OTHER

Treatment Process

FLUORIDATION

Objective: PARTICULATE REMOVAL

Treatment Process

FILTRATION, CARTRIDGE

FILTRATION, PRESSURE SAND

Administrative / Owner Information for

AK2340345 ELIM WATER SUPPLY

Owner Type	Owner Name	Address				Phone Number	Fax Number
OP	DANIELS, ROY	101 Hillside St	ELIM	AK	99739	907-890-3581	907-890-3811
OP	GIFFIN, JERRY	101 Hillside St	ELIM	AK	99739	907-890-3441	907-890-3811
AC	AMAKTOOLIK, CHRISTIN	101 Hillside St	ELIM	AK	99739	907-890-3441	907-890-3811

Last Sample Date by Analyte Group For Compliance for

AK2340345 ELIM WATER SUPPLY

Coliform	Old Inorganics	New Inorganics	Nitrates	Nitrites	Arsenic	VOC	Gross Alpha
09/28/2010	11/21/2002	11/21/2002	12/09/2009	12/29/1999	12/09/2009	12/28/2009	09/12/2007
Lead / Copper	**Asbestos**	**SOC**	**TTHM**	**HAA5**	**TOC**	**DPRE**	
09/08/2008	**NSF	12/30/2005	12/28/2009	12/28/2009	**NSF	**NSF	

Sample Schedule for

AK2340345 ELIM WATER SUPPLY

Facility Number	Analyte Group	Analyte Code	Begin Date	End Date	Sample Type	Sample Frequency	Sample Count
AK2340345	COLIFORM (TCR)	3100	01/01/1991		RT	MN	1
DS001	LEAD & COPPER	PBCU	01/01/2003		RT	3Y	5
DS001	TTHM & HAA5 GROUP	DBP1	01/01/2008		RT	YR	1
TP001	ARSENIC - SINGLE	ARSN	01/01/2002		RT	YR	1
TP001	ASBESTOS - SINGLE	ASBS	01/01/2008		RT	3Y	1
TP001	INORGANIC PHASE 2&5	IN25	01/01/2002		RT	9Y	1
TP001	NITRATE - SINGLE	NIT3	01/01/2002		RT	YR	1
TP001	PESTICIDES PHASE 2&5	SO25	01/01/2013	12/31/2013	RT	QT	1
TP001	PESTICIDES PHASE 2&5	SO25	01/01/2010	12/31/2010	RT	QT	1
TP001	RAD 226/228 COMBINED	RADC	01/01/2008		RT	9Y	1
TP001	RAD-TOTAL GROSS ALPH	RAD3	01/01/2008		RT	6Y	1
TP001	VOC P2/P5 W/ VCL	VC25	01/01/2004		RT	YR	1

Facility Analyte Levels (FANLs) for

AK2340345 ELIM WATER SUPPLY

PWS Facility: DS001

Analyte Name	Summary Type Code	Control Level Type	UOM	Days to Monitor Per Month	Samples Required per Day	Effective Begin Date
TTHM		MAX	0.080 MG/L	0	0	01/01/2004
TOTAL HALOACETIC ACIDS (HAA5)		MAX	0.060 MG/L	0	0	01/01/2004
CHLORINE	MRDL	MAX	4.0 MG/L	0	0	01/01/2004
CHLORINE	DSRD	MIN	.01 MG/L	0	0	06/30/1993

PWS Facility: TP001

Analyte Name	Summary Type Code	Control Level Type	UOM	Days to Monitor Per Month	Samples Required per Day	Effective Begin Date
CHLORINE	EPRD	MIN	.2 MG/L	20	1	06/30/1993
TURBIDITY	MAXT	MAX	5 NTU	20	1	06/30/1993
TURBIDITY	95PT	95P	1.49 NTU	20	1	06/30/1993

Compliance Schedules for

AK2340345 ELIM WATER SUPPLY

Schedule Type	Effective Date	Closed Date	Status
SRVY	7/1/94	12/31/09	

Activities

Name	Due Date	Achieved Date
SANITARY SURVEY	12/31/2013	

Total Coliform Rule Sample Results for

AK2340345 ELIM WATER SUPPLY

Water System Facility	Lab Assigned ID	Sample Location	Sample Type	Comp	Result	Analyte	Count	Count Type	Compliance End Date	Collection Date	Dist Cl (mg / L)
DS001	A1009354-01A	LOOP B RET. FAR END	RT	Y	A	3100				9/28/2010	0.87
DS001	A1009354-01A	LOOP B RET. FAR END	RT	Y	A	3014				9/28/2010	0.87
DS001	A1008152-01A	IRA BLDG. LOOP A	RT	Y	A	3100				8/10/2010	0.76
DS001	A1008152-01A	IRA BLDG. LOOP A	RT	Y	A	3014				8/10/2010	0.76
DS001	A1007104-01A	LOOP B RETURN	RT	Y	A	3100				7/7/2010	0.73
DS001	A1007104-01A	LOOP B RETURN	RT	Y	A	3014				7/7/2010	0.73
DS001	A1006027-01A	LP A FAR END IRA BLD	RT	Y	A	3100				6/1/2010	1.01
DS001	A1006027-01A	LP A FAR END IRA BLD	RT	Y	A	3014				6/1/2010	1.01
DS001	A1005154-01A	GIFFIN RES. LOOP B	RT	Y	A	3100				5/11/2010	0.23
DS001	A1005154-01A	GIFFIN RES. LOOP B	RT	Y	A	3014				5/11/2010	0.23
DS001	A1004293-01A	CITY BLDG.	RT	Y	A	3100				4/20/2010	0.31
DS001	A1004293-01A	CITY BLDG.	RT	Y	A	3014				4/20/2010	0.31
DS001	10:OM387	LOOP B	RT	Y	A	3100				3/3/2010	0.29
DS001	10:OM219	LOOP B FAR END	RT	Y	A	3100				2/2/2010	0.27
DS001	10:OM23	LOOP A CITY BUILDING	RT	Y	A	3100				1/5/2010	0.36
DS001	09:OM2281	LOOP B FAR END	RT	Y	A	3100				12/8/2009	0.23
DS001	09;OM2042	LOOP B	RT	Y	A	3100				11/3/2009	0.26
DS001	09;OM1748	LOOP B FAR END	RT	Y	A	3100				10/5/2009	0.40
DS001	09;OM1560	LOOP B	RT	Y	A	3100				9/8/2009	0.15
DS001	09;OM1515	LOOP A	RT	Y	A	3100				9/1/2009	0.30
DS001	09;OM1340	LOOP B RETURN	RT	Y	A	3100				8/3/2009	0.73
DS001	09;OM1263	END OF 1200 MAIN	SP	N	A	3100				7/21/2009	0.88
DS001	09;OM1261	WEST LOOP	SP	N	A	3100				7/20/2009	1.37
DS001	09;OM1219	END OF NEW 1200	SP	N	A	3100				7/13/2009	0.48
DS001	09;OM1151	LOOP A CITY BLDG	RT	Y	A	3100				7/1/2009	0.60
DS001	09;OM1149	NEW W. LOOP	SP	N	A	3100				7/1/2009	1.26
DS001	OM965	LOOP B RETURN	RT	Y	A	3100				6/1/2009	0.46
DS001	09;OM858	WATER PLANT	RT	Y	A	3100				5/6/2009	0.20
DS001	09;OM642	LOOP B	RT	Y	A	3100				4/6/2009	0.20
DS001	09;OM446	LOOP B	RT	Y	A	3100				3/10/2009	0.22
DS001	09'OM219	GIFFINS HOUSE LOOP B	RT	Y	A	3100				2/2/2009	0.18
DS001	09;OM15	LOOP B	RT	Y	A	3100				1/6/2009	

Old Inorganics Sample Results for

AK2340345 ELIM WATER SUPPLY

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date
IC*F309787	BARIUM	RT	Y	1010	23.00000	UG/L	11/21/2002
IC*F309787	CADMIUM	RT	Y	1015	0.00000	UG/L	11/21/2002
IC*F309787	CHROMIUM	RT	Y	1020	2.70000	UG/L	11/21/2002
IC*F309787	FLUORIDE	RT	Y	1025	0.00000	UG/L	11/21/2002
IC*F309787	MERCURY	RT	Y	1035	0.00000	UG/L	11/21/2002
IC*F309787	SELENIUM	RT	Y	1045	0.00000	UG/L	11/21/2002
F159135	BARIUM	RT	Y	1010	27.00000	UG/L	03/19/1996
F159135	CADMIUM	RT	Y	1015	0.00000		03/19/1996
F159135	CHROMIUM	RT	Y	1020	0.00000		03/19/1996
F159135	FLUORIDE	RT	Y	1025	1630.00000	UG/L	03/19/1996
F159135	MERCURY	RT	Y	1035	0.00000		03/19/1996
F159135	SELENIUM	RT	Y	1045	0.00000		03/19/1996
932273-1	BARIUM	RT	Y	1010	0.00000		05/18/1993
932273-1	CADMIUM	RT	Y	1015	0.00000		05/18/1993
932273-1	CHROMIUM	RT	Y	1020	0.00000		05/18/1993
932273-1	FLUORIDE	RT	Y	1025	0.00000		05/18/1993
932273-1	MERCURY	RT	Y	1035	0.00000		05/18/1993
932273-1	SELENIUM	RT	Y	1045	0.00000		05/18/1993

New Inorganics Sample Results for

AK2340345 ELIM WATER SUPPLY

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date
IC*F309787	CYANIDE	RT	Y	1024	0.00000	UG/L	11/21/2002
IC*F309787	NICKEL	RT	Y	1036	0.00000	UG/L	11/21/2002
IC*F309787	ANTIMONY, TOTAL	RT	Y	1074	0.00000	UG/L	11/21/2002
IC*F309787	BERYLLIUM, TOTAL	RT	Y	1075	0.00000	UG/L	11/21/2002
IC*F309787	THALLIUM, TOTAL	RT	Y	1085	0.00000	UG/L	11/21/2002
F302109	CYANIDE	RT	Y	1024	0.00000		09/18/2001
F302109	NICKEL	RT	Y	1036	0.00000		09/18/2001
F302109	ANTIMONY, TOTAL	RT	Y	1074	0.00000		09/18/2001
F302109	BERYLLIUM, TOTAL	RT	Y	1075	0.00000		09/18/2001
F302109	THALLIUM, TOTAL	RT	Y	1085	1.70000	UG/L	09/18/2001
F201481	CYANIDE	RT	Y	1024	0.00000		12/27/2000
F201481	NICKEL	RT	Y	1036	0.00000		12/27/2000
F201481	ANTIMONY, TOTAL	RT	Y	1074	0.00000		12/27/2000
F201481	BERYLLIUM, TOTAL	RT	Y	1075	0.00000		12/27/2000
F201481	THALLIUM, TOTAL	RT	Y	1085	0.00000		12/27/2000
F188882	CYANIDE	RT	Y	1024	0.00000		12/14/1999
F188882	NICKEL	RT	Y	1036	0.00000		12/14/1999
F188882	ANTIMONY, TOTAL	RT	Y	1074	0.00000		12/14/1999
F188882	BERYLLIUM, TOTAL	RT	Y	1075	0.00000		12/14/1999
F188882	THALLIUM, TOTAL	RT	Y	1085	0.00000		12/14/1999
F159135	CYANIDE	RT	Y	1024	0.00000		03/19/1996
F159135	NICKEL	RT	Y	1036	0.00000		03/19/1996
F159135	ANTIMONY, TOTAL	RT	Y	1074	0.00000		03/19/1996
F159135	BERYLLIUM, TOTAL	RT	Y	1075	0.00000		03/19/1996
F159135	THALLIUM, TOTAL	RT	Y	1085	0.00000		03/19/1996

Nitrate Sample Results for

AK2340345 ELIM WATER SUPPLY

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date
IN*F0912192-02A	NITRATE	RT	Y	1040	0.28600	MG/L	12/09/2009
IN*F0812255-04A	NITRATE	RT	Y	1040	0.00000		12/16/2008
IN*F0712005-04A	NITRATE	RT	Y	1040	0.00000		11/27/2007
IN*F0701034-06A	NITRATE	RT	Y	1040	0.00000		12/31/2006
IN*F0601037-05A	NITRATE	RT	Y	1040	372.00000	UG/L	12/30/2005
IN*F0408202-02A	NITRATE	RT	Y	1040	84.70000	UG/L	08/10/2004
IN*F313811	NITRATE	RT	Y	1040	0.00000	UG/L	07/29/2003
IN*F310162	NITRATE	RT	Y	1040	0.00000	UG/L	12/18/2002
IC*F309787	NITRATE	RT	Y	1040	150.00000	UG/L	11/21/2002

F302109	NITRATE	RT	Y	1040	120.00000	UG/L	09/18/2001
F201481	NITRATE	RT	Y	1040	230.00000	UG/L	12/27/2000
A164780	NITRATE-NITRITE	RT	Y	1038	120.00000	UG/L	12/29/1999
A164780	NITRATE	RT	Y	1040	120.00000	UG/L	12/29/1999
F181702	NITRATE	RT	Y	1040	100.00000	UG/L	12/07/1998
A149380	NITRATE	RT	Y	1040	320.00000	UG/L	04/01/1997
F159135	NITRATE	RT	Y	1040	100.00000	UG/L	03/19/1996
932273-1	NITRATE	RT	Y	1040	960.00000	UG/L	05/18/1993

Nitrite Sample Results for

AK2340345 ELIM WATER SUPPLY

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date
A164780	NITRITE	RT	Y	1041	0.00000		12/29/1999

Arsenic Sample Results for

AK2340345 ELIM WATER SUPPLY

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date
IA*F0912192-01A	ARSENIC	RT	Y	1005	0.21400	UG/L	12/09/2009
IA*F0812255-04B	ARSENIC	RT	Y	1005	0.22500	UG/L	12/16/2008
IA*F0712005-03A	ARSENIC	RT	Y	1005	0.00000		11/27/2007
IA*F0701034-05A	ARSENIC	RT	Y	1005	0.22800	UG/L	12/31/2006
IA*F0601037-04A	ARSENIC	RT	Y	1005	0.45000	UG/L	12/30/2005
IA*F0408202-02B	ARSENIC	RT	Y	1005	0.00000	UG/L	08/10/2004
IA*F310163	ARSENIC	RT	Y	1005	0.00000		12/18/2002
IC*F309787	ARSENIC	RT	Y	1005	0.00000	UG/L	11/21/2002
F159135	ARSENIC	RT	Y	1005	0.00000		03/19/1996
932273-1	ARSENIC	RT	Y	1005	0.00000		05/18/1993

Volatile Organic Compound (VOC) Sample Results for

AK2340345 ELIM WATER SUPPLY

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date
VO*F0912360-01A	1,2,4-TRICHLOROBENZENE	RT	Y	2378	0.00000		12/28/2009
VO*F0912360-01A	CIS-1,2-DICHLOROETHYLENE	RT	Y	2380	0.00000		12/28/2009
VO*F0912360-01A	XYLENES, TOTAL	RT	Y	2955	0.00000		12/28/2009
VO*F0912360-01A	DICHLOROMETHANE	RT	Y	2964	0.00000		12/28/2009
VO*F0912360-01A	O-DICHLOROBENZENE	RT	Y	2968	0.00000		12/28/2009
VO*F0912360-01A	P-DICHLOROBENZENE	RT	Y	2969	0.00000		12/28/2009
VO*F0912360-01A	VINYL CHLORIDE	RT	Y	2976	0.00000		12/28/2009
VO*F0912360-01A	1,1-DICHLOROETHYLENE	RT	Y	2977	0.00000		12/28/2009
VO*F0912360-01A	TRANS-1,2-DICHLOROETHYLENE	RT	Y	2979	0.00000		12/28/2009
VO*F0912360-01A	1,2-DICHLOROETHANE	RT	Y	2980	0.00000		12/28/2009
VO*F0912360-01A	1,1,1-TRICHLOROETHANE	RT	Y	2981	0.00000		12/28/2009
VO*F0912360-01A	CARBON TETRACHLORIDE	RT	Y	2982	0.00000		12/28/2009
VO*F0912360-01A	1,2-DICHLOROPROPANE	RT	Y	2983	0.00000		12/28/2009
VO*F0912360-01A	TRICHLOROETHYLENE	RT	Y	2984	0.00000		12/28/2009
VO*F0912360-01A	1,1,2-TRICHLOROETHANE	RT	Y	2985	0.00000		12/28/2009
VO*F0912360-01A	TETRACHLOROETHYLENE	RT	Y	2987	0.00000		12/28/2009
VO*F0912360-01A	CHLOROBENZENE	RT	Y	2989	0.00000		12/28/2009
VO*F0912360-01A	BENZENE	RT	Y	2990	0.00000		12/28/2009
VO*F0912360-01A	TOLUENE	RT	Y	2991	0.00000		12/28/2009
VO*F0912360-01A	ETHYLBENZENE	RT	Y	2992	0.00000		12/28/2009
VO*F0912360-01A	STYRENE	RT	Y	2996	0.00000		12/28/2009
VO*F0812255-01A	1,2,4-TRICHLOROBENZENE	RT	Y	2378	0.00000		12/16/2008
VO*F0812255-01A	CIS-1,2-DICHLOROETHYLENE	RT	Y	2380	0.00000		12/16/2008
VO*F0812255-01A	XYLENES, TOTAL	RT	Y	2955	0.00000		12/16/2008
VO*F0812255-01A	DICHLOROMETHANE	RT	Y	2964	0.00000		12/16/2008
VO*F0812255-01A	O-DICHLOROBENZENE	RT	Y	2968	0.00000		12/16/2008
VO*F0812255-01A	P-DICHLOROBENZENE	RT	Y	2969	0.00000		12/16/2008
VO*F0812255-01A	VINYL CHLORIDE	RT	Y	2976	0.00000		12/16/2008
VO*F0812255-01A	1,1-DICHLOROETHYLENE	RT	Y	2977	0.00000		12/16/2008
VO*F0812255-01A	TRANS-1,2-DICHLOROETHYLENE	RT	Y	2979	0.00000		12/16/2008
VO*F0812255-01A	1,2-DICHLOROETHANE	RT	Y	2980	0.00000		12/16/2008
VO*F0812255-01A	1,1,1-TRICHLOROETHANE	RT	Y	2981	0.00000		12/16/2008

VO*F0812255-01A	CARBON TETRACHLORIDE	RT	Y	2982	0.00000		12/16/2008
VO*F0812255-01A	1,2-DICHLOROPROPANE	RT	Y	2983	0.00000		12/16/2008
VO*F0812255-01A	TRICHLOROETHYLENE	RT	Y	2984	0.00000		12/16/2008
VO*F0812255-01A	1,1,2-TRICHLOROETHANE	RT	Y	2985	0.00000		12/16/2008
VO*F0812255-01A	TETRACHLOROETHYLENE	RT	Y	2987	0.00000		12/16/2008
VO*F0812255-01A	CHLOROBENZENE	RT	Y	2989	0.00000		12/16/2008
VO*F0812255-01A	BENZENE	RT	Y	2990	0.00000		12/16/2008
VO*F0812255-01A	TOLUENE	RT	Y	2991	0.00000		12/16/2008
VO*F0812255-01A	ETHYLBENZENE	RT	Y	2992	0.00000		12/16/2008
VO*F0812255-01A	STYRENE	RT	Y	2996	0.00000		12/16/2008
VO*F0712005-05A	1,2,4-TRICHLOROBENZENE	RT	Y	2378	0.00000		11/27/2007
VO*F0712005-05A	CIS-1,2-DICHLOROETHYLENE	RT	Y	2380	0.00000		11/27/2007
VO*F0712005-05A	XYLENES, TOTAL	RT	Y	2955	0.00000		11/27/2007
VO*F0712005-05A	DICHLOROMETHANE	RT	Y	2964	0.00000		11/27/2007
VO*F0712005-05A	O-DICHLOROBENZENE	RT	Y	2968	0.00000		11/27/2007
VO*F0712005-05A	P-DICHLOROBENZENE	RT	Y	2969	0.00000		11/27/2007
VO*F0712005-05A	VINYL CHLORIDE	RT	Y	2976	0.00000		11/27/2007
VO*F0712005-05A	1,1-DICHLOROETHYLENE	RT	Y	2977	0.00000		11/27/2007
VO*F0712005-05A	TRANS-1,2-DICHLOROETHYLENE	RT	Y	2979	0.00000		11/27/2007
VO*F0712005-05A	1,2-DICHLOROETHANE	RT	Y	2980	0.00000		11/27/2007
VO*F0712005-05A	1,1,1-TRICHLOROETHANE	RT	Y	2981	0.00000		11/27/2007
VO*F0712005-05A	CARBON TETRACHLORIDE	RT	Y	2982	0.00000		11/27/2007
VO*F0712005-05A	1,2-DICHLOROPROPANE	RT	Y	2983	0.00000		11/27/2007
VO*F0712005-05A	TRICHLOROETHYLENE	RT	Y	2984	0.00000		11/27/2007
VO*F0712005-05A	1,1,2-TRICHLOROETHANE	RT	Y	2985	0.00000		11/27/2007
VO*F0712005-05A	TETRACHLOROETHYLENE	RT	Y	2987	0.00000		11/27/2007
VO*F0712005-05A	CHLOROBENZENE	RT	Y	2989	0.00000		11/27/2007
VO*F0712005-05A	BENZENE	RT	Y	2990	0.00000		11/27/2007
VO*F0712005-05A	TOLUENE	RT	Y	2991	0.00000		11/27/2007
VO*F0712005-05A	ETHYLBENZENE	RT	Y	2992	0.00000		11/27/2007
VO*F0712005-05A	STYRENE	RT	Y	2996	0.00000		11/27/2007
VO*F0701034-01A	1,2,4-TRICHLOROBENZENE	RT	Y	2378	0.00000		12/31/2006
VO*F0701034-01A	CIS-1,2-DICHLOROETHYLENE	RT	Y	2380	0.00000		12/31/2006
VO*F0701034-01A	XYLENES, TOTAL	RT	Y	2955	0.00000		12/31/2006
VO*F0701034-01A	DICHLOROMETHANE	RT	Y	2964	0.00000		12/31/2006
VO*F0701034-01A	O-DICHLOROBENZENE	RT	Y	2968	0.00000		12/31/2006
VO*F0701034-01A	P-DICHLOROBENZENE	RT	Y	2969	0.00000		12/31/2006
VO*F0701034-01A	VINYL CHLORIDE	RT	Y	2976	0.00000		12/31/2006
VO*F0701034-01A	1,1-DICHLOROETHYLENE	RT	Y	2977	0.00000		12/31/2006
VO*F0701034-01A	TRANS-1,2-DICHLOROETHYLENE	RT	Y	2979	0.00000		12/31/2006
VO*F0701034-01A	1,2-DICHLOROETHANE	RT	Y	2980	0.00000		12/31/2006
VO*F0701034-01A	1,1,1-TRICHLOROETHANE	RT	Y	2981	0.00000		12/31/2006
VO*F0701034-01A	CARBON TETRACHLORIDE	RT	Y	2982	0.00000		12/31/2006
VO*F0701034-01A	1,2-DICHLOROPROPANE	RT	Y	2983	0.00000		12/31/2006
VO*F0701034-01A	TRICHLOROETHYLENE	RT	Y	2984	0.00000		12/31/2006
VO*F0701034-01A	1,1,2-TRICHLOROETHANE	RT	Y	2985	0.00000		12/31/2006
VO*F0701034-01A	TETRACHLOROETHYLENE	RT	Y	2987	0.00000		12/31/2006
VO*F0701034-01A	CHLOROBENZENE	RT	Y	2989	0.00000		12/31/2006
VO*F0701034-01A	BENZENE	RT	Y	2990	0.00000		12/31/2006
VO*F0701034-01A	TOLUENE	RT	Y	2991	0.00000		12/31/2006
VO*F0701034-01A	ETHYLBENZENE	RT	Y	2992	0.00000		12/31/2006
VO*F0701034-01A	STYRENE	RT	Y	2996	0.00000		12/31/2006
VO*F0601037-01A	1,2,4-TRICHLOROBENZENE	RT	Y	2378	0.00000		12/30/2005
VO*F0601037-01A	CIS-1,2-DICHLOROETHYLENE	RT	Y	2380	0.00000	UG/L	12/30/2005
VO*F0601037-01A	XYLENES, TOTAL	RT	Y	2955	0.00000		12/30/2005
VO*F0601037-01A	DICHLOROMETHANE	RT	Y	2964	0.00000		12/30/2005
VO*F0601037-01A	O-DICHLOROBENZENE	RT	Y	2968	0.00000	UG/L	12/30/2005
VO*F0601037-01A	P-DICHLOROBENZENE	RT	Y	2969	0.00000	UG/L	12/30/2005
VO*F0601037-01A	VINYL CHLORIDE	RT	Y	2976	0.00000	UG/L	12/30/2005
VO*F0601037-01A	1,1-DICHLOROETHYLENE	RT	Y	2977	0.00000		12/30/2005
VO*F0601037-01A	TRANS-1,2-DICHLOROETHYLENE	RT	Y	2979	0.00000	UG/L	12/30/2005
VO*F0601037-01A	1,2-DICHLOROETHANE	RT	Y	2980	0.00000	UG/L	12/30/2005
VO*F0601037-01A	1,1,1-TRICHLOROETHANE	RT	Y	2981	0.00000	UG/L	12/30/2005
VO*F0601037-01A	CARBON TETRACHLORIDE	RT	Y	2982	0.00000	UG/L	12/30/2005
VO*F0601037-01A	1,2-DICHLOROPROPANE	RT	Y	2983	0.00000	UG/L	12/30/2005

VO*F0601037-01A	TRICHLOROETHYLENE	RT	Y	2984	0.00000	UG/L	12/30/2005
VO*F0601037-01A	1,1,2-TRICHLOROETHANE	RT	Y	2985	0.00000		12/30/2005
VO*F0601037-01A	TETRACHLOROETHYLENE	RT	Y	2987	0.00000	UG/L	12/30/2005
VO*F0601037-01A	CHLOROBENZENE	RT	Y	2989	0.00000	UG/L	12/30/2005
VO*F0601037-01A	BENZENE	RT	Y	2990	0.00000	UG/L	12/30/2005
VO*F0601037-01A	TOLUENE	RT	Y	2991	0.00000	UG/L	12/30/2005
VO*F0601037-01A	ETHYLBENZENE	RT	Y	2992	0.00000	UG/L	12/30/2005
VO*F0601037-01A	STYRENE	RT	Y	2996	0.00000	UG/L	12/30/2005
VO*F0412177-02A	1,2,4-TRICHLOROBENZENE	RT	Y	2378	0.00000	UG/L	12/13/2004
VO*F0412177-02A	CIS-1,2-DICHLOROETHYLENE	RT	Y	2380	0.00000	UG/L	12/13/2004
VO*F0412177-02A	XYLENES, TOTAL	RT	Y	2955	0.00000		12/13/2004
VO*F0412177-02A	DICHLOROMETHANE	RT	Y	2964	0.00000	UG/L	12/13/2004
VO*F0412177-02A	O-DICHLOROBENZENE	RT	Y	2968	0.00000	UG/L	12/13/2004
VO*F0412177-02A	P-DICHLOROBENZENE	RT	Y	2969	0.00000	UG/L	12/13/2004
VO*F0412177-02A	VINYL CHLORIDE	RT	Y	2976	0.00000	UG/L	12/13/2004
VO*F0412177-02A	1,1-DICHLOROETHYLENE	RT	Y	2977	0.00000	UG/L	12/13/2004
VO*F0412177-02A	TRANS-1,2-DICHLOROETHYLENE	RT	Y	2979	0.00000	UG/L	12/13/2004
VO*F0412177-02A	1,2-DICHLOROETHANE	RT	Y	2980	0.00000	UG/L	12/13/2004
VO*F0412177-02A	1,1,1-TRICHLOROETHANE	RT	Y	2981	0.00000	UG/L	12/13/2004
VO*F0412177-02A	CARBON TETRACHLORIDE	RT	Y	2982	0.00000	UG/L	12/13/2004
VO*F0412177-02A	1,2-DICHLOROPROPANE	RT	Y	2983	0.00000	UG/L	12/13/2004
VO*F0412177-02A	TRICHLOROETHYLENE	RT	Y	2984	0.00000	UG/L	12/13/2004
VO*F0412177-02A	1,1,2-TRICHLOROETHANE	RT	Y	2985	0.00000	UG/L	12/13/2004
VO*F0412177-02A	TETRACHLOROETHYLENE	RT	Y	2987	0.00000	UG/L	12/13/2004
VO*F0412177-02A	CHLOROBENZENE	RT	Y	2989	0.00000	UG/L	12/13/2004
VO*F0412177-02A	BENZENE	RT	Y	2990	0.00000	UG/L	12/13/2004
VO*F0412177-02A	TOLUENE	RT	Y	2991	0.00000	UG/L	12/13/2004
VO*F0412177-02A	ETHYLBENZENE	RT	Y	2992	0.00000	UG/L	12/13/2004
VO*F0412177-02A	STYRENE	RT	Y	2996	0.00000	UG/L	12/13/2004
VO*A309154	1,2,4-TRICHLOROBENZENE	RT	Y	2378	0.00000	UG/L	08/14/2003
VO*A309154	CIS-1,2-DICHLOROETHYLENE	RT	Y	2380	0.00000	UG/L	08/14/2003
VO*A309154	XYLENES, TOTAL	RT	Y	2955	0.00000	UG/L	08/14/2003
VO*A309154	DICHLOROMETHANE	RT	Y	2964	0.00000	UG/L	08/14/2003
VO*A309154	O-DICHLOROBENZENE	RT	Y	2968	0.00000	UG/L	08/14/2003
VO*A309154	P-DICHLOROBENZENE	RT	Y	2969	0.00000	UG/L	08/14/2003
VO*A309154	VINYL CHLORIDE	RT	Y	2976	0.00000	UG/L	08/14/2003
VO*A309154	1,1-DICHLOROETHYLENE	RT	Y	2977	0.00000	UG/L	08/14/2003
VO*A309154	TRANS-1,2-DICHLOROETHYLENE	RT	Y	2979	0.00000	UG/L	08/14/2003
VO*A309154	1,2-DICHLOROETHANE	RT	Y	2980	0.00000	UG/L	08/14/2003
VO*A309154	1,1,1-TRICHLOROETHANE	RT	Y	2981	0.00000	UG/L	08/14/2003
VO*A309154	CARBON TETRACHLORIDE	RT	Y	2982	0.00000	UG/L	08/14/2003
VO*A309154	1,2-DICHLOROPROPANE	RT	Y	2983	0.00000	UG/L	08/14/2003
VO*A309154	TRICHLOROETHYLENE	RT	Y	2984	0.00000	UG/L	08/14/2003
VO*A309154	1,1,2-TRICHLOROETHANE	RT	Y	2985	0.00000	UG/L	08/14/2003
VO*A309154	TETRACHLOROETHYLENE	RT	Y	2987	0.00000	UG/L	08/14/2003
VO*A309154	CHLOROBENZENE	RT	Y	2989	0.00000	UG/L	08/14/2003
VO*A309154	BENZENE	RT	Y	2990	0.00000	UG/L	08/14/2003
VO*A309154	TOLUENE	RT	Y	2991	0.00000	UG/L	08/14/2003
VO*A309154	ETHYLBENZENE	RT	Y	2992	0.00000	UG/L	08/14/2003
VO*A309154	STYRENE	RT	Y	2996	0.00000	UG/L	08/14/2003
VO*A305196	1,2,4-TRICHLOROBENZENE	RT	Y	2378	0.00000	UG/L	12/18/2002
VO*A305196	CIS-1,2-DICHLOROETHYLENE	RT	Y	2380	0.00000	UG/L	12/18/2002
VO*A305196	XYLENES, TOTAL	RT	Y	2955	0.00000	UG/L	12/18/2002
VO*A305196	DICHLOROMETHANE	RT	Y	2964	0.00000	UG/L	12/18/2002
VO*A305196	O-DICHLOROBENZENE	RT	Y	2968	0.00000	UG/L	12/18/2002
VO*A305196	P-DICHLOROBENZENE	RT	Y	2969	0.00000	UG/L	12/18/2002
VO*A305196	VINYL CHLORIDE	RT	Y	2976	0.00000		12/18/2002
VO*A305196	1,1-DICHLOROETHYLENE	RT	Y	2977	0.00000	UG/L	12/18/2002
VO*A305196	TRANS-1,2-DICHLOROETHYLENE	RT	Y	2979	0.00000	UG/L	12/18/2002
VO*A305196	1,2-DICHLOROETHANE	RT	Y	2980	0.00000	UG/L	12/18/2002
VO*A305196	1,1,1-TRICHLOROETHANE	RT	Y	2981	0.00000	UG/L	12/18/2002
VO*A305196	CARBON TETRACHLORIDE	RT	Y	2982	0.00000	UG/L	12/18/2002
VO*A305196	1,2-DICHLOROPROPANE	RT	Y	2983	0.00000	UG/L	12/18/2002
VO*A305196	TRICHLOROETHYLENE	RT	Y	2984	0.00000	UG/L	12/18/2002
VO*A305196	1,1,2-TRICHLOROETHANE	RT	Y	2985	0.00000	UG/L	12/18/2002

VO*A305196	TETRACHLOROETHYLENE	RT	Y	2987	0.00000	UG/L	12/18/2002
VO*A305196	CHLOROBENZENE	RT	Y	2989	0.00000	UG/L	12/18/2002
VO*A305196	BENZENE	RT	Y	2990	0.00000	UG/L	12/18/2002
VO*A305196	TOLUENE	RT	Y	2991	0.00000	UG/L	12/18/2002
VO*A305196	ETHYLBENZENE	RT	Y	2992	0.00000	UG/L	12/18/2002
VO*A305196	STYRENE	RT	Y	2996	0.00000	UG/L	12/18/2002
A175244	1,2,4-TRICHLOROBENZENE	RT	Y	2378	0.00000		09/18/2001
A175244	CIS-1,2-DICHLOROETHYLENE	RT	Y	2380	0.00000		09/18/2001
A175244	XYLENES, TOTAL	RT	Y	2955	0.00000		09/18/2001
A175244	DICHLOROMETHANE	RT	Y	2964	0.00000		09/18/2001
A175244	O-DICHLOROBENZENE	RT	Y	2968	0.00000		09/18/2001
A175244	P-DICHLOROBENZENE	RT	Y	2969	0.00000		09/18/2001
A175244	VINYL CHLORIDE	RT	Y	2976	0.00000		09/18/2001
A175244	1,1-DICHLOROETHYLENE	RT	Y	2977	0.00000		09/18/2001
A175244	TRANS-1,2-DICHLOROETHYLENE	RT	Y	2979	0.00000		09/18/2001
A175244	1,2-DICHLOROETHANE	RT	Y	2980	0.00000		09/18/2001
A175244	1,1,1-TRICHLOROETHANE	RT	Y	2981	0.00000		09/18/2001
A175244	CARBON TETRACHLORIDE	RT	Y	2982	0.00000		09/18/2001
A175244	1,2-DICHLOROPROPANE	RT	Y	2983	0.00000		09/18/2001
A175244	TRICHLOROETHYLENE	RT	Y	2984	0.00000		09/18/2001
A175244	1,1,2-TRICHLOROETHANE	RT	Y	2985	0.00000		09/18/2001
A175244	TETRACHLOROETHYLENE	RT	Y	2987	0.00000		09/18/2001
A175244	CHLOROBENZENE	RT	Y	2989	0.00000		09/18/2001
A175244	BENZENE	RT	Y	2990	0.00000		09/18/2001
A175244	TOLUENE	RT	Y	2991	0.21000	UG/L	09/18/2001
A175244	ETHYLBENZENE	RT	Y	2992	0.00000		09/18/2001
A175244	STYRENE	RT	Y	2996	0.00000		09/18/2001
A170318	1,2,4-TRICHLOROBENZENE	RT	Y	2378	0.00000		12/27/2000
A170318	CIS-1,2-DICHLOROETHYLENE	RT	Y	2380	0.00000		12/27/2000
A170318	XYLENES, TOTAL	RT	Y	2955	0.00000		12/27/2000
A170318	DICHLOROMETHANE	RT	Y	2964	0.00000		12/27/2000
A170318	O-DICHLOROBENZENE	RT	Y	2968	0.00000		12/27/2000
A170318	P-DICHLOROBENZENE	RT	Y	2969	0.00000		12/27/2000
A170318	VINYL CHLORIDE	RT	Y	2976	0.00000		12/27/2000
A170318	1,1-DICHLOROETHYLENE	RT	Y	2977	0.00000		12/27/2000
A170318	TRANS-1,2-DICHLOROETHYLENE	RT	Y	2979	0.00000		12/27/2000
A170318	1,2-DICHLOROETHANE	RT	Y	2980	0.00000		12/27/2000
A170318	1,1,1-TRICHLOROETHANE	RT	Y	2981	0.00000		12/27/2000
A170318	CARBON TETRACHLORIDE	RT	Y	2982	0.00000		12/27/2000
A170318	1,2-DICHLOROPROPANE	RT	Y	2983	0.00000		12/27/2000
A170318	TRICHLOROETHYLENE	RT	Y	2984	0.00000		12/27/2000
A170318	1,1,2-TRICHLOROETHANE	RT	Y	2985	0.00000		12/27/2000
A170318	TETRACHLOROETHYLENE	RT	Y	2987	0.00000		12/27/2000
A170318	CHLOROBENZENE	RT	Y	2989	0.00000		12/27/2000
A170318	BENZENE	RT	Y	2990	0.00000		12/27/2000
A170318	TOLUENE	RT	Y	2991	0.00000		12/27/2000
A170318	ETHYLBENZENE	RT	Y	2992	0.00000		12/27/2000
A170318	STYRENE	RT	Y	2996	0.00000		12/27/2000
A165002	1,2,4-TRICHLOROBENZENE	RT	Y	2378	0.00000		12/14/1999
A165002	CIS-1,2-DICHLOROETHYLENE	RT	Y	2380	0.00000		12/14/1999
A165002	XYLENES, TOTAL	RT	Y	2955	0.00000		12/14/1999
A165002	DICHLOROMETHANE	RT	Y	2964	0.00000		12/14/1999
A165002	O-DICHLOROBENZENE	RT	Y	2968	0.00000		12/14/1999
A165002	P-DICHLOROBENZENE	RT	Y	2969	0.00000		12/14/1999
A165002	VINYL CHLORIDE	RT	Y	2976	0.00000		12/14/1999
A165002	1,1-DICHLOROETHYLENE	RT	Y	2977	0.00000		12/14/1999
A165002	TRANS-1,2-DICHLOROETHYLENE	RT	Y	2979	0.00000		12/14/1999
A165002	1,2-DICHLOROETHANE	RT	Y	2980	0.00000		12/14/1999
A165002	1,1,1-TRICHLOROETHANE	RT	Y	2981	0.00000		12/14/1999
A165002	CARBON TETRACHLORIDE	RT	Y	2982	0.00000		12/14/1999
A165002	1,2-DICHLOROPROPANE	RT	Y	2983	0.00000		12/14/1999
A165002	TRICHLOROETHYLENE	RT	Y	2984	0.00000		12/14/1999
A165002	1,1,2-TRICHLOROETHANE	RT	Y	2985	0.00000		12/14/1999
A165002	TETRACHLOROETHYLENE	RT	Y	2987	0.00000		12/14/1999
A165002	CHLOROBENZENE	RT	Y	2989	0.00000		12/14/1999

A165002	BENZENE	RT	Y	2990	0.00000	12/14/1999
A165002	TOLUENE	RT	Y	2991	0.00000	12/14/1999
A165002	ETHYLBENZENE	RT	Y	2992	0.00000	12/14/1999
A165002	STYRENE	RT	Y	2996	0.00000	12/14/1999
A149380	1,2,4-TRICHLOROBENZENE	RT	Y	2378	0.00000	04/01/1997
A149380	CIS-1,2-DICHLOROETHYLENE	RT	Y	2380	0.00000	04/01/1997
A149380	XYLENES, TOTAL	RT	Y	2955	0.00000	04/01/1997
A149380	DICHLOROMETHANE	RT	Y	2964	0.00000	04/01/1997
A149380	O-DICHLOROBENZENE	RT	Y	2968	0.00000	04/01/1997
A149380	P-DICHLOROBENZENE	RT	Y	2969	0.00000	04/01/1997
A149380	VINYL CHLORIDE	RT	Y	2976	0.00000	04/01/1997
A149380	1,1-DICHLOROETHYLENE	RT	Y	2977	0.00000	04/01/1997
A149380	TRANS-1,2-DICHLOROETHYLENE	RT	Y	2979	0.00000	04/01/1997
A149380	1,2-DICHLOROETHANE	RT	Y	2980	0.00000	04/01/1997
A149380	1,1,1-TRICHLOROETHANE	RT	Y	2981	0.00000	04/01/1997
A149380	CARBON TETRACHLORIDE	RT	Y	2982	0.00000	04/01/1997
A149380	1,2-DICHLOROPROPANE	RT	Y	2983	0.00000	04/01/1997
A149380	TRICHLOROETHYLENE	RT	Y	2984	0.00000	04/01/1997
A149380	1,1,2-TRICHLOROETHANE	RT	Y	2985	0.00000	04/01/1997
A149380	TETRACHLOROETHYLENE	RT	Y	2987	0.00000	04/01/1997
A149380	CHLOROBENZENE	RT	Y	2989	0.00000	04/01/1997
A149380	BENZENE	RT	Y	2990	0.00000	04/01/1997
A149380	TOLUENE	RT	Y	2991	0.00000	04/01/1997
A149380	ETHYLBENZENE	RT	Y	2992	0.00000	04/01/1997
A149380	STYRENE	RT	Y	2996	0.00000	04/01/1997
A144117	1,2,4-TRICHLOROBENZENE	RT	Y	2378	0.00000	04/16/1996
A144117	CIS-1,2-DICHLOROETHYLENE	RT	Y	2380	0.00000	04/16/1996
A144117	XYLENES, TOTAL	RT	Y	2955	0.00000	04/16/1996
A144117	DICHLOROMETHANE	RT	Y	2964	0.00000	04/16/1996
A144117	O-DICHLOROBENZENE	RT	Y	2968	0.00000	04/16/1996
A144117	P-DICHLOROBENZENE	RT	Y	2969	0.00000	04/16/1996
A144117	VINYL CHLORIDE	RT	Y	2976	0.00000	04/16/1996
A144117	1,1-DICHLOROETHYLENE	RT	Y	2977	0.00000	04/16/1996
A144117	TRANS-1,2-DICHLOROETHYLENE	RT	Y	2979	0.00000	04/16/1996
A144117	1,2-DICHLOROETHANE	RT	Y	2980	0.00000	04/16/1996
A144117	1,1,1-TRICHLOROETHANE	RT	Y	2981	0.00000	04/16/1996
A144117	CARBON TETRACHLORIDE	RT	Y	2982	0.00000	04/16/1996
A144117	1,2-DICHLOROPROPANE	RT	Y	2983	0.00000	04/16/1996
A144117	TRICHLOROETHYLENE	RT	Y	2984	0.00000	04/16/1996
A144117	1,1,2-TRICHLOROETHANE	RT	Y	2985	0.00000	04/16/1996
A144117	TETRACHLOROETHYLENE	RT	Y	2987	0.00000	04/16/1996
A144117	CHLOROBENZENE	RT	Y	2989	0.00000	04/16/1996
A144117	BENZENE	RT	Y	2990	0.00000	04/16/1996
A144117	TOLUENE	RT	Y	2991	0.00000	04/16/1996
A144117	ETHYLBENZENE	RT	Y	2992	0.00000	04/16/1996
A144117	STYRENE	RT	Y	2996	0.00000	04/16/1996

Gross Alpha Sample Results for

AK2340345 ELIM WATER SUPPLY

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date
GA*L65132-01	GROSS ALPHA, EXCL. RADON & U	RT	Y	4000	3.30000	PCI/L	09/12/2007
GA*L65132-01	GROSS ALPHA, INCL. RADON & U	RT	Y	4002	3.30000	PCI/L	09/12/2007
GA*L65132-01	COMBINED URANIUM	RT	Y	4006	0.60000	PCI/L	09/12/2007
GA*L65132-01	RADIUM-226	RT	Y	4020	0.04000	PCI/L	09/12/2007
GA*L65132-01	RADIUM-228	RT	Y	4030	0.46000	PCI/L	09/12/2007

Lead / Copper Sample Result for

AK2340345 ELIM WATER SUPPLY

Analyte Name	Code	Comp	Sample Count	Lab ID	Concentration	UOM	Compliance Begin Date	Compliance End Date	Collection Date
LEAD SUMMARY	PB90	Y	5		0.00340	MG/L	01/01/2006	12/31/2008	09/08/2008
COPPER SUMMARY	CU90	Y	5		0.35700	MG/L	01/01/2006	12/31/2008	09/08/2008
LEAD SUMMARY	PB90	Y	3	CO00050	0.00150	MG/L	01/01/2003	12/31/2005	12/30/2005
COPPER SUMMARY	CU90	Y	3	CO00050	0.55900	MG/L	01/01/2003	12/31/2005	12/30/2005
LEAD SUMMARY	PB90	Y	4	AK00968	0.00300	MG/L	01/01/2000	12/31/2002	12/18/2002

COPPER SUMMARY	CU90	Y	4	AK00968	1.20000	MG/L	01/01/2000	12/31/2002	12/18/2002
LEAD SUMMARY	PB90	Y	5	MIG	0.00200	MG/L	01/01/2001	12/31/2001	01/01/2001
COPPER SUMMARY	CU90	Y	5	MIG	0.20000	MG/L	01/01/2001	12/31/2001	01/01/2001
LEAD SUMMARY	PB90	Y	10	MIG	0.00600	MG/L	01/01/2000	06/30/2000	01/01/2000
COPPER SUMMARY	CU90	Y	10	MIG	0.30300	MG/L	01/01/2000	06/30/2000	01/01/2000
LEAD SUMMARY	PB90	Y	5	MIG	0.00000	MG/L	07/01/1999	12/31/1999	07/01/1999
COPPER SUMMARY	CU90	Y	5	MIG	0.29000	MG/L	07/01/1999	12/31/1999	07/01/1999
LEAD SUMMARY	PB90	Y	0	MIG	0.00620	MG/L	01/01/1993	12/31/1993	07/01/1993
COPPER SUMMARY	CU90	Y	0	MIG	0.24000	MG/L	01/01/1993	12/31/1993	07/01/1993

Asbestos Sample Results for

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date

Synthetic and Other Organic Compounds (SOC) Sample Results for

AK2340345 ELIM WATER SUPPLY

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date
VO*F0601037-01A	ETHYLENE DIBROMIDE	RT	Y	2946	0.00000	UG/L	12/30/2005
VO*F0412177-02A	1,2-DIBROMO-3-CHLOROPROPANE	RT	Y	2931	0.00000	UG/L	12/13/2004
VO*F0412177-02A	ETHYLENE DIBROMIDE	RT	Y	2946	0.00000	UG/L	12/13/2004
VO*A309154	ETHYLENE DIBROMIDE	RT	Y	2946	0.00000	UG/L	08/14/2003
VO*A305196	ETHYLENE DIBROMIDE	RT	Y	2946	0.00000	UG/L	12/18/2002
PE-88-264786	ENDRIN	RT	Y	2005	0.00000		10/27/1988
PE-88-264786	BHC-GAMMA	RT	Y	2010	0.00000		10/27/1988
PE-88-264786	METHOXYCHLOR	RT	Y	2015	0.00000		10/27/1988
PE-88-264786	TOXAPHENE	RT	Y	2020	0.00000		10/27/1988
PE-88-264786	2,4-D	RT	Y	2105	0.00000		10/27/1988
PE-88-264786	2,4,5-TP	RT	Y	2110	0.00000		10/27/1988

Secondary Compounds Sample Results for

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date

Total Organic Compounds (TOC) And Alkalinity Sample Results - Raw Water for

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date

Total Organic Compounds (TOC) for

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date

Bromide and Bromate Sample Results for

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date

Total Trihalomethanes (TTHM) and Total Haloacetic Acids (HAA5) Sample Results for

AK2340345 ELIM WATER SUPPLY

Lab Assigned ID	Analyte Name	Sample Type*	Comp	Code	Concentration	UOM	Collection Date
DT*F0912360-02A	TTHM	RT	Y	2950	14.30000	UG/L	12/28/2009
DH*F0912360-02B	TOTAL HALOACETIC ACIDS (HAA5)	RT	Y	2456	5.25000	UG/L	12/28/2009
DT*F0812255-03A	TTHM	RT	Y	2950	11.90000	UG/L	12/16/2008
DH*F0812255-03B	TOTAL HALOACETIC ACIDS (HAA5)	RT	Y	2456	7.44000	UG/L	12/16/2008
DT*F0712005-02A	TTHM	RT	Y	2950	0.00000		11/27/2007
DH*F0712005-01A	TOTAL HALOACETIC ACIDS (HAA5)	RT	Y	2456	3.65000	UG/L	11/27/2007
DT*F0701034-03A	TTHM	RT	Y	2950	0.00000		12/31/2006
DH*F0701034-04A	TOTAL HALOACETIC ACIDS (HAA5)	RT	Y	2456	0.00000		12/31/2006
DB*F0601037-02A-	TTHM	RT	Y	2950	12.20000	UG/L	12/30/2005

DB*F0601037-02A-	TOTAL HALOACETIC ACIDS (HAA5)	RT	Y	2456	3.37000	UG/L	12/30/2005
DT*F0412177-03A	TTHM	RT	Y	2950	7.18000	UG/L	12/13/2004
VO*F0412177-02A	TTHM	RT	Y	2950	7.30000	UG/L	12/13/2004
DH*F0408202-02D	TOTAL HALOACETIC ACIDS (HAA5)	RT	Y	2456	0.00000	UG/L	08/10/2004
VO*A309154	TTHM	RT	Y	2950	24.30000	UG/L	08/14/2003
DB*A308724	TTHM	RT	Y	2950	30.80000	UG/L	07/29/2003
DB*A308724	TOTAL HALOACETIC ACIDS (HAA5)	RT	Y	2456	0.00000	UG/L	07/29/2003
VO*A305196	TTHM	RT	Y	2950	19.40000	UG/L	12/18/2002
A175244	TTHM	RT	Y	2950	5.56000	UG/L	09/18/2001
A170318	TTHM	RT	Y	2950	12.80000	UG/L	12/27/2000
A165002	TTHM	RT	Y	2950	5.69000	UG/L	12/14/1999
A149380	TTHM	RT	Y	2950	15.50000	UG/L	04/01/1997
A144117	TTHM	RT	Y	2950	3.81000	UG/L	04/16/1996

*Sample Type

RT = Routine CO = Confirmation

SP = Special PE = Performance Evaluation

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APPENDIX J

GPS Data

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Appendix L - GPS Data
Elim Old City Shop PACP

GPS ID	Latitude	Longitude	Description
General			
1	64.616164	-162.265328	City of Elim
24	64.619347	-162.256877	Drinking water source
26	64.646074	-162.224680	Landfill
27	64.663102	-162.212607	Landfarming operation
PACP Evaluation Property			
	Abandoned Tank Farm		
11	64.618836	-162.260802	SE corner of tank farm berm
12	64.618924	-162.260887	NE corner of tank farm berm
	Equipment Laydown Area		
14	64.618706	-162.260745	Equipment laydown area drums
18	64.618572	-162.260639	Equipment laydown area drums
15	64.618589	-162.261463	Current battery storage area
13	64.618679	-162.260675	Former battery storage area
	The Shop Building		
16	64.618477	-162.260871	NW corner of shop
17	64.618584	-162.260661	NE corner of shop
	South Yard		
19	64.618134	-162.260621	Southyard drums
20	64.618021	-162.260597	Used oil collection AST
21	64.618069	-162.260407	2 abandoned 10,000-gallon vertical ASTs
22	64.618209	-162.261166	NE corner of fire station
23	64.618070	-162.261082	SE corner of fire station
PID Headspace Soil Sample Locations			
9	64.618834	-162.261096	HS1
10	64.618813	-162.261601	HS2
8	64.618692	-162.260677	HS3
7	64.618594	-162.260692	HS4
6	64.618618	-162.261491	HS5
5	64.618417	-162.260933	HS6
4	64.618110	-162.261041	HS7
3	64.618094	-162.260569	HS8
2	64.617964	-162.260564	HS9
25	64.618496	-162.260849	HS10

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APPENDIX K

Photo Log

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PHOTOGRAPH 1: DRINKING WATER SOURCE.

PHOTOGRAPH 2: ABOVE GROUND RAW WATER TRANSMISSION LINE BETWEEN WATER SOURCE AND WATER TREATMENT PLANT.

PHOTOGRAPH 3: PACP PROPERTY FROM THE SOUTHERN EDGE LOOKING NORTH.

PHOTOGRAPH 4: PACP PROPERTY FROM THE WESTERN EDGE LOOKING EAST.

PHOTOGRAPH 5: PACP PROPERTY FROM THE NORTHERN EDGE LOOKING SOUTH.

PHOTOGRAPH 6: PACP PROPERTY FROM THE EASTERN EDGE LOOKING WEST.

PHOTOGRAPH 7: ABANDONED TANK FARM FROM THE SOUTHERN EDGE LOOKING NORTH.

PHOTOGRAPH 8: ABANDONED TANK FARM FROM THE WESTERN EDGE LOOKING EAST.

PHOTOGRAPH 9: ABANDONED TANK FARM FROM THE NORTHERN EDGE LOOKING SOUTH.

PHOTOGRAPH 10: ABANDONED TANK FARM FROM THE EASTERN EDGE LOOKING WEST.

PHOTOGRAPH 11: THE EQUIPMENT LAY-DOWN AREA FROM THE SOUTHERN EDGE LOOKING NORTH.

PHOTOGRAPH 12: THE EQUIPMENT LAY-DOWN AREA FROM THE WESTERN EDGE LOOKING EAST.

PHOTOGRAPH 13: THE EQUIPMENT LAY-DOWN AREA FROM THE NORTHERN EDGE LOOKING SOUTH.

PHOTOGRAPH 14: THE EQUIPMENT LAY-DOWN AREA FROM THE EASTERN EDGE LOOKING WEST.

PHOTOGRAPH 15: CURRENT BATTERY STORAGE AREA, FLAG MARKS PID HEADSPACE SOIL SAMPLE LOCATION HS5.

PHOTOGRAPH 16: INSIDE THE SHOP BUILDING FROM THE SOUTHERN END LOOKING NORTH.

PHOTOGRAPH 17: INSIDE THE SHOP BUILDING FROM THE WESTERN END LOOKING EAST.

PHOTOGRAPH 18: INSIDE THE SHOP BUILDING FROM THE NORTHERN END LOOKING SOUTH.

PHOTOGRAPH 19: INSIDE THE SHOP BUILDING FROM THE EASTERN END LOOKING WEST.

PHOTOGRAPH 20: OUTSIDE OF THE SHOP BUILDING ON THE BUILDING'S EASTERN SIDE LOOKING SOUTH.

PHOTOGRAPH 21: THE SOUTH YARD AREA FROM THE WESTERN EDGE LOOKING EAST.

PHOTOGRAPH 22: THE SOUTH YARD AREA FROM THE NORTHERN EDGE LOOKING SOUTH.

PHOTOGRAPH 23: THE SOUTH YARD AREA FROM THE EASTERN EDGE LOOKING WEST.

PHOTOGRAPH 24: 55-GALLON DRUMS FORMERLY USED FOR THE STORAGE OF HEATING FUEL, FLAG MARKS HS8.

PHOTOGRAPH 25: USED OIL COLLECTION AST, FLAG MARKS HS9.

PHOTOGRAPH 26: 1 UNUSED AST (GREEN) AND 2 ABANDONED VERTICAL ASTS.

PHOTOGRAPH 27: ABANDONED TANK FARM LOOKING EAST, FLAG MARKS HS1.

PHOTOGRAPH 28: WEST SIDE OF ABANDONED TANK FARM, FLAG MARKS HS2.

PHOTOGRAPH 29: FORMER BATTERY STORAGE AREA (EAST SIDE OF THE EQUIPMENT LAY-DOWN AREA), FLAG MARKS HS3.

PHOTOGRAPH 30: SOIL STAINING NEAR DRUMS (SE CORNER OF THE EQUIPMENT LAYDOWN AREA), FLAG MARKS HS4.

PHOTOGRAPH 31: SOIL STAINING OUTSIDE THE SHOP BUILDING (WEST SIDE), FLAG MARKS HS6.

PHOTOGRAPH 32: FIRE DEPARTMENT, FLAG MARKS HS7.

PHOTOGRAPH 33: INSIDE THE SHOP BUILDING (NE CORNER), FLAG MARKS HS10.

PHOTOGRAPH 34: POTENTIAL SITE FOR LANDFARMING.

PHOTOGRAPH 35: INTERNATIONAL S1900 DOUBLE AXLE DUMP TRUCK.

PHOTOGRAPH 36: HITACHI EX200 EXCAVATOR.

PHOTOGRAPH 37: CATERPILLAR 950F FRONT END LOADER.

PHOTOGRAPH 38: CATERPILLAR 972H FRONT END LOADER.

PHOTOGRAPH 39: CASE 621B FRONT END LOADER.

PHOTOGRAPH 40: CATERPILLAR 140G GRADER.

PHOTOGRAPH 41: INTERNATIONAL 7300 SEPTIC PUMP TRUCK.

PHOTOGRAPH 42: DOUBLE AXLE TRAILER.

PHOTOGRAPH 43: TRIPLE AXLE TRAILER.

APPENDIX L

Video Log

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 September 28, 2010	**VIDEO 1: ABANDONED TANK FARM FACING NORTH.** Narrative in video: "To the east, across the road is the community drinking water source. The west side of the tank farm berm appears to be removed. This is the south and the east side of the tank farm berm."
 September 28, 2010	**VIDEO 2: ABANDONED TANK FARM FACING SOUTH.** Narrative in video: "This is the outer extent of the abandoned tank farm berm. These are some local puppies. To the west is a dog yard just on the edge of the Old City Shop site property."
 September 28, 2010	**VIDEO 3: THE EQUIPMENT LAY-DOWN AREA FACING WEST.** Narrative in video: "This is the area where they used to store batteries; they have since been removed."
 September 28, 2010	**VIDEO 4: THE SOUTH YARD AREA FACING SOUTH.** Aside from the introduction, narrative is absent from this video.

 September 28, 2010	**VIDEO 5: THE SOUTH YARD AREA FACING NORTH.** Aside from the introduction, narrative is absent from this video.

APPENDIX M

Human Health Conceptual Site Model Scoping and Graphic Forms

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Human Health Conceptual Site Model
Scoping Form

Site Name: Elim Old City Shop

File Number: 600.57.002

Completed by: OASIS Environmental

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, a CSM graphic and text must be submitted with the site characterization work plan.

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
- ☑ Groundwater
- ☑ Surface water
- ☐ 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

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

If both boxes are checked, label this pathway complete: complete

2 Dermal Absorption of Contaminants from Soil

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Can the soil contaminants permeate the skin? (Contaminants listed below, or within the groups listed below, should be evaluated for dermal absorption). ☑

Arsenic	Lindane
Cadmium	PAHs
Chlordane	Pentachlorophenol
2,4-dichlorophenoxyacetic acid	PCBs
Dioxins	SVOCs
DDT	

If all of the boxes are checked, label this pathway complete: complete

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 ADEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.* ☑

If both the boxes are checked, label this pathway complete: complete

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: complete

3 Ingestion of Wild Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild food? ☑

Do the site contaminants have the potential to bioaccumulate (*see* Appendix A)? ☑

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. the top 6 feet of soil, in groundwater that **could be** connected to surface water, etc.) ☑

If all of the boxes are checked, label this pathway complete: complete

c) Inhalation

1 Inhalation of Outdoor Air

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Are the contaminants in soil volatile (*See Appendix B*)? ☑

If all of the boxes are checked, label this pathway complete: complete

2 Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be placed on the site in an area that could be affected by contaminant vapors? (i.e., within 100 feet, horizontally or vertically, of the contaminated soil or groundwater, <u>or</u> subject to "preferential pathways" that promote easy airflow, like utility conduits or rock fractures) ☑

Are volatile compounds present in soil or groundwater (*See Appendix C*)? ☑

If both boxes are checked, label this pathway complete: complete

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

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- Climate permits recreational use of waters for swimming,
- Climate permits exposure to groundwater during activities, such as construction, without protective clothing, or
- Groundwater or surface water is used for household purposes.

Check the box if further evaluation of this pathway is needed: ☑

Comments:

Inhalation of Volatile Compounds in Household Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- The contaminated water is used for household purposes such as showering, laundering, and dish washing, and
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix B)

Check the box if further evaluation of this pathway is needed: ☑

Comments:

Inhalation of Fugitive Dust

Generally DEC soil ingestion cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway, although this is not true in the case of chromium. Examples of conditions that may warrant further investigation include:

- 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. This size can be inhaled and would be of concern for determining if this pathway is complete.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during recreational or some types of subsistence activities. People then incidentally **ingest** sediment from normal hand-to-mouth activities. In addition, **dermal absorption of contaminants** may be of concern if people come in contact with sediment and the contaminants are able to permeate the skin (see dermal exposure to soil section). This type of exposure is rare but it should be investigated if:

- Climate permits recreational activities around sediment, and/or
- Community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

ADEC soil ingestion cleanup levels are protective of direct contact with sediment. If they are determined to be over-protective for sediment exposure at a particular site, other screening levels could be adopted or developed.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

4. Other Comments (*Provide other comments as necessary to support the information provided in this form.)*

APPENDIX A

BIOACCUMULATIVE COMPOUNDS

Table A-1: List of Compounds of Potential Concern for Bioaccumulation

Organic compounds are identified as bioaccumulative if they have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5. Inorganic compounds are identified as bioaccumulative if they are listed as such by EPA (2000). Those compounds in Table X of 18 AAC 75.345 that are bioaccumulative, based on the definition above, are listed below.

Aldrin	DDT	Lead
Arsenic	Dibenzo(a,h)anthracene	Mercury
Benzo(a)anthracene	Dieldrin	Methoxychlor
Benzo(a)pyrene	Dioxin	Nickel
Benzo(b)fluoranthene	Endrin	PCBs
Benzo(k)fluoranthene	Fluoranthene	
Cadmium	Heptachlor	Pyrene
Chlordane	Heptachlor epoxide	Selenium
Chrysene	Hexachlorobenzene	Silver
Copper	Hexachlorocyclopentadiene	Toxaphene
DDD	Indeno(1,2,3-c,d)pyrene	Zinc
DDE		

Because BCF values can relatively easily be measured or estimated, the BCF is frequently used to determine the potential for a chemical to bioaccumulate. A compound with a BCF greater than 1,000 is considered to bioaccumulate in tissue (EPA 2004b).

For inorganic compounds, the BCF approach has not been shown to be effective in estimating the compound's ability to bioaccumulate. Information available, either through scientific literature or site-specific data, regarding the bioaccumulative potential of an inorganic site contaminant should be used to determine if the pathway is complete.

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000). The BCF can also be estimated from a chemical's physical and chemical properties. A chemical's octanol-water partitioning coefficient (K_{ow}) along with defined regression equations can be used to estimate the BCF. EPA's Persistent, Bioaccumulative, and Toxic (PBT) Profiler (EPA 2004) can be used to estimate the BCF using the K_{ow} and linear regressions presented by Meylan et al. (1996). The PBT Profiler is located at http://www.pbtprofiler.net/. For compounds not found in the PBT Profiler, DEC recommends using a log K_{ow} greater than 3.5 to determine if a compound is bioaccumulative.

APPENDIX B

VOLATILE COMPOUNDS

Table B-1: List of Volatile Compounds of Potential Concern
Common volatile contaminants of concern at contaminated sites. A chemical is defined as volatile if the Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater and the molecular weight less than 200 g/mole (g/mole; EPA 2004a). Those compounds in Table X of 18 AAC 75.345 that are volatile, based on the definition above, are listed below.

Acenaphthene	1,4-dichlorobenzene	Pyrene
Acetone	1,1-dichloroethane	Styrene
Anthracene	1,2-dichloroethane	1,1,2,2-tetrachloroethane
Benzene	1,1-dichloroethylene	Tetrachloroethylene
Bis(2-chlorethyl)ether	Cis-1,2-dichloroethylene	Toluene
Bromodichloromethane	Trans-1,2-dichloroethylene	1,2,4-trichlorobenzene
Carbon disulfide	1,2-dichloropropane	1,1,1-trichloroethane
Carbon tetrachloride	1,3-dichloropropane	1,1,2-trichloroethane
Chlorobenzene	Ethylbenzene	Trichloroethylene
Chlorodibromomethane	Fluorene	Vinyl acetate
Chloroform	Methyl bromide	Vinyl chloride
2-chlorophenol	Methylene chloride	Xylenes
Cyanide	Naphthalene	GRO
1,2-dichlorobenzene	Nitrobenzene	DRO

APPENDIX C

COMPOUNDS OF CONCERN FOR VAPOR MIGRATION

Table C-1: List of Compounds of Potential Concern for the Vapor Migration

A chemical is considered sufficiently toxic if the vapor concentration of the pure component poses an incremental lifetime cancer risk greater than 10-6 or a non-cancer hazard index greater than 1. A chemical is considered sufficiently volatile if it's Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater.

Acenaphthene	Dibenzofuran	Hexachlorobenzene
Acetaldehyde	1,2-Dibromo-3-chloropropane	Hexachlorocyclopentadiene
Acetone	1,2-Dibromoethane (EDB)	Hexachloroethane
Acetonitrile	1,3-Dichlorobenzene	Hexane
Acetophenone	1,2-Dichlorobenzene	Hydrogen cyanide
Acrolein	1,4-Dichlorobenzene	Isobutanol
Acrylonitrile	2-Nitropropane	Mercury (elemental)
Aldrin	N-Nitroso-di-n-butylamine	Methacrylonitrile
alpha-HCH (alpha-BHC)	n-Propylbenzene	Methoxychlor
Benzaldehyde	o-Nitrotoluene	Methyl acetate
Benzene	o-Xylene	Methyl acrylate
Benzo(b)fluoranthene	p-Xylene	Methyl bromide
Benzylchloride	Pyrene	Methyl chloride chloromethane)
beta-Chloronaphthalene	sec-Butylbenzene	Methylcyclohexane
Biphenyl	Styrene	Methylene bromide
Bis(2-chloroethyl)ether	tert-Butylbenzene	Methylene chloride
Bis(2-chloroisopropyl)ether	1,1,1,2-Tetrachloroethane	Methylethylketone (2-butanone)
Bis(chloromethyl)ether	1,1,2,2-Tetrachloroethane	Methylisobutylketone
Bromodichloromethane	Tetrachloroethylene	Methylmethacrylate
Bromoform	Dichlorodifluoromethane	2-Methylnaphthalene
1,3-Butadiene	1,1-Dichloroethane	MTBE
Carbon disulfide	1,2-Dichloroethane	m-Xylene
Carbon tetrachloride	1,1-Dichloroethylene	Naphthalene
Chlordane	1,2-Dichloropropane	n-Butylbenzene
2-Chloro-1,3-butadiene (chloroprene)	1,3-Dichloropropene	Nitrobenzene
Chlorobenzene	Dieldrin	Toluene
1-Chlorobutane	Endosulfan	trans-1,2-Dichloroethylene
Chlorodibromomethane	Epichlorohydrin	1,1,2-Trichloro-1,2,2-trifluoroethane
Chlorodifluoromethane	Ethyl ether	1,2,4-Trichlorobenzene
Chloroethane (ethyl chloride)	Ethylacetate	1,1,2-Trichloroethane
Chloroform	Ethylbenzene	1,1,1-Trichloroethane
2-Chlorophenol	Ethylene oxide	Trichloroethylene
2-Chloropropane	Ethylmethacrylate	Trichlorofluoromethane
Chrysene	Fluorene	1,2,3-Trichloropropane
cis-1,2-Dichloroethylene	Furan	1,2,4-Trimethylbenzene
Crotonaldehyde (2-butenal)	Gamma-HCH (Lindane)	1,3,5-Trimethylbenzene
Cumene	Heptachlor	Vinyl acetate
DDE	Hexachloro-1,3-butadiene	Vinyl chloride (chloroethene)

Source: EPA 2002.

HUMAN HEALTH CONCEPTUAL SITE MODEL

Site: Elim Old City Shop
600.57.002

Completed By: OASIS Environmental
Date Completed: September 10, 2010

Follow the directions below. Do not consider engineering or 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. Briefly list other mechanisms or reference the report for details.

(3)
Check exposure media identified in (2).

(4)
Check exposure pathways that are complete or need further evaluation. The pathways identified must agree with Sections 2 and 3 of the CSM Scoping Form.

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	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		CF	CF	CF	CF	CF	
	☑ Migration or leaching to subsurface — *check soil*		☑ Dermal Absorption of Contaminants from Soil		CF	CF	CF	CF	CF	
	☑ Migration or leaching to groundwater — *check groundwater*									
	☑ Volatilization — *check air*									
	☑ Runoff or erosion — *check surface water*									
	☑ Uptake by plants or animals — *check biota*									
	☐ Other (*list*): Elim Old City Shop									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — *check soil*	☑ groundwater	☑ Ingestion of Groundwater	CF						
	☑ *Migration to groundwater* — *check groundwater*		☑ Dermal Absorption of Contaminants in Groundwater	CF						
	☑ *Volatilization* — *check air*		☑ Inhalation of Volatile Compounds in Tap Water	CF						
	☐ *Other (list):* 600.57.002									
☐ Ground-water	☑ Direct release to groundwater — *check groundwater*	☑ air	☐ Inhalation of Outdoor Air		CF	CF	CF	CF	CF	
	☐ *Volatilization* — *check air*		☑ Inhalation of Indoor Air		CF	CF	CF	CF	CF	
	☑ *Flow to surface water body* — *check surface water*		☑ Inhalation of Fugitive Dust							
	☑ *Flow to sediment* — *check sediment*									
	☑ *Uptake by plants or animals* — *check biota*									
	☑ *Other (list):* OASIS Environmental									
☑ Surface Water	☑ Direct release to surface water — *check surface water*	☑ surface water	☑ Ingestion of Surface Water	CF						
	☑ *Volatilization* — *check air*		☐ Dermal Absorption of Contaminants in Surface Water	CF	CF	CF	CF	CF	CF	
	☑ *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							
	☑ *Resuspension, runoff, or erosion* — *check surface water*									
	☑ *Uptake by plants or animals* — *check biota*									
	☑ *Other (list):*	☑ biota	☑ Ingestion of Wild Foods	CF						

Revised 3/21/06

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APPENDIX N

Alaska Funding Spreadsheet from the Center for Creative Land Recycling

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Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
US Environmental Protection Agency (EPA):							
Assessment	Grant	States, local government, Intertribal Consortia (excluding Alaskan tribes), Alaska Native Regional Corporation, Alaska Native Village Corporation, and Metlakatla Indian Community.	Petroleum or Hazardous & Site-Specific or Community-wide	Site assessment, community planning & outreach	$200K for Petroleum; $200K for Hazardous; or $350K for single site with EPA waiver $1M for coalitions of 3 eligible entities	Fall 2010	Mary Goolie goolie.mary@epa.gov 907.271.3414 Susan Morales morales.susan@epa.gov 206.553.7299 http://yosemite.epa.gov/R10/cleanup.nsf/sites/bf
Cleanup	Grant	Same as above; Nonprofits. Eligible party must own site	Petroleum or Hazardous	Cleanup	$200K/site, up to 3 sites (requires 20% cost share)	Fall 2010	same as above
Revolving Loan Fund (RLF)	Grant	States, local government, Intertribal Consortia (excluding Alaskan tribes), Alaska Native Regional Corporation, Alaska Native Village Corporation, and Metlakatla Indian Community.	Petroleum or Hazardous	Cleanup	$1M/entity (requires 20% cost share) May subgrant 40% of award to nonprofits & municipalities with site ownership	Fall 2010	same as above
Targeted Brownfield Assessments (TBAs)	In-kind Technical Service	State and Local Governments, Tribes, and Nonprofits	Any brownfield	Site assessment	Site assessment services	Ongoing	Joanne LaBaw labaw.joanne@epa.gov 206.553.2594
US Department of Housing & Urban Development (HUD):							
Community Development Block Grant (CDBG)	Grant or loan	State, urban county, or entitlement city who decides use of funds & to whom funds will be made available	Anything that passes HUD's Environmental Review	Site assessment, cleanup, rehabilitation, site improvements, limited construction	Depends on needs/size of community (average project award ranges from $200K - $1M)	Ongoing	Colleen Bickford colleen.bickford@hud.gov 907.677-9800
Section 108	Loan	same as CDBG	same as CDBG	same as CDBG	Up to five times the annual allocation less any outstanding loan amounts	Ongoing	same as above
Sustainable Communities Regional Planning Grants	Grant	Multijurisdictional and multisector partnership consisting of a consortium of government entities and non-profit partners.	Multiple jurisdictions	Planning	$1M - $5M, depending on community size and number of coalition members	August 2010	Zuleika K. Morales-Romero 202-402-7683 Zuleika.K.Morales@hud.gov http://www.hud.gov/offices/adm/grants/nofa10/scrpgsec.pdf

Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Sustainable Communities Challenge Grants	Grant	State and local governments, including U.S. territories, tribal governments, transit agencies, port authorities	Priority area	Planning	$3M	August 2010	Zuleika K. Morales-Romero 202-402-7683 Zuleika.K.Morales@hud.gov http://www.dot.gov/livability/source/FINAL%20Joint%20Planning%20NOFA%20061810.pdf
Brownfields Economic Development Initiative (BEDI)	Grant	same as CDBG	same as CDBG	same as CDBG	Up to $2M; may not exceed 1:1 ratio with Section 108 loan	July 2010	Same as above
Alaska Office of Native American Programs (ONAP)	Grant	Native Alaskan communities	same as CDBG	same as CDBG	Contact staff	Contact staff	Carma Reed carma.reed@hud.gov 907.677.9800 http://www.hud.gov/offices/pih/ih/codetalk/onap/akonap/
Indian Community Development Block Grant (ICDBG)	Grant	Any Indian tribe, band, group, or nation (including Alaska Indians, Aleut, and Eskimos) or Alaska Native village which has established a relationship to the Federal government as defined in the program regulations. In certain instances, tribal organizations may be eligible to apply.	same as CDBG	Housing - Rehabilitation, land acquisition, and under limited circumstances, new housing construction. Community Facilities - Infrastructure, e.g., roads, water and sewer facilities; and, single or multipurpose community buildings. Economic Development - Commercial, industrial, agricultural projects which may be recipient-owned and operated or which may be owned and/or operated by a third party.	Contact staff	Contact Staff	Deb Alston deb.alston@hud.gov 907.677.9863 http://www.nls.gov/offices/pih/ih/grants/icdbg.cfm
US Department of Commerce, Economic Development Administration (EDA):							
Public Works	Grant	States & political subdivisions of states; tribes, nonprofits, higher education institutions; BRAC impacted communities	Sites in areas with one or more of the following: high unemployment, low per capita income, or special needs; must be part of a Comprehensive Economic Development Strategy	Construction or rehab of public infrastructure & facilities that generate or retain private sector jobs & capital investment	No more than 50-80% of the total project cost (with exceptions); (average project award $1.4M)	Ongoing	Shirley Kelly skelly@eda.doc.gov 907-677.9800 http://www.eda.gov/InvestmentsGrants/Investments.xml

Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Economic Adjustment	Grant	States & political subdivisions of states; tribes, nonprofits, higher education institutions; BRAC impacted communities	Sites in areas with one or more of the following: high unemployment, low per capita income, or special needs; must be part of a Comprehensive Economic Development Strategy	Strategy development, infrastructure construction, & revolving loan fund capitalization in communities & regions experiencing adverse economic changes	No more than 50-80% of the total project cost (with exceptions); (average project award $570K)	Ongoing	same as above
Local Technical Assistance	Grant	States & political subdivisions of states; tribes, nonprofits, higher education institutions	Sites in areas of economic distress	Technical assistance (project planning, economic analyses, feasibility studies, etc.)	No more than 50-80% of the total project cost (with exceptions)	Ongoing	same as above
Partnership Planning	Grant	States & political subdivisions of states; tribes, nonprofits, higher education institutions	Sites in areas of economic distress	Economic development planning assistance	No more than 50-80% of the total project cost (with exceptions)	Ongoing	same as above
US Department of Agriculture (USDA):							
Community Facilities	Grant or Loan	Political subdivisions of the State, NonProfits, and federally recognized Alaska Native Tribes	In a rural community	Costs for essential facilities, usually construction costs, for essential community services that are typically provided by local government or a community based organization for the benefit of the community	Contact staff	Ongoing	Regional contacts: Bethel - Gene Kane Gene.Kane@ak.usda.gov 907.543.3858 Dillingham - Spud Williams William.C.William@ak.usda.gov 907.842.3921 Fairbanks / Nome - James Polhman James.Polhlman@ak.usda.gov 907.479.6767.4 Kenai - Michelle Hoffman Michelle.Hoffman@ak.usda.gov 907.283.6640.4 Sitka - Keith Perkins Keith.Perkins@ak.usda.gov 907.747.3506 http://www.rurdev.usda.gov/ak/Community.htm

Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Rural Development - Renewable Energy and Energy Efficiency; Housing; Community Facilities; Business; Cooperatives; Electric; Telecommunication; Utility; Water and Environment; Community Development	Grant, Loan or technical assistance	Varies - depends on program	Varies	Loans, loan guarantees, downpayment assistance, construction	Contact staff	Ongoing	Same as above http://www.usda.gov/rus/
Rural Housing	Grant or Loan	Varies - depends on program	Varies	Loans, loan guarantees, downpayment assistance, construction	Contact staff	Ongoing	Same as above http://www.rurdev.usda.gov/ak/Housing.htm
US Army Corps of Engineers (USACE):							
Planning Assistance to States	Cost share/match 50% / in-kind services	State, local government, Native Alaskan communities	Sites affected by coastal areas and waterways	Technical services provided by USACE	Maximum of $500,000 per year per state; $25K - $100K per project	Ongoing	Valerie Hansen valerie.a.hansen@usace.army.mil 907.753.2521 http://www.poa.usace.army.mil/en/cw/cap/brochures/Planning%20Asst.%20to%20States.pdf
Alaska Department of Environmental Conservation (DEC):							
DEC Brownfields Assessments (DBAs)	In-kind Service	Public and nonprofits	Any brownfield.	Site assessment	Contact staff	Winter 2011	Sonja Benson Sonja.Benson@alaska.gov 907.451.2156 http://www.dec.state.ak.us/spar/csp/brownfields.htm#assess
Alaska Energy Authority (AEA):							
Various alternative energy projects	Grant/Loan and technical assistance	States & political subdivisions of states; tribes, nonprofits, energy generators	Various requirements	Technical assistance, system upgrade, training	Contact staff	Different deadlines	Shauna Howell showell@aidea.org 907.771.3000 http://www.aidea.org/AEA/programs.html
Alaska Industrial Development and Export Authority (AIDEA):							
Revenue Bond Program	Loans	Business enterprises	Location of business enterprise	Financing for capital expenses	Contact staff	Ongoing	Chris Anderson canderson@aidea.org 907.771.3030 http://www.aidea.org/programscrb.html

Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Alaska Department of Natural Resources:							
Alaska Trails Initiative	Grants	Nonprofit organizations and local, state, federal and tribal entities	Proposed trail	Planning, permitting, design, construction, reconstruction, equipment purchase, education and interpretation of trails and trail related facilities.	Average of $500,000	Applications usually due in March.	Bill Luck http://dnr.alaska.gov/shared/emailcontact.cfm?send=bill.luck 907.269.8699 http://www.dnr.alaska.gov/parks/grants/aktrailinit.htm
Recreational Trails Program - Recreational trails and Snowmobiles	Matching grants	For recreational trails - nonprofit organizations and public agencies. For snowmobile trails - all organizations, clubs, public agencies, or businesses	Proposed or existing trail	Reimbursable, matching funds to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses.	Subject to program requirements	Applications usually due in November.	Bill Luck http://dnr.alaska.gov/shared/emailcontact.cfm?send=bill.luck 907.269.8699 http://www.dnr.alaska.gov/parks/grants/aktrailinit.htm
Land and Water Conservation Fund Grant Program	Partial grants	State, regional or local governments with authority to provide outdoor recreation services	Public lands	Acquisition of outdoor recreation lands and/or development of outdoor recreation facilities	$100,000 - $500,000	Applications are due on April 30, 2010	Kristy Gray http://dnr.alaska.gov/shared/emailcontact.cfm?send=kristy.gray 907.269.8694 http://www.dnr.alaska.gov/parks/grants/lwcf.htm
National Coastal Wetlands Conservation Grant Program	Grants	Public agencies and land trusts	Coastal areas	Acquisition, restoration, management or enhancement of coastal wetlands	Contact staff, subject to availability of state matching funds	Contact Staff	Steve Neel http://dnr.alaska.gov/shared/emailcontact.cfm?send=steve.neel 907.269.8709 http://www.dnr.alaska.gov/parks/grants/ncwc.htm
Division of Forestry - Green Infrastructure Planning Grants	Grants	Local government	Publicly owned land	Green infrastructure planning	$20,000-$80,000	Applications are usually due in January	Patricia Joyner patricia.joyner@alaska.gov 907.269.8465 http://forestry.alaska.gov/community/grants.htm
Alaska Department of Commerce:							
Alaska CDBG	Grants	Municipalities	Publicly-owned sites	Community development, planning and Special Economic Development	Maximum of $850,000 per community	Applications are usually due in December	Jill Davis Jill.Davis@alaska.gov 907.451.2717 http://www.commerce.state.ak.us/dca/grt/blockgrants.htm

Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Alaska Housing Finance Corporation (AHFC):							
Beneficiary and Special Needs Housing Grant Program (SNHG)	Grant	Nonprofit service providers and housing developers for construction of housing for the Alaskan special needs populations, primarily the beneficiaries of the Alaska Mental Health Trust	A housing site	Planning and construction activities for congregate, supportive and transitional housing types	Contact staff	Typically in January	Daniel Delfino ddelfino@ahfc.state.ak.us 907.330.8273 http://www.ahfc.state.ak.us/grants/beneficiary_snhg.cfm
Elder Housing Program (Denali Commission)	Grant	Housing Authorities, local governments, nonprofits	A housing site	Grants to plan, construct and rehabilitate housing in rural locations	Contact staff. Predevelopment funds only for 2011	Typically in January and February	Diana Faude dfaud@ahfc.state.ak.us 907.330.8277 http://www.ahfc.state.ak.us/grants/elder_housing.cfm
Matching Grants Program	Grant	Nonprofits providing supportive housing services	A housing site	Supportive Housing Program (SHP) activities	Contact staff	Contact Staff	Diana Faude dfaud@ahfc.state.ak.us 907.330.8277 http://www.ahfc.state.ak.us/grants/matching_grants.cfm
Elder Housing Program (Denali Commission)	Grant	Housing Authorities, local governments, nonprofits	A housing site	Plan, construct and rehabilitate housing in rural locations.	Contact Staff	Contact Staff	Diana Faude dfaud@ahfc.state.ak.us 907.330.8277 http://www.ahfc.state.ak.us/grants/elder_housing.cfm
Matching Grants Program	Grant	Nonprofits	A housing site	Funds to meet the federal and state match requirements for grants awarded to nonprofit organizations.	Contact Staff	Contact Staff	Diana Faude dfaud@ahfc.state.ak.us 907.330.8277 http://www.ahfc.state.ak.us/grants/matching_grants.cfm
Homeownership Development Program (HDP)	Grant	Participants in the USDA's 523 self-help homeownership program, Community Land Trusts and Habitat for Humanity organizations	A housing site	Real property acquisition and site improvements for new construction of permanent, single family housing.	Contact Staff	Contact Staff	Colette Slover cslover@ahfc.state.ak.us 907.330.8275 http://www.ahfc.state.ak.us/grants/hdp.cfm

Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Teacher, Health Professional and Public Safety Housing Program (AHFC/Denali Commission)	Grant	School districts, local governments, housing authorities and nonprofit health organizations	A housing site	New construction, rehabilitation or acquisition of rental or lease/purchase housing to develop housing in rural Alaska for teachers, public safety officials and health professionals	Contact Staff	Contact Staff	James Wiedle jwiedle@ahfc.state.ak.us 907.330.8235 http://www.ahfc.state.ak.us/grants/teacher_health_safety_housing.cfm
Rasmuson Foundation:							
Pre-Development	Grants	Nonprofit organizations, municipal government and tribal communities	Contact staff	Contact staff	Contact staff	Ongoing	rasmusonfdn@rasmuson.org 907.297.2700 http://www.rasmuson.org/index.php?switch=viewpage&pageid=141 http://www.forakergroup.org/index.cfm?section=Shared-Services&page=Pre-Development
Program-related investments	Loans, equity investments, linked deposits or loan guarantees	Nonprofit organizations	Contact staff	Program-related investments for housing, economic development, historic preservation	Contact staff	Ongoing	Chris Perez cperez@rasmuson.org 907.334.0522 http://www.rasmuson.org/index.php?switch=viewpage&pageid=159
Capital projects - Tier 1	Grant	Nonprofit organizations	Contact staff	Capital projects i.e., community centers, playgrounds	Average $25,000	Ongoing	Aleesha Towns-Bain atowns-bain@rasmuson.org 907.297.2875 http://www.rasmuson.org/index.php?switch=viewpage&pageid=32
Strategic projects - Tier 2	Grant	Nonprofit organizations	Contact staff	Strategic projects and the expansion or start-up of innovative programs by established organizations.	Average $25,000	Ongoing	Same as above http://www.rasmuson.org/index.php?switch=viewpage&pageid=33
RurAL CAP:							
Self Help housing	Grant	Contact staff	Contact staff	Self Help housing	Contact staff	Contact Staff	Mitzi Barker 907.865.7370 http://www.ruralcap.com/index.php?option=com_content&view=article&id=174&Itemid=225

Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Community planning	Grant	Contact staff	Contact staff	Community Planning Activities	Contact staff	Contact Staff	Mitzi Barker 907.865.7370 http://www.ruralcap.com/index.php?option=com_content&view=article&id=89&Itemid=87
Waste management	Grant	Contact staff	Contact staff	improving solid waste management, with an emphasis on protecting local water supplies from contamination	Contact staff	Contact Staff	Ellen Kazary 907.865.7358 http://www.rasmuson.org/index.php?switch=viewpage&pageid=32
Alaska Community Foundation:							
Pebble Fund and other grant programs	Grant	Nonprofit organizations, municipal government and tribal communities	Contact staff	Donor fund grant requirements including renewable resources/fish, energy, education and community and economic development	Contact staff	Contact Staff	Iris Matthews imatthews@alaskacf.org 907.274.6707 http://www.alaskacf.org/GrantOpportunities/TypesofGrants/tabid/177/Default.aspx
University of Alaska:							
Office of University Partnerships	Technical assistance / partnerships	Contact staff	Contact staff	Various - contact staff	Contact staff	Contact Staff	Andrew Parkerson-Gray fyosp@uaf.edu 907.474.6000
BP:							
Community Giving	Grant, technical assistance or in-kind services	Contact staff	Contact staff	Various - contact staff	Contact staff	Contact Staff	ancextaff@BP.com 907.564.5640 http://www.bp.com/sectiongenericarticle.do?categoryId=9030185&contentId=7055672
Conoco:							
Community Giving	Grant, technical assistance or in-kind services	Contact staff	Contact staff	Various - contact staff	Contact staff	Apply between June 1 - August 1	http://www.conocophillips.com/EN/susdev/communities/pages/contributions.aspx

APPENDIX O

Cost Estimate Table

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Elim Old City Shop General Cost Estimate

HazCat Identification		
	Materials	$ 4,634
	Transport and Travel	$ 8,216
	Labor	$ 11,700
Total - HAZCAT		**$ 24,550**
Waste Removal		
	Demolition and Transport of Inert Waste	$ 257,400
	Transport and Disposal of Hazardous Waste	$ 20,000
Total - Waste Removal		**$ 277,400**
Develop Monofill		
	Labor and materials to develop 1000 cy monofill approx 3 miles from site	$ 90,525
Total - Monofill		**$ 90,525**
Improve Used Oil and Battery Storage Area		
	Install used oil collection system and battery containment area	$ 55,150
Total - Used oil and battery storage area improvements		**$ 55,150**
Site Characterization		
	Collect soil, groundwater, and surface water samples (install 20 temporary well points and 3 monitoring wells)	$ 100,000
Total - Site characterization		**$ 100,000**
Excavate Contaminated Soil		
	Excavate, transport, and backfill 2000 yards of contaminated soil	$ 344,000
Total-Excavation, Backfill, landfarm spreading		**$ 344,000**
Landfarming		
	Annual Tilling (3 yrs - includes local operator & equipment)	$ 12,000
	Interim Sampling (2 yrs - includes labor, samples & reporting)	$ 16,000
	Closure Sampling (1 yr-includes labor, samples & reporting)	$ 14,000
Total-Landfarming		**$ 42,000**
Total for all tasks		**$ 933,625**

Assumptions:

Hazcat approximately 100 drums

Waste removal based on exposed debris only and includes: draining and cleaning waste fluids from tanks and equipment; disassembly; transport of inert waste to monofill; transport of hazardous wast to disposal facility.

Removal of contaminated soil includes: excavation, transport to landfarm (approx 3 mi.), landfarm spreading, and backfill using local material.

Need land use approval from Elim Native Corporation for landfarming, fee is nominal.

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