Ocean Cape Radio Relay – F10AK0747
Contaminant Sampling Report

Central Council
Tlingit and Haida
Indian Tribes of Alaska

March 31, 2004

Prepared for:

U.S. Army Corps of Engineers – Alaska District,
DOD (Native American Lands Environmental Mitigation Program),
and the
Yakutat Tlingit Tribe

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List of Acronyms

ADEC	Alaska Department of Environmental Conservation
ANCSA	Alaska Native Claims Settlement Act
ATSDR	Agency for Toxic Substances and Disease Registry
CCTHITA	Central Council of Tlingit and Haida Indian Tribes of Alaska
DOD	United States Department of Defense
EPA	United States Environmental Protection Agency
FUDS	Formerly Used Defense Site
NALEMP	Native American Lands Environmental Mitigation Program
ND	Not Detected
ppt	Parts per Trillion
START	Superfund Technical Assessment and Response Team
TEQ	Toxic Equivalence Quotient
USACE	United States Army Corps of Engineers
WACS	White Alice Communications System
YTT	Yakutat Tlingit Tribe

1.0 Introduction:

Through a Department of Defense (DoD) Cooperative Agreement between the Central Council of Tlingit and Haida Indian Tribes of Alaska (CCTHITA) and the United States Army Corps of Engineers-Alaska District (USACE), CCTHITA was tasked with performing dioxin contaminant sampling on the Ocean Cape Radio Relay site (F10AK0747) in Yakutat, Alaska. This work falls under the DoD's Native American Lands Environmental Mitigation Program (NALEMP).

Working with the Yakutat Tlingit Tribe (YTT) and the USACE Formerly Used Defense Site (FUDS) program, CCTHITA developed a contaminant sampling plan that addressed whether subsistence foods at or near the Ocean Cape Radio Relay site are contaminated with dioxins. In the Final 2000 Remedial Investigation Report (February, 2003) of Yakutat Tlingit Tribe's former Culture Camp, dioxins were found in soils associated with the former site of the Ocean Cape Barracks. During this investigation, soil samples were taken on site, so the CCTHITA contaminant sampling plan integrated 3 soil samples off-site of the Ocean Cape Radio Relay station for consideration as background samples.

Appendix A contains the approved contaminant sampling plan, which was reviewed by the USACE and the Alaska Department of Environmental Conservation (ADEC) prior to sampling. The attached plan also includes related work at Fort Ray and Fort Pierce near Sitka, Alaska, and a separate report for the sampling conducted at these two sites was prepared by CCTHITA.

2.0 FUDS Site Location and Description

The Ocean Cape Radio Relay site (F10AK0747) is located approximately 5 miles west of the city of Yakutat. The site is at the end of Point Carrew Road on Phipps Penninsula, and is adjacent to the Ankau Saltchuck. The facility operated between 1960 and 1976, and served as a tropospheric communications station under the White Alice Communications System (WACS). The facility hosted 8 industrial buildings and 17 miscellaneous support facilities, including four 60 foot billboard antennas, water tanks, fuel storage tanks and access roads.

Prior to military activity, this site was relied upon heavily for subsistence foods, including; moose, berries, clams, cockles, ducks, salmon and seaweed. The site is now under the ownership of the ANSCA village corporation Yak-Tat Kwan and referred to as the Yakutat Culture Camp. The area hosts an active youth camp, where local tribal elders teach traditional subsistence practices. Subsistence foods are still gathered at Ocean Cape.

3.0 Sampling Locations (see figure 1)

3.1 Soil Samples (see table 1)

A total of 3 soil samples were taken during this sampling event. The soil samples taken were meant to be "background" samples to compliment sampling events previously conducted by the USACE in a remedial investigation of the site in 2000. Sample #1 was taken on the northern end of Khantaak Island on Gilbert spit, west of Crab Island. Sample #2 was taken on the southern end of Khantaak Island at Turner Point. Sample #3 was taken within the Ankau Saltchuck on the shoreline of Kardy Lake. All three samples were grab samples.

3.2 Tissue Samples (see table 1)

A total of 5 tissue samples were taken during this sampling event. Tissue samples #4, 5 and 6 (cockle, clam, and mussel respectively), were taken at the Ankau Bridge, located at the mouth of the Ankau Saltchucks. Sample #4 was on the east shore, and #5 and #6 were on the west shore. Tissue sample #7 (mussel) was considered a "background" sample and was taken on the outer shore of Philips Peninsula at Ocean Cape. Sample #8 was taken within the Ankau Saltchuck on the western shore inland of Ocean Cape. All samples were composite.

Table 1. Matrix of sampling locations

Sample #	Media	On-site or Background	Location
1	Soil	Background	Khantaak Island (northern end)
2	Soil	Background	Khantaak Island (southern end)
3	Soil	Background	Ankau Saltchuck (Kardy Lake)
4	Tissue (cockle)	On-site	Ankau Bridge
5	Tissue (clam)	On-site	Ankau Bridge
6	Tissue (mussel)	On-site	Ankau Bridge
7	Tissue (mussel)	Background	Ocean Cape-outside
8	Tissue (clam)	On-site	Ankau Saltchuck

4.0 Summary Results

Summary sample results are presented in terms of Toxicity Equivalence Quotient (TEQ), which is a calculated weighted average among 17 identified dioxin-like compounds detected in the Environmental Protection Agency (EPA) method 8290 analysis. The Southwest Laboratory of Oklahoma, Inc. performed the chemical analysis on all samples and a summary of the data from the laboratory can be found in Appendix B. The summary data and TEQ's presented in Tables 2 and 3 are those calculated by the State of Alaska Department of Environmental Conservation, and calculations are based on the World Health Organizations' (WHO) Toxicity Equivalency Factors. This report is presenting the re-calculated TEQ's at the request of the Alaska Department of Environmental Conservation and to be consistent with the screening levels set for in the sampling plan and study design.

An independent data quality review was performed by ETHIX, to determine whether the sampling and laboratory analysis quality assurance measures were within the industry standards. Appendix C contains the portion of the data quality review specific to the Yakutat sampling project. Specific recommendations from this report are noted in the following sections.

4.1 Soil Sampling

Dioxin concentrations (reported as TEQ's) were found in all three soil samples collected near Ocean Cape, Yakutat, Alaska (Table 2). For the purposes of this report, results are compared to the U.S. EPA Region 9's preliminary remediation goal in residential soils of 3.9 ppt. All three samples were below this level; 0.0007 ppt, 0.0504 ppt and 1.3240 ppt (samples 1-3 respectively).

It is noted that the independent quality review by ETHIX reported that sample #1 detected the congener OCDD, however OCDD was also detected in the laboratory blank (Appendix C). The TEQ for sample #1 should be considered qualified.

4.2 Tissue Sampling

Dioxin concentrations (reported as TEQ's) were found in all five tissue samples collected at Ocean Cape, Yakutat, Alaska (Table 3). For the purposes of this report, results are compared to the U.S. EPA's "Guidance for Assessing Chemical Contaminant Data for use in Fish Advisories" TEQ of 0.019 ppt. This screening level is calculated and based on the World Health Organizations' Toxicity Equivalency Factor. At the time of this report, no advisory or remediation goals have been set for dioxins found in shellfish. It should be noted that shellfish and even different species of shellfish may uptake dioxin congeners and bioaccumulate dioxin at different rates.

Four of the five samples reported TEQ levels above 0.019 ppt. Tissue sample #8, which was located closest to the former Ocean Cape Radio Relay site (figure 1), showed the highest dioxin concentration with a TEQ level of 2.1821 ppt. Tissue samples #4, 5 and 6, which were taken within the Ankau Saltchuck and share an aquatic media with the former Ocean Cape Radio Relay site, all reported TEQ levels of 0.3178 ppt, 0.1909 ppt and 0.1515 ppt, respectively. Tissue sample #7, which was furthest from the former Ocean Cape Radio Relay site (figure 1), showeda TEQ level of 0.0027 ppt, which was below the preliminary remediation goal set forth in this study.

Table 2. Results of soil sampling for dioxin near Ocean Cape, Yakutat, Alaska (2002). TEQ's were calculated by the State of Alaska Department of Environmental Conservation and are based on the World Health Organization' Toxicity Equivalency Factors.

Method 8290
Dioxins and Furans
Yakutat 2002 Soil Samples

	Background - East	Background - West	South Ankau
LOCATION OF SAMPLE:	Khanntak Is.	Khanntak Is.	Saltchuck
DATE OF SAMPLE:	8/27/2002	8/27/2002	8/28/2002
TYPE OF SAMPLE:	soil	soil	soil
FIELD SAMPLE ID: 02YAKOC-	01-SO	02-SO	03-SO
TESTING LABORATORY:	SW Lab of Ok	SW Lab of Ok	SW Lab of Ok
LABORATORY SAMPLE ID:	50687.01	50687.02	50687.03
DATE RECEIVED:	8/29/2002	8/29/2002	8/29/2002
DATE ANALYZED:	9/12/2002	9/12/2002	9/12/2002
CONCENTRATION UNITS:	ng/kg (dry weight)	ng/kg (dry weight)	ng/kg (dry weight)
TEQ	0.0007 B	0.0504	1.3240
2,3,7,8-TCDD	ND(0.441)	ND(0.761)	ND(0.812)
1,2,3,7,8-PeCDD	ND(0.407)	ND(1.052)	ND(0.789)
1,2,3,4,7,8-HxCDD	ND(0.643)	ND(1.443)	ND(1.153)
1,2,3,6,7,8-HxCDD	ND(0.548)	ND(1.231)	2.629
1,2,3,7,8,9-HxCDD	ND(0.558)	ND(1.253)	ND(1.001)
1,2,3,4,6,7,8-HpCDD	ND(0.581)	0.04596	0.7322
OCDD	~~0.000727B~~	0.004163B	0.07442B
2,3,7,8-TCDF	ND(0.328)	ND(0.545)	ND(0.557)
1,2,3,7,8-PeCDF	ND(0.275)	ND(0.629)	ND(0.524)
2,3,4,7,8-PeCDF	ND(0.292)	ND(0.668)	ND(0.557)
1,2,3,4,7,8-HxCDF	ND(0.453)	ND(0.923)	0.1265
1,2,3,6,7,8-HxCDF	ND(0.442)	ND(0.901)	ND(0.658)
1,2,3,7,8,9-HxCDF	ND(0.527)	ND(1.073)	ND(0.784)
2,3,4,6,7,8-HxCDF	ND(0.596)	ND(1.213)	ND(0.887)
1,2,3,4,6,7,8-HpCDF	ND(0.397)	ND(0.611)	0.1216
1,2,3,4,7,8,9-HpCDF	ND(0.532)	ND(0.819)	ND(0.545)
OCDF	ND(0.545)	.0002291	0.006384

EPA Region 9 Preliminary Remediation Goal in Residential Soils (10/1/02)
TEQ = 3.9 ng/kg (dry weight)

strikethrough = datum qualified
ng/kg: nanograms per kilogram (parts per trillion)
TEQ: Toxicity Equivalence Quotient
B: Analyte Detected in the associated method blank.
ND: Not Detected. (The number in parentheses is the method reporting limit).

Table 3. Results of tissue sampling at Ocean Cape, Yakutat, Alaska (2002). TEQ's were calculated by the State of Alaska Department of Environmental Conservation and are based on the World Health Organization' Toxicity Equivalency Factors.

Method 8290
Dioxins and Furans
Yakutat 2002 Shellfish Composite Tissue Samples

LOCATION OF SAMPLE:	Ankau Bridge Cockles	Ankau Bridge Clams	Ankau Bridge Mussels	(background) Ocean Cape Mussels	Culture Camp Clams
DATE OF SAMPLE:	8/28/2002	8/28/2002	8/28/2002	8/28/2002	8/28/2002
TYPE OF SAMPLE:	tissue	tissue	tissue	tissue	tissue
FIELD SAMPLE ID: 02YAKOC-	04-TS	05-TS	06-TS	07-TS	08-TS
TESTING LABORATORY:	SW Lab of Ok	SW Lab of Ok	SW Lab of Ok	SW Lab of Ok	SW Lab of Ok
LABORATORY SAMPLE ID:	50687.04	50687.05	50687.06	50687.07	50687.08
DATE RECEIVED:	8/29/2002	8/29/2002	8/29/2002	8/29/2002	8/29/2002
DATE ANALYZED:	9/12/2002	9/12/2002	9/12/2002	9/12/2002	9/12/2002
CONCENTRATION UNITS:	ng/kg (wet weight)	ng/kg (wet weight)	ng/kg (wet weight)	ng/kg (wet weight)	ng/kg (wet weight)
TEQ	0.3178	0.1909	0.1515	0.0027	2.1821
2,3,7,8-TCDD	ND(0.957)	ND(1.490)	ND(1.218)	ND(1.066)	ND(1.050)
1,2,3,7,8-PeCDD	ND(1.197)	ND(1.406)	ND(4.163)	ND(1.110)	ND(1.180)
1,2,3,4,7,8-HxCDD	ND(1.482)	ND(1.018)	ND(1.758)	ND(1.773)	ND(1651)
1,2,3,6,7,8-HxCDD	ND(1.264)	ND(0.868)	ND(1.500)	ND(1.512)	0.4203
1,2,3,7,8,9-HxCDD	ND(1.287)	ND(0.884)	ND(1.527)	ND(1.539)	ND(1.434)
1,2,3,4,6,7,8-HpCDD	0.2532	0.1415	0.1146	ND(1.481)	1.21
OCDD	0.02457	0.02165	0.009338	0.002714	0.1358
2,3,7,8-TCDF	ND(0.701)	ND(1.059)	ND(0.950)	ND(0.710)	ND(0.764)
1,2,3,7,8-PeCDF	ND(0.676)	ND(0.843)	ND(0.622)	ND(0.695)	ND(0.611)
2,3,4,7,8-PeCDF	ND(0.718)	ND(0.896)	ND(0.661)	ND(0.738)	ND(0.649)
1,2,3,4,7,8-HxCDF	ND(1.052)	ND(1.296)	ND(1.112)	ND(1.087)	0.2214
1,2,3,6,7,8-HxCDF	ND(1.027)	ND(1.264)	ND(1.085)	ND(1.061)	ND(0.952)
1,2,3,7,8,9-HxCDF	ND(1.222)	ND(1.506)	ND(1.292)	ND(1.264)	ND(1.133)
2,3,4,6,7,8-HxCDF	ND(1.382)	ND(1.703)	ND(1.461)	ND(1.429)	ND(1.282)
1,2,3,4,6,7,8-HpCDF	0.0385	0.02652	0.02699	ND(0.861)	0.1877
1,2,3,4,7,8,9-HpCDF	ND(1.047)	ND(1.280)	ND(1.278)	ND(1.155)	ND(1.213)
OCDF	0.001507	0.001195	0.000531	ND(1.705)	0.006937

US EPA "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories"
Risk based consumption limit for dioxins/furans, "unlimited meals"
TEQ = 0.019 ng/kg (wet weight)

ng/kg: nanograms per kilogram (parts per trillion)
TEQ: Toxicity Equivalence Quotient
ND: Not Detected. (The number in parentheses is the method reporting limit).

5.0 Recommendations/Considerations

Background soil sampling results indicate there are background levels of dioxin near Yakutat, Alaska. However, these background levels do not exceed the EPA Region 9 preliminary remediation goals. Past soil sampling conducted by ENSR International, at the former Ocean Cape Barracks, report TEQ levels that far exceed 3.9 ppt (see 2000 Remedial Investigation Report). The results of this study suggest that some soils at the Ocean Cape Radio Relay Site are anomalously high in dioxins.

Tissue sampling results address and support the concern that subsistence foods near Ocean Cape, Yakutat, Alaska are contaminated with dioxins. It is noted, that although contamination was found in shellfish, there is no conclusive evidence to pinpoint the exact source of contamination. Given the nature of dioxins, some background levels of detection were expected and this is confirmed by detection of dioxin in background sample #7. However, the sampling results show higher levels of dioxin contamination within Ankau Saltchuck, which is adjacent to the former Ocean Cape Radio Relay site (F10AK0747). It is recommended that more comprehensive tissue sampling for dioxins be conducted, including shellfish, fish, algae and berries. The sampling design needs to include locations near Ocean Cape Radio Relay site, throughout the Ankau Saltchuck and in background locations.

Although sample #3 (1.3240 ppt) did not exceed the EPA Region 9 preliminary remediation goal of 3.9 ppt, some discussion is warranted for finding a higher TEQ in this sample than the other two background soil samples taken during this study. Sample #3 was taken closer to the Ocean Cape Radio Relay Site (in Ankau Saltchuck), while the other two samples were taken on Kahntaak Island. Water mixing in Ankau Saltchuck could potentially be transporting dioxins throughout the saltchuck. This trend would be supported by the tissue sampling data as well. TEQ's for samples #4, 5 and 6 (all within the Ankau Saltchuck) all detected dioxin concentrations higher than the screening levels established in this report (0.019 ppt), and these concentrations were approximately 10 times greater than levels found in background sample #7. This trend can not be statistically supported due to the low number of samples taken. It is recommended that if further soil and tissue sampling for dioxins should take place that a gradient sampling regime be set up to determine the extent of dioxin contamination within and adjacent to the Ankau Saltchuck.

The Yakutat Tlingit Tribe continues to express concerns about Department of Defense activities in Yakutat, Alaska. In 1996, they contracted AGRA Earth and Environmental to conduct a summary investigation of DoD activities, with the purpose of addressing the high cancer rate in Yakutat and the potential health risk of using the Culture Camp. In this current study, CCTHITA worked with YTT in sampling to directly address their concerns. It is imperative that all future work at the Ocean Cape Radio Relay site include the close coordination and participation of the Yakutat Tlingit Tribe. Contamination from past military activities at this site not only impact their Native lands and resources, but may also be impacting the health of their tribal members.

6.0 References

Chemical Data Quality Review: CCTH NALEMP 2002, Soil and Tissue Sampling. Report prepared for U.S. Army Corps of Engineers. Submitted by ETHIX

Summary Investigation of DOD Activities on Yakutat Tribal Lands, ANA Grant No. 90NM0024/0 (March, 1997). Submitted by AGRA Earth & Environmental, Inc. Submitted to Yakutat Tlingit Tribe.

Draft Yakutat Air Base/Ocean Cape Radio Relay Site Investigation Report Yakutat, Alaska (December, 1997). EPA Region X START Report submitted to U.S. Environmental Protection Agency

Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Volume 1: Fish Sampling and Analysis (November, 2000). U.S. Environmental Protection Agency

Dioxin and Dioxin-like Compounds in Soil, Part 1: ATSDR Interim Policy Guideline (August, 1997). Agency for Toxic Substances and Disease Registry.

EPA Region 9 Preliminary Remediation Goals (November, 2002). http://www.epa.gov/Region9/waste/sfund/prg/files/02table.pdf

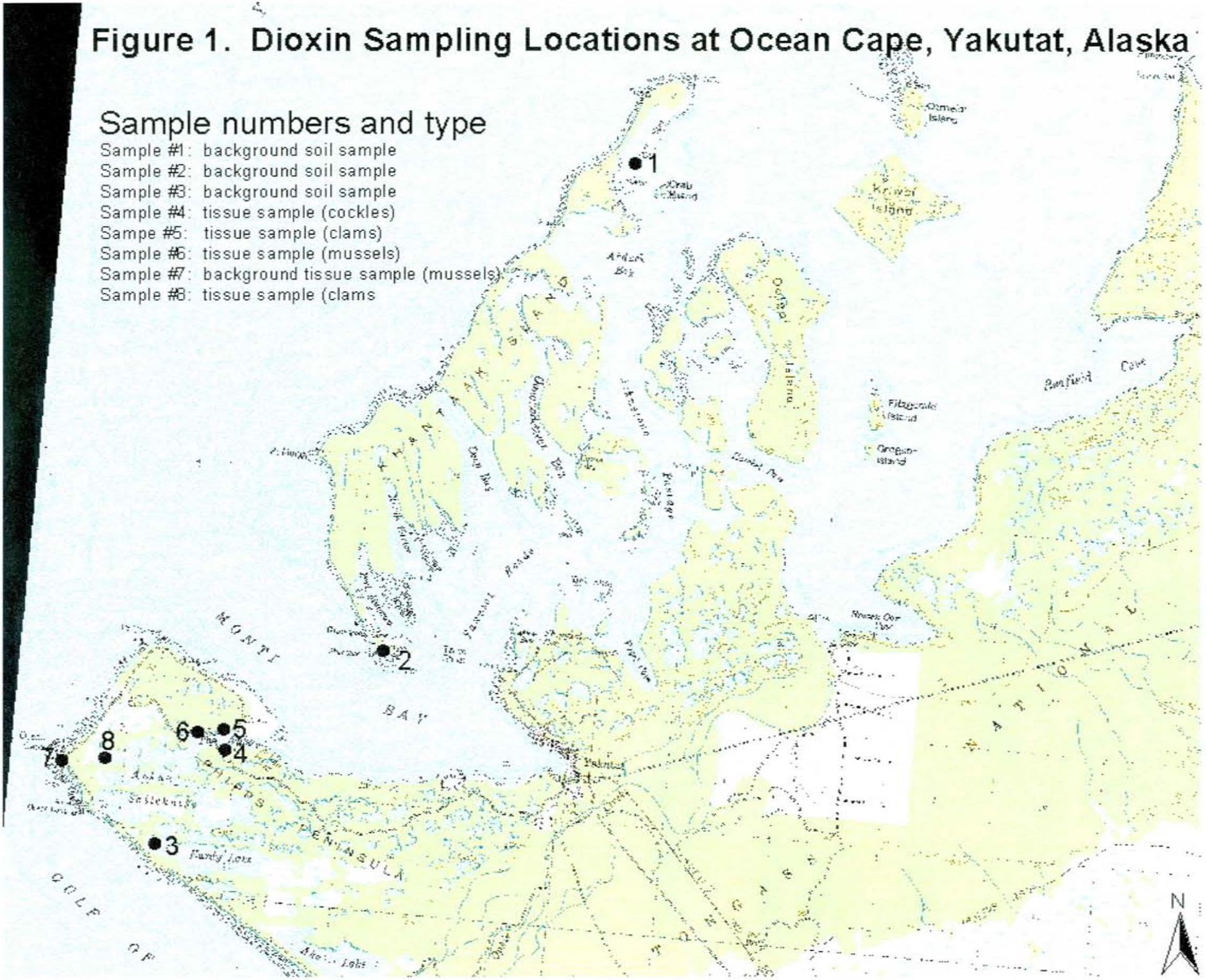
2000 Remedial Investigation Report, Remedial Investigation/Feasibility Study Yakutat Area, Alaska (February 2003). Prepared by ENSR International Report submitted to the U.S. Army Corps of Engineers - Alaska District. Document No. 09000-216-310

World Health Organizations' Toxicity Equivalency Factors. http://www.sho.int/pcs/docs/diozin-exec-sum/exe-sum-final.html

Figure 1

Contaminant Sampling Locations

Figure 1. Dioxin Sampling Locations at Ocean Cape, Yakutat, Alaska



Appendix A

CCTHITA Contaminant Sampling Plan

CONTAMINANT SAMPLING PLAN

Central Council Tlingit and Haida Indian Tribes of Alaska

Sampling Sites

Fort Pierce / Fort Ray

Yakutat

Prepared by the
Environmental Section
Native American Lands Environmental Mitigation Program
Native Lands and Resources Department

Central Council Tlingit and Haida
Indian Tribes of Alaska

July 2002

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Work Plan

1(0) INTRODUCTION

1(1) Document Organization

This document presents the Work Plan for the proposed site investigations at Fort Pierce, Fort Ray, and Yakutat Ocean Cape. This Work Plan consists of four basic components:
A.) Project Work Plan: describes the basic scope of work and objectives of the Contaminant Sampling Plan. Outlines project organization and responsibilities. Presents site history and background information, including the findings of previous investigations at the site.
B.) Attachment I- Sampling and Analysis Plan (SAP): The Sampling and Analysis Plan are subdivided into two parts:

i.) Part A – Field Sampling Plan (FSP): describes in detail the field sampling and sample handling procedures to be followed.
ii.) Part B – Quality Assurance Project Plan (QAPP): Describes the chemical data quality management procedures to be followed, and the data reporting requirements for these projects.

C.) Attachment II – Site Specific Health and Safety Plan (SSHSP): Describes on-site health and safety procedures that will be followed during these site investigations.

1(2) Project Organization and Responsibilities

1(2.1) Project Organization: The 2001 Cooperative Agreement with the Department of Defense Authorizes the United States Army Corp of Engineers (ACOE) to serve as Partners with the Central Council. The ACOE has been enacted to be the Project Officer for CCTHITA NALEMP projects, which generally consists of sampling plan review and approval, overseeing of field sampling activities, and review of sampling reports. The Central Council has established a Native American Lands Environmental Mitigation Program (NALEMP) within the Native Lands and Resources Department.

1(2.2) Responsibilities: The Responsibilities of the Cooperative Agreement partners, Department of Defense, Army Corp of Engineers, and the CCTHITA are described below:

A) Department of Defense: is responsible to meet its trust responsibilities under the Federal Trust Doctrine, Indian Treaties, Executive Orders, Agreements, Statutes, and their obligations.
B) Army Corp of Engineers is responsible for the fulfillment of the NALEMP Project Officers roles and responsibilities, which include: reviewing and approving contaminant sampling plans at the request of CCTHITA; assisting with contaminant sampling field work; and review of contaminant sampling results.
C) CCTHITA is responsible for Project Management of the NALEMP program and developing Cooperative Agreements with the Department of Defense.

1(2.3) Contaminant Sampling Plan Development: The CCTHITA / NALEMP Project Manager is responsible for development of the project Work Plan, which will include the documentation described in Section 1.1 above. The Work Plan will be consistent with the

requirements of the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency (EPA), and the State of Alaska Department of Environmental Conservation (ADEC).

1(2.4) Laboratory Analytical Services: The CCTHITA / NALEMP Project Manager will be responsible for selecting laboratories and procuring analytical services for any chemical analyses that will be performed as part of this work plan.

1(2.5) Field Work: Contaminant sampling will be conducted by personnel from: CCTHITA; USACE, and at least one representative from partnering tribes. See Attachment IV – Resumes of sampling personnel.

1(2.6) Site Safety Officer: The NALEMP Project Manager will be the responsible Site Safety Officer, unless that role is delegated to another site investigation participant.

1(2.7) Data Quality Review: The NALEMP Project Manager will be responsible for receiving raw data reports from the analytical laboratories. The project manager and CEPOA will cooperatively select a data reviewer and establish criteria for data reviews.

1(2.8) Chemical Data Quality Assessment Report: The NALEMP Project Manager will be responsible for the preparation of a Tribal Chemical Quality Assurance Report (TCQAR).

1(2.9) Contaminant Sampling Report: The Contaminant Sampling Reports will be prepared by the NALEMP Project Manager, using the findings of the field investigations, with the analytical results and TCQAR provided by CCTHITA. Separate Contaminant Sampling Reports will be prepared for each site.

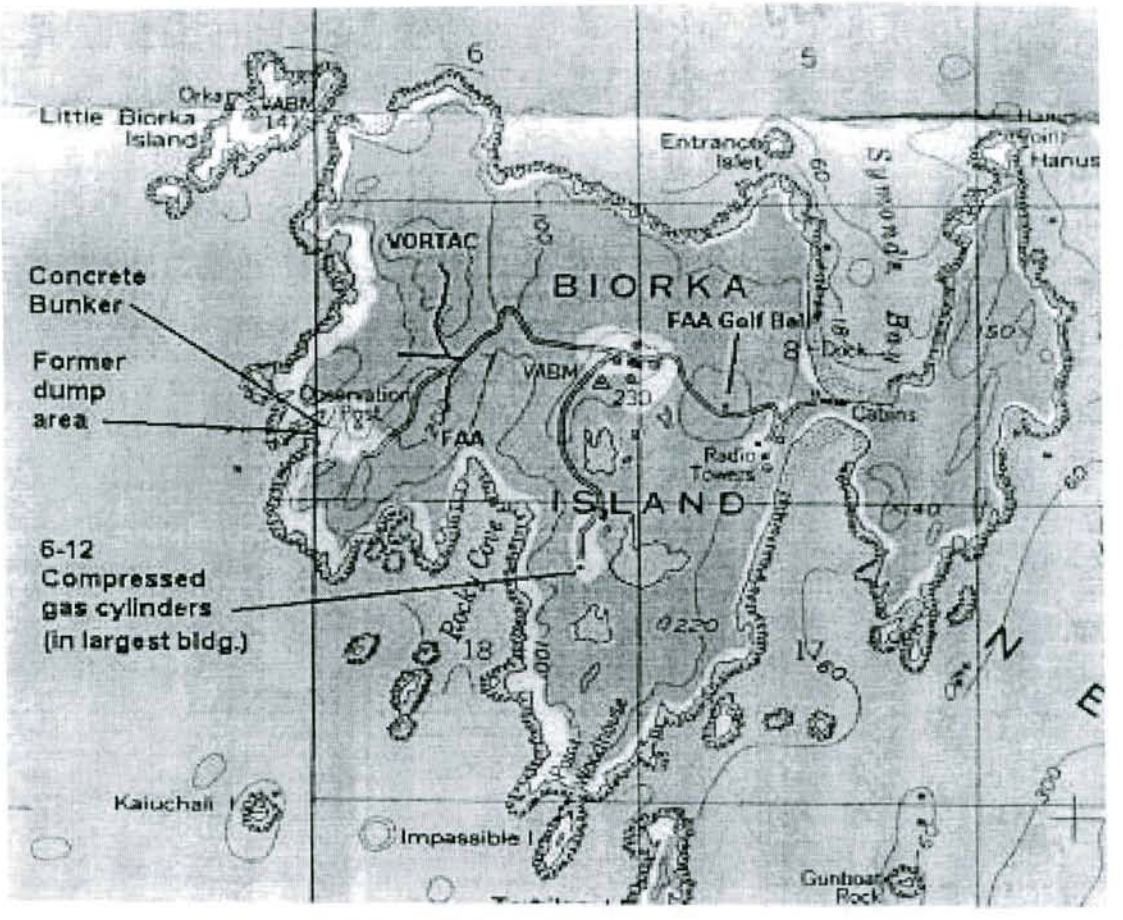
2(0) Project Background

2(1) Site Locations and Site Histories

2(1.1) Site Locations: There are three site locations for this Contaminant Sampling Plan, including Fort Peirce and Fort Ray in the Sitka area, and the Ocean Cape Radio Relay Site in the Yakutat area.

Fort Peirce is located on Biorka Island, 40 miles southwest of Sitka, Alaska. Biorka Island (approximately 1900 acres) is an outer coast island, located on the edge of the Gulf of Alaska, 20 miles west of Baranof Island. The legal description is Township 58 South, Range 63 East, Sections 7, 8, 9, 17, and 18; and Township 58 South, Range 62 East, Section 12. The site contains 507 acres.

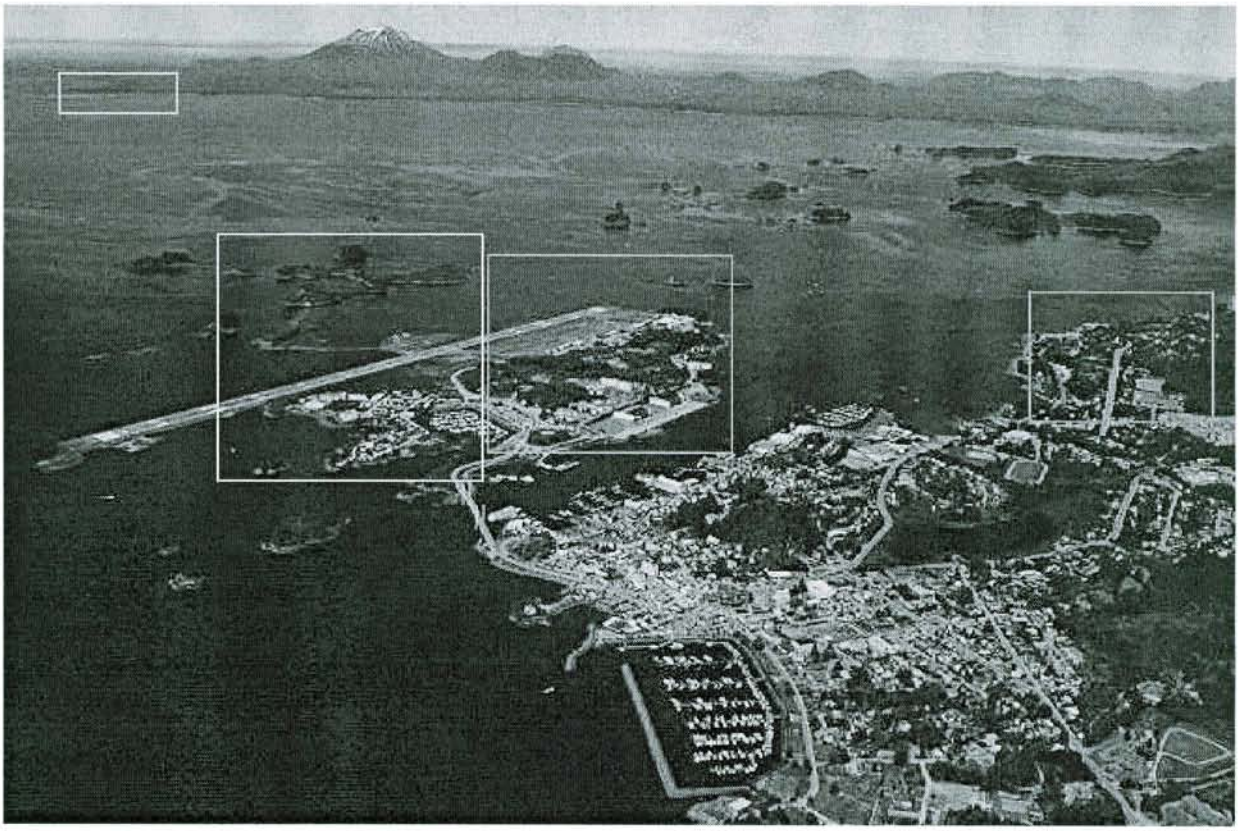
Map of Fort Peirce (Biorka Island)



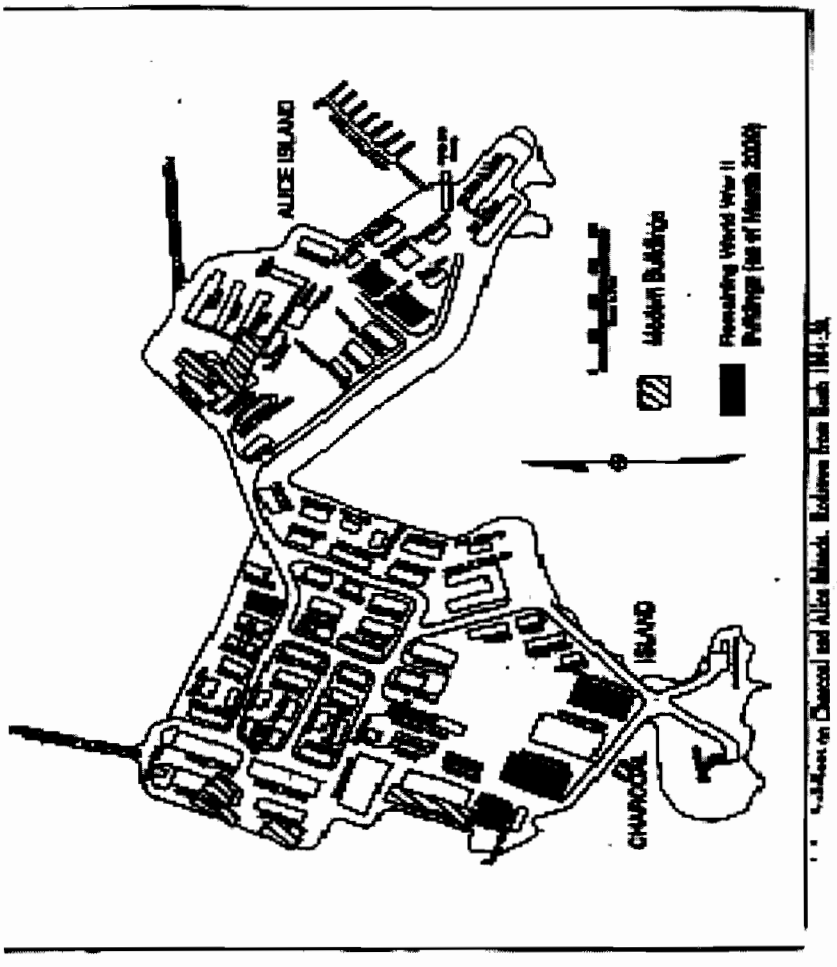
Topo of Biorka Island (1 square = 1 mile)

The Fort Ray site is located on Charcoal and Alice Islands, two small islets approximately ¼ mile offshore (west) of downtown Sitka. These islets are part of the Japonski Island islets, and are adjacent to the Sitka commercial airport and U.S. Coast Guard Air Station (on Japonski Is.). Charcoal Island is approximately 0.4 miles wide, and Alice Island is about ½ that size. The legal description is Township 56S, Range 63E, Sections 1 & 2, Copper River Meridian, containing approximately 35 acres.

Aerial Photo of Sitka Harbor – Fort Ray (with white outline)

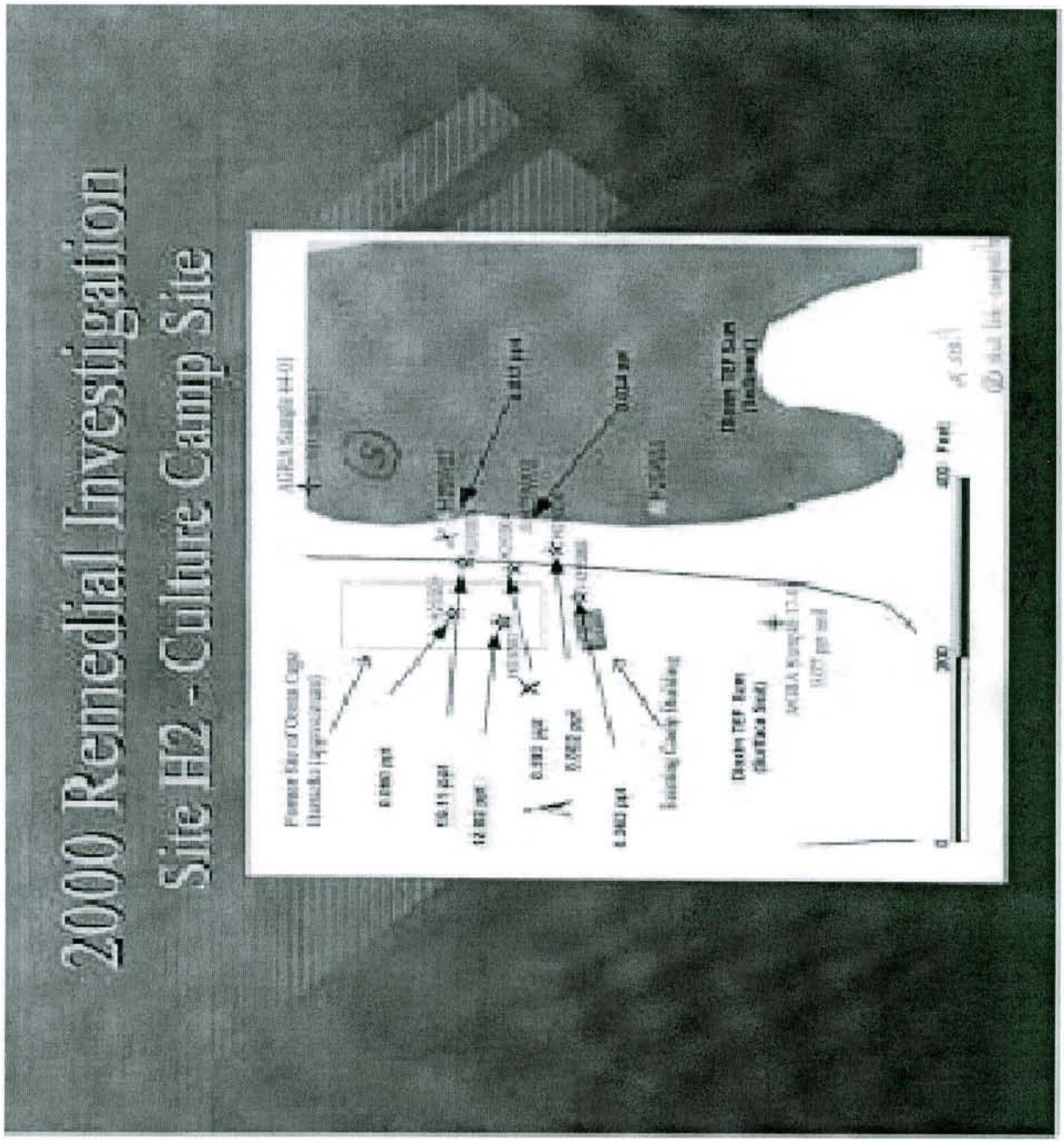


Map of Fort Ray Site



The Ocean Cape Radio Relay Site is located at the mouth of Yakutat Bay on the southeast side, 2.5 miles southwest of the town of Yakutat. More specifically, the site is located at "Ocean Cape" at the end of Phipps Peninsula on Pt. Carrew road. The legal description of the site is Township 27S, Range 33E, Sections 21, 25-29, 32-36, Copper River Meridian, containing 244.83 acres. The latitude and longitude for the site are approximately 59.5 and 139.8 degrees respectively. See Aerial Photo and site map of Ocean Cape Site.

Site map of Yakutat Culture Camp – 2000 ACOE Sampling Site Visit



Aerial Photo of Yakutat Ocean Cape Site

2(1.2) Histories of Sample Sites: The Histories for each site are listed below:

2(1.2.1) Fort Peirce: On October 19th, 1909, Biorka Island was withdrawn from the Tongass National Forest by Executive Order 1133 and reserved for use by the U.S. Navy. Biorka Island was to be used as a battery (#291) with two six-inch gun emplacements during WWII to protect the Naval Operating Base Station at Japonski Island and Fort Ray on Charcoal and Alice Islands. Records indicate that construction of Fort Peirce began in 1941, and included concrete gun emplacements, bunkers, vaults for diesel storage, and support buildings. The construction was never completed and the guns never installed before the site was declared excess by the US Navy in 1942.

Following the war, the U.S. Coast Guard (USCG) operated a LORAN station on the island. In 1985 the USCG transferred 160 acres of the original 784-acre USCG withdrawl to the FAA. This portion of the USCG property contained the majority of known contaminants. The Federal Aviation Administration (FAA) has also operated a number of navigation, communication, and radar facilities on the island. Currently, the FAA operates a very high frequency omnidirectional range and tactical air navigation (VORTAC) facility, an air traffic control beacon integrator/remote communications air/ground facility, and a nondirectional beacon (NDB). The NDB is located at the former LORAN site operated by the USCG. A previously used quarters, operational, and docking area is located in Symonds Bay. The Southeast Alaska Regional Health Consortium had been (in the last few years) using the quarters area for a youth alcohol and drug abuse rehabilitation center.

In 1988 the FAA performed an audit of the Biorka Island Station and identified the following environmental concerns (Ecology & Environment 1992): 1) Evidence of petroleum fuel leaks and spills in several locations, including the area surrounding four approximately 25,000 gallon fuel tanks located on the beach near the dock, the FAA station fuel pump house, the engine generator building, and the VORTAC building 2) Abandoned containers of various hazardous chemicals throughout the facility 3) Asbestos building materials at the former USCG facility 4) Garbage and solid waste disposal sites near the former quarters area and at the former observation post on the west side of the island (materials were dumped over the cliff toward the sea). In 1988 the USCG was informed that it was liable under CERCLA for removal of various wastes and materials at the Biorka Island site.

The FAA performed a cleanup effort on the island in 1989. Various containers of waste were collected and overpacked for shipment to Northwest Enviroservices in Seattle, Washington. Also in September of 1989 the USCG hired Glen, Inc. of Anchorage, Alaska to remove an unspecified amount of material and equipment from the site.

In 1998 Army COE staff performed a site visit to determine that "No Further Action" (NOFA) was warranted, or to collect information needed to design a contract action to bring the site to a (NOFA) status. The ACOE had previously determined that the focus of the investigation was two 3,500-gallon diesel fuel vaults. Other concerns included reports of transformer casings in the dump and abandoned gas cylinders in an old building on the island. The ACOE team found 3 presumed "oxygen" cylinders in an old building on FAA land, and determined them to be of low risk. The transformer casings were never found. The ACOE determined that No Further Action is

recommended for the Fort Peirce site. The two diesel fuel tanks were found to have amounts of diesel and water in them. Tank #1 had approximately 150 gallons of diesel floating on about a foot of water. Tank #2 was mostly full of water mixed with small amounts of diesel fuel.

2(1.2.2) Fort Ray: Japonski Island was set aside as a naval reservation in the early nineteenth century. The defense of Navy bases in Alaska was the responsibility of the Army. Fort Ray was the Army Garrison for the defense of the Sitka Naval Air Station, later changed to the Sitka Naval Operating Base (which was located on Japonski Island and surrounding islets). The Naval Base was the largest in SE Alaska at the time. The Army Garrison facilities included the commander's quarters, barracks, mess halls, administration buildings, officer's quarters, an officer's club, motor sheds, a quartermaster warehouse, day rooms, an ordnance shop, cold storage buildings, a fire station, a post exchange, a guardhouse, a paint and oil storage building, an ammunition magazine, a three-ward hospital, an infirmary, nurse's quarters, storehouses, a boiler house, a bakery, a laundry, utility buildings, garages, a decontamination station, recreation buildings, a post office, an emergency powerhouse, a ferry slip, a pier with seven finger floats, a dock house, a boat shop, and a softball field complete with bleachers.

Construction of the facilities started in January 1941. Prior to construction (September 1940), a contractor was hired to level Charcoal Island from the near 300' elevation (of mostly solid rock) to 8' above the mean high tide line. The garrison was constructed to accommodate 194 officers and 2,988 enlisted men. A total of 136 housing buildings, 11 administration buildings, 13 maintenance buildings, 11 recreational buildings, and 18 messhalls were built.
Fort Ray operated from 1941 to 1943. The fort stood ready for potential Japanese invasion into Alaska until after the battle of Midway in June of 1942 lessened the tension. In June of 1944 the Navy deactivated the Sitka facilities and by November 1944 Fort Ray was placed under caretaker status. The entire Fort Ray facilities were transferred to the Alaska Native Service in August 1946, which was charged with fighting the tuberculosis epidemic that was ravaging the Native communities of Alaska. The state Native sanatorium was located on Alice Island and the Mt. Edgecumbe hospital (on Japonski Is.) became an orthopedic facility for the care of bone and joint tuberculosis. It was too expensive to send deceased tuberculosis victims back to their home villages so hospital staff built wooden caskets and placed the dead in various ammunition magazines. The ammunition magazine on Charcoal Island became known as the Mermaid Cove Mausoleum.

A 1985 inventory of the site reported that there were 37 buildings in use. Colt Denfeld wrote in a 1987 article that portions of the fort are still standing and either in use as private residences or vacant, including: two 63-man and two 45-man barracks, two day rooms, three orderly rooms, four mess halls, six storehouses, and a commander's quarters. A public school was also built on Alice Island at the site of the old post hospital.

In 1986 Charcoal and Alice Islands were transferred to Shee-atika Corporation, the urban village corporation for Sitka. Most of the buildings remaining at this time were torn down over several years, but some remained, including: the ammunition magazine, an ordnance shop, a quartermaster warehouse and utility building, a cold storage facility, a fire station, and a barrack building all on Charcoal Island. All these buildings were still in use as businesses or private

residences as of 2000. Figure 1 – "Buildings remaining at the Fort Ray Army Garrison in March 2000", depicts the layout of the fort in the 1940's as well as the buildings that remained in 2000.

On October 19th and 20th 2000, Carson Dorn Incorporated (Environmental Consultants) was commissioned by the Alaska Department of Transportation and Public Facilities (DOT/PF) to conduct a Phase I Environmental Assessment on lots 170 and 172 on Charcoal Island, owned by Shee-Atika Corporation. The DOT/PF wanted to acquire the land in order to improve airport safety and provide space for airport expansion. Shee-Atika stated in an email that the 14.58 acres of Charcoal Island has been transferred to the State DOT/PF. It is not known if the buildings on the lot have been removed as the DOT/PF had planned to do.

These two lots make up the approximately 14.58 acres of the roughly 20-acre island. There are 6 buildings on these lots, 5 of which are original Fort Ray buildings, and the other building is a steel building constructed by Shee-Atika in 1997. Five of the six buildings were being leased (as of 2000) and house a diverse mix of businesses, including: a preschool, Native cultural center, woodworking shop, refrigeration repair, outboard and marine repair shop, boat prop repair, automotive repair shop, seafood processing plant, and an asphalt batch plant (outdoors). Past uses of these buildings and surrounding property have been heavily focused on industrial activities, which utilize a variety of petroleum products (such as gas, diesel, oil, solvents, lubricants, and asphalt material).

Here is a report of the findings from the Carson Dorn Phase I Environmental Site Assessment:
In 1985 the ACOE contracted with Sverfrup, Parcel & Associates to do an inventory of the Fort Ray site. The inventory only addressed 21 buildings not currently in use, but did not address 37 other buildings in use by Shee-Atika. The ACOE reported that the Charcoal Island property did not contain any unsafe debris or hazardous materials from past DOD uses.

In 1995 Shee-Atika removed the original electrical system for the fort, including 21 transformers containing PCB's. The transformers were shipped to Burlington Environmental in Seattle, Washington, and there is no indication that any PCB's were released onto the site.
Also in 1995, Shee-Atika contracted with Full Moon Enterprises to remove 32 underground storage tanks form Charcoal and Alice Islands, 13 of which were located on lots 170 and 172. Eleven of the thirteen tank sites were sampled for contaminants, and six of these were found to exceed clean-up standard levels of contaminants. A contractor was hired to clean-up two of these sites, but the remaining four sites presumably still need some clean-up effort. See document "Phase I Environmental Site Assessment of Lots 170 & 172, Charcoal Island, Sitka Alaska – November 2000" for contamination levels.

In 1996, petroleum contamination was encountered at the 2-3 foot depth while excavating for a water line adjacent to Galena Drive on Charcoal Island. Contamination was found to be as high as 7,880 mg/kg diesel range organics, but limited in extent. Historical evidence shows that an automotive repair shop once existed in the immediate area. Contamination was documented by ADEC and left in place. All Fort Ray era buildings potentially house asbestos containing materials and should require sampling and abatement if the buildings are removed. Also, fluorescent lighting may contain PCB ballasts that would require appropriate disposal.

2(2) Environmental Setting

2(2.1) Geology: Southeast Alaska is a part of the Coast Range Mountains that extend from California to the Alaska Peninsula. It is a broad belt of interconnected ranges that have been subject to several events of folding, faulting, and intrusion, which have produced complex geology and rough terrain. Glaciation is the overriding factor in development of present day landforms. The terrain is immature, soils shallow and nutrient poor, and vegetation is not yet in climax condition.

Yakutat is located at the mouth of Yakutat bay, on the ancient outwash plain (Yakutat forelands) of North America's largest glacier, the Malaspina. The outwash plain and associated moraine, lacustrine, and alluvial sediments were deposited during retreat of the Malaspina 500 to 600 years ago. Outwash deposits range in size from silty sand to cobble gravel, with occasional cobble-sized rocks and boulders.

The Sitka area is comprised mainly of granite, Sitka greywacke, and low-grade metamorphic rocks such as phyllites. Volcanic ash and cinders are the principal parent materials, as most of this area was blanketed by 2 to 6 feet of volcanic ash about 9-12,000 years ago (Riehle et al. 1992). The Japonski Island Islets have been principally shaped by thousands of years of heavy wave and tidal action.

2(2.2) Climate: Yakutat has a maritime climate characterized by relatively mild, but often rain or snow dominated weather. Average summer temperatures range from 42 to 60 F. Average winter temperatures range from 17 to 39 F. Moist air from the Gulf of Alaska is forced to rise when it meets the peaks of the St. Elias Range causing cloudiness, rain, and snow 80% of the time. Total precipitation averages 132 inches per year, while total snowfall averages 219 inches per year. Prevailing winter winds are from the east at 6.9 to 9.3 miles per hour.

Sitka has a maritime climate characterized by mild, but very wet and often windy weather. Warm and moist air from the Gulf of Alaska is forced to rise when it meets the steep mountains around Sitka, resulting in rain most of the time. Yearly precipitation and snowfall averages are 90 and 50 inches respectively. Summer temperatures average 46F to 60F, while winter temperatures average 26F to 40F. The prevailing wind is from the east-southeast at 6.2 knots.

2(2.3) Ecological Resources of each site are listed below:

2(2.3.1) Fort Ray / Fort Pierce: The Sitka Sound area boasts some of the state's best fisheries and marine resources! All five species of Pacific salmon, herring, steelhead, dolly-varden, cutthroat trout, halibut, rockfish, and other bottom fish are found in relative abundance in these waters. The Sitka area is also productive for most every species of shellfish found in SE Alaska, including abalone, an uncommon but highly prized resource. The kelp beds in the area are important for providing food, cover, and resting places for many species, including sea otters, herring, salmon, and seabirds. The Sitka Sound and surrounding waters and the resources found in these waters provide for a large portion of Sitka's economy, whether in the commercial fishing and fish processing industry, or in

tourism related businesses like tour ships, whale watching, sea kayaking, and guided sport fishing.

2(2.3.2) Yakutat Ocean Cape RRS: The Yakutat area supports an abundant population of fish and wildlife resources, which are utilized by approximately 7,000 annual visiting sport hunting and fishing enthusiasts as well as the majority of the 700 year round residents for subsistence. Terrestrial mammals such as moose, brown and black bear, wolves, lynx, mountain goats, and sitka black-tailed deer can be found in the area. Small mammals such as mink, river otter, marten, beaver, marmot, red squirrel, ermine, deer mice, and red fox are also plentiful. Marine mammals such as sea otter, sea lion, harbor and fur seals, killer, humpback, grey, minke, and beluga whales are found at certain times of the year. The Yakutat Forelands are an important resting spot for migratory waterfowl traveling the Pacific Migration Route. Fisheries resources of importance include all five salmon species plus steelhead, halibut, rockfish, pacific herring, pacific cod, pollock, and lingcod. Important shellfish include dungeness, tanner, and king crab, shrimp, and scallops.

2(2.4) Cultures: Yakutat is a Tlingit Village established in 1889. The original Native settlers were thought to be Eyak speaking people from the Copper River area near Cordova. The legend states that a canoe party pulled into the bay to wait out a storm, and they're still waiting. The old village site has since been washed away by the perpetual ocean surf. The present day village site was established in the early 1900's when families moved to be closer to the cannery, which opened in 1904.

The Sitka area is the traditional territory of the Sitka Tlingit, which was historically one of the largest and most powerful of the Tlingit tribes in SE. Several summer and permanent villages were established in the Sitka Sound area. Travel by means of dugout canoe, hunting, fishing, gathering, and trading amongst the neighboring tribes was all part of life for the Sitka Natives. A strong sense of culture and tradition still exists in the community today.

The Russians first came to Sitka in the late 1700's in search of furs from sea otter, harbor seal, and other fur-bearing mammals. The Russians set-up a fort to protect their fur-trading interests, mainly from the Tlingits, who fought against Russian settlement into the area. Russian influence is still evident in the town today (the Russian Orthodox Church and names of many town landmarks and streets).

2(2.5) Economies: The economy of Yakutat is based primarily on commercial fishing and fish processing. The first cannery opened in 1904. The Gulf of Alaska was extremely productive from 1900 thru the 1970's, but overfishing during the second half of the century greatly reduced the fishing take in the area. Tourism based revenue from sport fishing, guided hunting, and other activities are also important. The USFS estimates that 7,000 people visit Yakutat each year for these types of activities. The federal and state government provide the majority of year-round jobs. The Federal Aviation Administration, USFS, National Weather Service, and the State Departments of Transportation and Fish & Game provide most of the jobs.
The community is heavily dependent on subsistence fishing, hunting, and gathering to supplement their income. A very large fish camp with up to 50 cabins and fish houses is established at the mouth of the Situk River, and bustles with activity in the summer months.

Attachment I

Sampling and Analysis Plan

Contaminant Sampling 2002

NALEMP PROJECT SITES:

Fort Pierce / Fort Ray

Yakutat

Alaska

<<DRAFT>>

Prepared by the
Environmental Section
Native American Lands Environmental Mitigation Program
Native Lands and Resources Department
March 2002

Table of Contents

Part A. Field Sampling Plan

1(0) Introduction

This Field Sampling Plan (FSP) has been prepared for the planned Contaminant Sampling at Fort Pierce, Fort Ray, and Yakutat Ocean Cape RR details the scope of the proposed sampling activities, as well as the sampling procedures and equipment to be used.

2(0) Project Organization and Responsibilities

Project organization and responsibilities are detailed in Section 1.2 of the Work Plan. For these sites, sample collection, documentation, and sample handling performed by the NALEMP Project Manager, CCTHITA Environmental Assistant, Participating Tribal Staff, and Analytical Alaska Inc. Personnel.

3(0) Scope and Objectives of Sampling

The primary objectives of the planned sampling at Fort Peirce, Fort Ray and at Yakutat Ocean Cape RR are described below:

Fort Peirce:

A) Perform visual inspection of "old dump site" looking for suspected transformers, and of inter-tidal beach areas exhibiting signs of contamination such as petroleum "sheen" in soil or water;
B) Sample soil/sediment for suspected sources of fuels, PCBs, metals, VOCs, and PAHs.

Fort Ray:

A) Sample known and suspected potential sources (from old USTs) of toxic contaminations in terrestrial and aquatic resources;
B) Collect up to six discretionary samples of sediment and/or surface water, analyzing for fuels, VOCs, and PAHs;
C) Sitka Tribe is concerned that contaminants may be present in subsistence food resources found in the inter-tidal areas.

Yakutat Ocean Cape:

A) Sample known and suspected potential sources of toxic contaminations in terrestrial and aquatic resources near culture camp and in pristine areas for background levels;
B) Sample soil/sediment and shellfish tissue for Dioxins, which the community is concerned that may be found in the subsistence food resources.

3(1) Expected Types of Contamination

A) Weathered fuels, primarily ranging from Diesel #2 to bunker oil (found at Fort Ray & Fort Peirce Locations).
B) Polychlorinated biphenyls (PCBs), associated with the radar equipment and support structures (at Fort Peirce and Yakutat Ocean Cape);
C) Metals, associated with electrical equipment and fuel residues.

3(2) Known and Suspected Sources of Contamination

A) Fuels: ASTs and USTs

B) PCBs: electrical components and radar equipment such as transformers;

C) Metals: miscellaneous debris from construction of the facilities and as a residue from fuels.

3(3) Scope of Analytical Methods

The analytical methods selected for the Contaminant Sampling are shown in Table A1 below; specific target compounds for multi-analytical analysis are shown in Table B-1 of the QAPP:

Table A1 - Proposed Analytical Methods

Analytical Method	Target Contaminants
AK-102/103, Diesel Range Organics (DRO) and Residual Range Organics (RRO)	Mid-range and heavy fuel oils
AK-101, Gasoline Range Organics (GRO)	Gasoline
Method 8260B, Volatile Org. Compounds (BTEX only)	Fuel constituent compounds & solvents
Method 8270, Polyaromatic Hydrocarbons (PAHs) soils	Fuel constituent compounds
Method 8290, Dioxin	Dioxin like compounds
Method 8082, Polychlorinated Biphenyls (PCBs)	PCB dielectric from electrical equipment
Methods 6010-7000 series, Total Metals	Metals from electronic equipment, fuel residues

BTEX: Benzene, toluene, ethylbenzene, xylenes
SIMS: Selected Ion Mass Spectroscopy; see Table B-1 of the QAPP for list of target PAHs
Metals: Arsenic, Barium, Cadmium, Chromium, Mercury, Vanadium, and Nickel

3(4) Scope of Sampling Locations

The actual locations and numbers of samples to be collected will be determined in the field. Samples for DRO/RRO, GRO, BTEX, and PAHs will be concentrated at the USTs and ASTs. Any suspected fuel pipeline outfalls will be sampled for DRO/RRO, BTEX, and PAHs. Any obvious fuel-contaminated soils will also be sampled for metals.

If an area of stained soil is found, a limited number of soil samples for DRO/RRO analysis will be collected to help estimate the horizontal extent of contamination.

If the position of any former radar equipment can be determined with any confidence, apparent contamination will be sampled for PCBs and metals, in addition to DRO/RRO, BTEX, and PAHs. If no contamination is apparent at the radar equipment site, samples for PCBs may be collected in a grid-like pattern, or concentrated in hollows and run-off areas.

Dioxins will be sampled for in soils and shellfish near the Yakutat culture camp and at pristine locations on the islets northwest of the town of Yakutat (for background levels). The sample locations near the culture camp will be near sample sites that recorded high levels of contamination from the 2000 ENSR Remedial Investigation, in order to determine if a contamination pathway exists as a result of past DoD activities. The sample locations used for background levels will be areas traditionally used for shellfish gathering, that are also located away from any human activities potentially causing contamination.

At the Fort Ray site, samples will be collected from the inter-tidal zone surrounding Charcoal and Alice Islands. Soil and sediment will be sampled from areas showing visual signs of potential contamination (i.e. petroleum sheen). A visual inspection will occur at the Fort Peirce site, attempting to locate suspected transformers and signs of contamination in soils and/or water.

The estimated numbers of samples collected at each site are shown in Table A-2.

3(4.1) Background Samples: At least one sample for DRO/RRO, metals, and PAHs will be collected at each site, from a location thought to most likely be unaffected by on-site sources of contamination.

3(4.2) Duplicate Samples: A field duplicate sample will be collected at each site, for each analytical method used. The field duplicate will be sent to the laboratory as a "blind" duplicate, as an external check of laboratory precision.

Table A2 - "Number of samples collected at each site"

Site	Sample Medium	Analyzing For	Container/preservation	# Samples
Yakutat Ocean Cape	Soil/Sediment	Dioxins	8oz amber jar/none	3
"	Shellfish Tissues	"	8oz amber jar/none	4
Sitka - Fort Ray	Soil/Sediment	DROs (discretionary)	8oz amber jar/none	6
"		RROs (discretionary)	8oz amber jar/none	6
"		VOCs (discretionary)	40 ml vollavial/bisulphate	6
"		PAHs (discretionary)	8oz amber jar/none	6
Sitka - Fort Peirce	Soil/Sediment	DROs	8oz amber jar/none	1
"		RROs	8oz amber jar/none	1
"		PCBs	8oz amber jar/none	1
"	Soil and/or Product	DROs (discretionary)	8oz amber jar/none	2
"		RROs (discretionary)	8oz amber jar/none	2
"		RCRA Metals (discretionary)	8oz amber jar/none	2
"		VOCs (discretionary)	40 ml vollavial/bisulphate	2
"		PAHs (discretionary)	8oz amber jar/none	2
"	Product	SVOCs (discretionary)	8oz amber jar/none	2
"		PCBS (method 8082)	8oz amber jar/none	1

4(0) Field Sampling Activities

4(1) Site Access and Logistics: Transportation to sample sites will be trucks, ATVs, planes, and boats. The field team will travel through out the Southeast via commercial air transport, and make appropriate arrangements at the outlying communities.
If methanol preservative is used in samples for BTEX analysis, some equipment and samples may need to be shipped on cargo-only flights, depending on the carriers' interpretation of transport regulations (see Appendix IA-1).

4(2) Sampling Equipment and Procedures

4(2.1) Sampling Equipment: Sampling equipment will be clean, new, stainless steel spoons, stainless steel trowels, stainless steel mixing bowls, and appropriate sample collection jars. Equipment will be decontaminated in the field (with liquinox soap and distilled water) where applicable, but there will be enough equipment to use new equipment for each sample if necessary. New scalpels will be used to cut shellfish tissue away from the shells for sampling. New nitrile gloves will be used to collect each sample.

4(2.2) Soil/Sediment Collection: Soil samples will generally be collected from the top two to six inches of mineral soil available at the sampling point. Sampling depth for dioxins will be 2-3 inches from the surface. The expected nature of the site soils (thick organic mat and thin mineral layer overlying shallow bedrock) may require the appropriate sampling depth to be determined on a location-by-location basis. Any mat of live or dead vegetation will be carefully cut away and removed from the sampling point. A clean spoon or trowel will be used to collect soil from the desired depths. After mixing the soil to make a composite sample, the soil will be transferred to the appropriately labeled sample containers. If any samples are collected for volatiles analyses (e.g., GRO and BTEX, volatile organic compounds, gasoline range organics) jars for those analyses will be filled first and directly from the sampling point, and will not be composite samples. Any vegetation mat removed will be restored to the sampling point, if feasible.

4(2.3) Biological (shellfish tissue) Collection: All biological samples (shellfish) will be collected using new nitrile rubber gloves and new stainless steel equipment. Shellfish species sampled will include cockles (Clinocardium nuttallii), clams (Macoma inquinata and Tresus capax), and blue mussles (Mytilis edulis); All of which are commonly harvested for subsistence foods by Yakutat area residents (verbal interview w/ Bert Adams, Sr. of the Yakutat Tlingit Tribe – August 2002). Whole samples will be cut away from the shell, containerized (with at least 20 grams of tissue) in 8-ounce amber glass jars, frozen, held in the dark at 2 –4 degrees Celsius, and shipped to the lab for analytical preparation. The lab will be homogenizing shellfish samples for us in order to prevent unnecessary contamination.

5(0) Sample Chain-of-Custody and Documentation

5(1) Field Logbook

All information pertinent to a field activity will be entered in a bound logbook with consecutively numbered pages. Entries in the logbook will include at least the following information:

a) Names, addresses, phone numbers of all pertinent field contacts.
b) Date and time of sampling or site entry.
c) Sample location (to include horizontal and vertical measurements), sample identification number, and tests required.
d) Detailed field observations, to include soil type, apparent contamination, nearby debris or containers, type and markings on containers, condition and type of nearby vegetation.
e) Any field measurements such as temperature, depth, etc.
f) Climatic conditions for each day.
g) Names of field personnel, with signature of data recorder.
h) Any deviations from the Sampling and Analysis Plan

5(2) Sample Documentation

Each sample must be sealed in a labeled container immediately after it is collected. Labels may be filled out and firmly affixed to the container prior to collection to minimize handling of the sample containers. The labels will include at least the following information:

- Name/Signature of Collector - Sample Preservative
- Date of Collection - Test to be performed
- Project Name - Sample Number

A standard chain-of-custody form will be prepared for each sample shipment.

5(3) Sample Numbering System

A standard sample identification number system will be used, consisting of two digits designating the year, then a project code of up to four letters, then a two-digit sample number, followed by a two-letter matrix code. For example, "**02-YOCR-01-SO**" would be the number assigned to the first soil sample collected at the Yakutat Ocean Cape RR. The matrix codes to be used are "SO" for soil, "TS" for tissue, and "PR" for product.

5(4) Photographs

Extensive photo documentation of the site will be prepared. All sampling locations will be photographed; cards bearing the sample identification number will be placed at each sampling point when the photograph is taken, and photos of the sampling point will show the surrounding area and context of the sampling point. All structures and debris thought to be of interest will be photographed. A log will be maintained that indicates the location, subject, and direction of view of each photograph.

6(0) Sample Packaging and Shipping

Samples will be delivered to the laboratory within 48 hours of collection for laboratory analysis. Samples will be collected and placed into 8 oz. amber glass jar containers within 5 – 10 minutes of collection. Sample jars will be wrapped in cushion wrap and placed into a waterproof metal or equivalent-strength plastic cooler. Vermiculite will be placed in the bottom of the cooler to a depth of 3 inches. Each jar will be wrapped in an absorbent towel to cushion the jar and absorb moisture. The jars will then be individually sealed in plastic bags. The jars will be placed in the cooler, and additional inert packing material will be added to protect the jars from breakage. Ice packs will be inserted around and on top of the jars. The cooler will be filled to the top with cushioning and insulating material. The cooler will be packed to maintain the samples within a temperature range of 2 to 4 degrees Centigrade. The packed cooler must not exceed weight limitations established by the commercial carrier (typically, 70 pounds). Chain-of-custody forms and other appropriate documentation will be sealed in a plastic bag and affixed with tape to the inside of the cooler lid. If the cooler has a drain, the drain will be taped shut. The lid of the cooler will be secured by wrapping heavy-duty tape completely around the cooler at least two locations without obscuring any labels. The appropriate shipping labels will be affixed to the top of the cooler. Dated and signed custody seals will be placed at the front right and back left corners of the cooler, overlapping both the lid and cooler body. A summary of reporting and packaging requirements is provided in Appendix IA-1. Specific shipping requirements will be ascertained well in advance of the site visit.

Part B: Quality Assurance Project Plan

1(0) Introduction

This Quality Assurance Project Plan (QAPP) presents the data quality objectives, data quality control and quality assurance procedures, and data reporting procedures to be used for this project.

2(0) Organization and Responsibilities

Project organization and responsibilities are detailed in Section 1.2 of the Work Plan. The Data Quality Objectives have been developed by the NALEMP Project Manger. The acquisition of laboratory analytical services and data review services will be performed by the CCTHITA and/or CEPOA personnel.

3(0) Analytical Data Quality Objectives

The Data Quality Objectives (DQOs) for the chemical sampling at these sites are to generate chemical data that will quantify and characterize potential petroleum, PCBs, and metals contamination at the sites, and can be compared with up-to-date regulatory or risk-based benchmark values. The benchmark values are taken from the ARARs and TBCs described in Section 3.4 of the Work Plan:

- State of Alaska, 18 AAC 75, Oil and other Hazardous Substances Pollution Control Regulations, 11 July, 2002;
- U.S. Environmental Protection Agency, Region III, Risk-Based Concentration Tables.
  - U.S. Environmental Protection Agency, Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund sites

The proposed benchmark values (except Dioxin) are shown in Table B-1. The benchmark values for Dioxin, taken from the EPA advisory limits (see website http://www.epa.gov/ost/fishadvice/volume2/v2ch4.pdf) in fish is 0.019 ppt (parts per trillion) wet-weight. The lowest method detection limit for method 8290 is 0.01 ppt (Chris Floyd – ACOE Chemist – Anchorage, AK.).

For some chemicals, the lowest concentration benchmarks may not be achievable by readily-available analytical methods, and it is not always feasible to select a detection limit below the lowest cited benchmark value. In most cases, the low benchmark is an ADEC proposed soil-to-groundwater screening criterion for metals; background sampling for metals will be important in assessing whether criterion is truly appropriate. In selecting benchmarks, the inhalation pathway for volatiles in soils was not considered due to the age of the expected contamination and the high winds typical at the sites. Ecological TBCs were not considered for this preliminary stage of these projects.

Table B-2 presents the analytical data quality objectives (DQOs) necessary to meet the project DQOs described in the FSP and Work Plan.

Table B.1 – Proposed Benchmark Concentrations

Parameter	State of Alaska Soil Cleanup Level[1]	Other
--Soils--	*mg/kg*	*mg/kg*
Gasoline Range Organics	260	-
Diesel Range Organics	230	-
Residual Range Organics	8300	-
Benzene	0.02	-
Toluene	4.8	-
Ethylbenzene	5	-
Xylenes	69	-
Polyaromatic Hydrocarbons:		
-Anthracene	3900	-
-Acenaphthene	190	-
-Benzo(a)anthracene	5.5	-
-Benzo(b)fluoranthene	9	-
-Benzo(k)fluoranthene	93	-
-Benzo(a)pyrene	0.9	-
-Chrysene	550	-
-Dibenzo(a,h)anthracene	0.9	-
-Fluorene	240	-
-Indeno(1,2,3-cd)pyrene	9	-
-Naphthalene	38	-
-Pyrene	1400	-
Polychlorinated Biphenyls	1	-
Dioxin (as 2,3,7,8-tetrachlorodibenzodioxin)	-	0.0000039[2]
Arsenic	1.8	-
Barium	982	-
Cadmium	4.5	-
Chromium (total)	23	-
Lead	-	400[3]
Mercury	1.24	-
Nickel	78	-
Vanadium	580	-
-- Tissue samples--	*ng/kg*	*ng/kg*
Dioxin (as 2,3,7,8-tetrachlorodibenzodioxin)	-	0.019[4]

1. Most stringent cleanup value provided for Method Two Soil Cleanup Levels, "Over 40-inch Zone", Table B1, 18 AAC 75 (rev. Jul 2002).
2. U.S. EPA Region 9 Preliminary Remediation Goal (Nov 2000).
3. U.S. EPA OSWER advisory limit for residential soils.
4. U.S. EPA "Guidance for Assessing Chemical Contaminant Data for Use In Fish Advisories"

4(0) Project Chemical Data Quality Control Program

The quality of the data obtained will be assured through the use of the following quality control and quality assurance elements, consistent with guidance provided in EM 200-1-6.

- Use of Approved Laboratories: The laboratory contracted will be Certified by the U.S. Army Corps of Engineers HTRW Center of Expertise (CENWO-HX) for the analytical methods requested, and approved by the Alaska Department of Environmental Conservation (ADEC).

The laboratory will also report on the condition (e.g., correct temperature, proper chain-of-custody, etc.) of the samples they receive.

- Collection of Field Quality Control Duplicates: Duplicate samples will be collected at a frequency of approximately one out of every ten samples, for each analytical method (see Table A-2 of the FSP). Each duplicate sample will accompany its associated primary sample to the assigned primary laboratory as a blind quality control duplicate.
- Assessment of Data: All analytical data will undergo a quality review by a person or firm contracted by the NALEMP Manager. The data quality review may include examinations of sampling chain-of-custody and documentation, examinations of data from laboratory control samples and duplicates, matrix spike samples and duplicates, surrogate recoveries, and field duplicates. The extent of the data review will be determined by the NALEMP Manager and will be consistent with guidelines provided in Appendix C of EM 200-1-6.

The person or firm performing the data quality review will prepare a Tribal Chemical Quality Assurance Report (CQAR). The TCQAR will be consistent with guidelines provided in Appendix D of EM 200-1-6.

5(0) Data Reduction, Review, and Reporting

Raw data submitted by the laboratories will be received by NALEMP Manager and forwarded to the data review contractor preparing the TCQAR. NALEMP staff will prepare data summary tables from the raw data. The data tables and the TCQAR will be used by NALEMP Manager in preparing the SI Report.

Table B-2 Analytical Data Quality Objectives					
Soils					
Parameter, Analytical Method	Extraction Method	Maximum MRL, (mg/kg)	Precision (% Relative Difference)	Accuracy (%)	Completeness of Data
Diesel Range Organics, ADEC Method AK-102	method specific	50	20	60-120	95%
Residual Range Organics, ADEC Method AK-103	method specific	100	20	60-120	95%
Gasoline Range Organics, ADEC Method AK-101	method specific	50	20	60-130	95%
Volatile Organics, SW-846 Method 8260B	SW-846 5035 (low level)	0.015 (benzene) – 0.05	20	65-140	95%
Polyaromatic Hydrocarbons, SW-846 Method 8270C SIMS	SW-846 3540/3550	1	20	50-110	95%
Polychlorinated Biphenyls, SW-846 Method 8082	SW-846 3540/3550	0.5	20	60-130	95%
Dioxins, SW-846 Method 8290	SW-846 3540/3550	0.000002 (2 ng/kg)	20	55-125	95%
Arsenic, SW-846 6010 or 7060	SW-846 3050	1	20	80-120	95%
Barium, SW-846 6010	SW-846 3050	50	20	80-120	95%
Cadmium, SW-846 6010	SW-846 3050	2	20	80-120	95%
Chromium, SW-846 6010	SW-846 3050	10	20	80-120	95%
Lead, SW-846 6010 or 7421	SW-846 3050	50	20	80-120	95%
Mercury, SW-846 7471	method specific	0.5	20	80-120	95%
Nickel, SW-846 6010	SW-846 3050	10	20	80-120	95%
Vanadium, SW-846 6010	SW-846 3050	50	20	80-120	95%
Biological Tissue		ng/kg (wet weight)			
Dioxins, SW-846 Method 8290	laboratory-specific	0.01	30%	55-125	90%

MRL: Method Reporting Limit
ADEC: Alaska Department of Environmental Conservation

The economy of Sitka is fairly diversified, with significant contributions to employment from the state and government sector, commercial fishing and fish processing, tourism, post-secondary education (two colleges), travel (Ak Airlines, air charters, and Alaska Marine Hwy), and tribal government.

2(2.5) Land Ownerships: Yakutat: Yak-tat Kwaan owns approximately 23,000 acres immediately surrounding Yakutat (and the property the Ocean Cape site is on). The state owns 3,600 acres around the Yakutat airport site. The majority of land around Yakutat is managed by the USFS. The Wrangell/St. Elias National Park is across Yakutat Bay on the west side.

Fort Ray: Current land ownership of Charcoal and Alice Islands are: 1) Alaska DOT/PF owns 14.58 acres (lots 170 & 172) of Charcoal Island 2) Shee-Atika owns the remainder of Charcoal Island (approximately 15 acres) and all of Alice Island.

Fort Peirce: The FAA owns approximately 340 acres on the island. The literature is not conclusive, but it appears that the USCG was originally transferred 784 acres on the west side of the island for a LORAN station and other improvements. In 1985 the USCG transferred 160 acres to the FAA. The Rudolph Walton Native Allotment, A-1494 (47.29 acres), is located at the head of Symonds Bay, at the site of the FAA quarters and dock. The remainder of the land is managed by the USFS – Tongass National Forest.

2(3) Existing Environmental Information for Contaminant Sampling Sites:

2(3.1) Fort Pierce: Known military dumpsites have been located and abandoned transformers and potential drums/containers have been reported but known if found or removed. There are potentials for PCB, Metals, DRO/RRO, PAH, and VOC contamination of soils and sediments.

2(3.2) Fort Ray: Known UST's throughout site with visible signs of contaminated soils and sediments. The impact, contaminants travel through the environment through hydraulic processes of surface water flows and sub-surface water flows with the inter-tidal areas as the receiving zones. There are known and potential soil and sediment POL contaminations of DRO/RRO, VOC, and PAH.

2(3.3) Yakutat: Known gasoline, bulk diesel, and oil storage tanks were utilized throughout the site. High potentials for DRO/RRO, VOC, & PAH. Building Debris (metal dump pile) has been located on site. Four removed sixty-foot tall Tropo Antenna locations have been identified. Use of transformers has been identified. There are high potential for PCB, Metals, and Dioxins. Dioxins have been sampled for and found on site with direct pathways to native lands and resources. In the summer time, the Yakutat Tlingit Tribe operates a culture camp adjacent to the former barracks building. Local Native youths are taught skills in subsistence food gathering and preparation, and depend entirely on the natural resources of the surrounding site (Ankau Slough) while living at the camp. The community is concerned that these subsistence foods may be contaminated from toxins left behind following the army activities in the area.

3(0) Objectives of developing a Contaminant Sampling Plan: Are to obtain critical information of the current conditions of native lands and resources through contaminant sampling, to complete contaminant analysis of samples to verify the presence of toxic contaminants and concentrations of toxic contaminants in the environments that affect native lands and resources, and to utilize analytical results towards the development of remediation prescriptions if needed.

Specific objectives for Ocean Cape (Yakutat) are:

1) Sample dioxins in soils and shellfish to assess the extent of suspected contaminants.
2) Establish contamination pathway (if any) from previous soil samples that show high dioxin levels at the Culture Camp.
3) Characterize background dioxin levels in pristine Yakutat area soil and/or shellfish samples.

Specific objectives for Fort Ray (Sitka) are:

1) Perform visual inspection of inter-tidal areas adjacent to Charcoal and Alice Islands and surrounding causeways for fuel-contaminated seepage in soils.
2) Sample soil and water for fuels, VOCs, and PAHs.
3) Establish contamination pathway (if any) from previous soil samples and the current samples that show high contamination levels in soils and water of the inter-tidal zone resulting from past DoD activities.

Specific objectives for Fort Peirce (Sitka) are:

1) Perform visual inspection for suspected transformer and of inter-tidal zones for contamination resulting from past DoD activities.
2) Sample soil for fuels, PCBs, VOCs, PAHs, and metals.
3) Establish contamination pathway (if any) from soil samples that show high contamination levels in soil and/or sediment of the intertidal zone resulting from past DoD activities.

3(1) Information Deficiencies: The principle information gaps for CCTHITA NALEMP contaminated sites are:

(a) A lack of chemical analysis of known sites
(b) Deficiencies in literature reviews
(c) Lack of background info on subsistence food contamination levels

3(2) Proposed Contaminant Sampling Activities

To overcome information deficiencies that have been identified the major on-site tasks envisioned for the contaminant sampling are to:
(a) To enhance upon the observations and conclusions that have been developed in environmental assessments.
(b) Collect samples of suspected contaminated soils, sediment, waters, biota for chemical analysis;

3(3) Analytical Data Quality Objectives

General Project DQOs are to develop chemical data sets from representative areas of the project sites; that the data sets will be compatible with ACOE and ADEC data management regimes; and that the data sets can be utilized to develop Remediation Plans / Prescriptions if needed.

3(4) Applicable or Relevant Appropriate Requirements and To Be Considered (ARARs&TBCs)

It is necessary to identify regulatory and/or non-regulatory criteria that may apply to the site, so that analytical DQOs can be developed that generate data useable under the identified criteria. Regulatory and non-regulatory criteria for chemical contamination are commonly referred to as "Applicable or Relevant and Appropriate requirements" (ARARs), and "To Be Considered" (TBCs), respectively.

4(0) References

a. U.S. Army Corps of Engineers, ER 1110-1-263, Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities, 30 April 1998.

b. U.S. Army Corps of Engineers, EM 200-1-3, Requirements for the Preparation of Sampling and Analysis Plans, 1 September 1994.

c. U.S. Army Corps of Engineers, EM 200-1-6, Chemical Quality Assurance for HTRW Projects, 10 October 1997.

d. U.S. Army Corps of Engineers, EM 200-1-2, Technical Project Planning Guidance for HTRW Data Quality Design, 31 July 1995.

e. U.S. Environmental Protection Agency, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846 Third Edition, Final Update III, December 1996.

f. State of Alaska Department of Environmental Conservation, 18 AAC 75, Oil and Hazardous Substances, Pollution Control Regulations, Cleanup Standards, Public Review Draft, 12 November 1997.

g. Bush, James D., LTC, Narrative Report of Alaska Construction, 1941-1944, November-December 1944 (printed edition 1984).

h. State of Alaska Department of Environmental Conservation, 18 AAC 75, Oil and Hazardous Substances, Pollution Control Regulations, Cleanup Standards,14 May 1992.

i. U.S. Environmental Protection Agency, Region III, Risk-Based Concentration Tables, 22 Oct 97.

j. U.S. Environmental Protection Agency, Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund sites, OSWER Directive #9355.4-02, 1989.

k. State of Alaska Department of Environmental Conservation, Contaminated Sites Remediation Program, Risk Assessment Procedures Manual, for Remedy Standard 3.0, 6 October 1997.

Attachment II

SITE SPECIFIC HEALTH AND SAFETY PLAN

SITE INVESTIGATION 1998

Fort Ray / Fort Pierce

Yakutat Ocean Cape RR

Alaska

Prepared by the
Environmental Section
Native American Lands Environmental Mitigation Program
Native Lands and Resource Department

Mach 2002

Table of Contents

1(0) INTRODUCTION

This Site Specific Health and Safety Plan (SSHSP) has been prepared to outline safety requirements, practices and procedures that will be followed during the contaminant sampling processes.

1(1) Safety Plan Requirements

This Site-Specific Health and Safety Plan will be implemented to comply with the provisions of 29 CFR 1910.120. A copy of this site specific safety plan must be kept on site during the contamination investigation described in the Field Sampling Plan of this project.
All work must be done in accordance with applicable regulations: OSHA (29 CFR), EM 385-1-1, State, and EPA. This safety plan meets the applicable requirements.
This site-specific safety and health plan must be read and signed by each employee physically present on the site. Each employee must supply the personal data for the Field Personnel Roster (see Appendix A). If an employee cannot supply the necessary data, the Sampling Leader/Site Safety Officer will document that, or other deficiencies, such as for training or medical exams.

1(2) Site Locations

The Site locations for this sampling activity are Fort Pierce, Fort Ray, and Yakutat Ocean Cape RR

.

1(3) Entry Objectives

The site investigations will involve low-risk, minimal-impact activities such as observation, photography, site measurements, and surface-soil sampling.
No confined-space-entry, drum-sampling, or other uniquely hazardous activities will be performed.

2(0) Personnel Requirements

2(1) Personnel Training and Documentation

All personnel working at the project site must be current in the following; any deficiencies must be documented:

2(1.1) Hazardous Waste Operations and Emergency Response (HAZWOPER) Training: All persons participating in field work will have completed all training required by OSHA, 29 CFR 1910.120, 29 CFR 1919.1200, and related regulations such as 29 CFR 1910.34. All persons shall be trained in the specific responsibilities of their job assignments.
The Site Safety Officer shall have completed the 40 hour training required under 29 CFR 1910.120 (e)(3)(i), and the additional 8 hours training required under paragraph (e)(4) of that regulation. In addition, the Site Safety Officer will have at least 5 days experience on sites with similar hazards or certified training in safety and health evaluation.

2(1.2) Medical Examinations: All persons participating in field work will have a current medical exam on file for general hazardous, toxic waste work, per 29 CFR 1910.120. Medical exams will include medical qualification for respirator use.

2(2) First Aid and CPR Training

If the project site is more than five minutes from a medical facility, at least one person at the project site shall have current first aid and CPR training.

2(3) On-Site Organization

The following safety functions will be assigned to the participating field personnel as needed, and recorded in the field logbook. One person may carry out more than one safety function.

- Sampling Team Leader
- Site Safety Officer
- Security Officer:
- Record Keeper

2(4) Statement of Understanding

All site personnel, including visitors, must read this plan and become familiar with its provisions. An individuals signature on the field roster (Appendix A) certifies that he or she has read, understands, and will comply with the guidelines set forth in the Site Specific Health and Safety Plan.

3(0) Safety Meetings

An initial safety meeting will be held immediately preceding the start of on-site work and as needed thereafter. The pre-start meeting will cover the location of safety items, telephone, potable water, escape routes, required PPE, MSDS data, buddy system requirements, available medical facilities, and any items peculiar to the site. Additional safety meetings will be held as needed. Close calls or incidents that threaten life, property, or the environment will be discussed immediately, or before the start of the next work session. Any major change in working conditions will be the subject for a safety discussion. Safety and emergency response equipment use and location will be addressed. Problems such as extreme weather hazards will be addressed.

4(0) Hazards and Safety Procedures

4(1) Site Description

Expected work date: Mid-August

Expected weather conditions: winds, fog, rain, mild temperatures likely.
Site characteristic: Abandoned military site.
Surrounding area: Rugged, broken terrain, sheer cliffs, heavy surf.
Expected contamination: Weathered fuel, possible PCBs and/or lead, dioxins.

4(2.0) Hazards

4(2.1) Physical Hazards: The expected physical hazards are those associated with entry into an abandoned military facility.

a) Exposure to potentially hazardous (e.g., sharp, unstable) debris .
b) Slips, trips, and falls, due to rugged terrain.
c) Potential weather extremes.
d) Potential OEW.

4(2.2) Chemical Exposure Hazards: The known or expected chemical contamination at the site is primarily heavy fuels, with the possibility of PCBs or lead. Because of the age and weathering of the contamination, and the non-invasive nature of the investigation, the primary potential route of exposure is expected to be dermal contact.
Material Safety Data Sheets (MSDS) for the predictable bulk chemical hazards are available in Appendix B.

4(3) Physical Hazard Control : The expected physical hazards will be minimized through:
a) Ensuring personnel awareness of potential physical hazards, including weather.
b) Providing employee safety training and work process controls.
c) Supplying and requiring the use of protective equipment, such as hard hats, safety boots, gloves, hearing protection, and safety glasses, as appropriate.

4(3.1) Survival Equipment: This site investigation may entail travel in a chartered light aircraft to a remote location. The possibility always exists for a forced landing or extended grounding at the site due to weather conditions or mechanical failure, and reasonable provisions should be made for such contingencies
visiting the sites should bring food rations for several days, water purification tablets, adequate clothing, small tools, and perhaps shelter. Because of weight restrictions, the team members should coordinate the items each will bring to avoid unnecessary redundancies of items.

4(3.2) Ordnance and Explosive Waste: The project sites were not a scene of combat, but were occupied by military forces, and the presence of ordnance and explosive waste (OEW) is possible. The most likely form of OEW to be encountered at these sites would be small arms ammunition. (WP ref. 4h, 4i). Personnel visiting the site will be familiarized with the appearance of potential ordnance items. If ordnance items are discovered, they will not be disturbed, but will be photographed and flagged if possible.

4(4.0) Chemical Hazard Control

4(4.1) Chemical Hazard Monitoring: There will be no specific health monitoring for chemical hazards at this site. If any visual or olfactory evidence of significant potential chemical exposure is discovered, field personnel will be directed away from the affected area.

4(4.2) Personal Protective Equipment: Based on the evaluation of potential hazards, LEVEL D personal protective equipment (PPE) has been designated for the initial site work:
a) Hard hats (when overhead hazards are present)
b) Safety boots
c) Chemical-resistant disposable gloves for sample handlers
d) Protective clothing (at workers discretion)
e) Hearing protection as necessary
f) Safety glasses as necessary

Decontamination Procedures: If work is performed in Level D PPE, no on-site personal decontamination is required. Any disposable protective over-garments will be bagged and

carried from the site for proper disposal and personnel will be encouraged to wash as soon as possible.

4(4.4) On-Site Control: The nature of the site and the planned site activities preclude the site control measures associated with hazardous materials facilities. The site is not known to contain hazardous waste, and no access controls can be maintained after the site visit has concluded.

5(0) Emergency Procedures

No medical care or medical transportation is available at the project sites. In case of on-site injuries, it may be necessary for the sampling team and helicopter pilot to provide immediate first aid care and transportation to medical facilities. In the case of severe injuries or accidents requiring patient extrication, it may be preferable to request aid from the U.S. Coast Guard via radio; however, such support from the Coast Guard may take hours to arrive.

5(1) NEAREST MEDICAL TREATMENT LOCATIONS AND CONTACT INFO:

5(1) Fort Pierce: Sitka Medical Center 907) 747-5861
5(2) Fort Ray: Sitka Medical Center 907) 747-5861
5(3) Yakutat Community health Center 907)784-3275

5(2) EMERGENCY NUMBERS

5(2) U.S. Coast Guard - Emergency 1-800-478-5555

5(3) First Aid Equipment: The following first aid equipment will be available on site:

a. First Aid Kit: in vehicle/helicopter
b. Emergency Eye Wash: portable eyewash, or any potable or de-ionized water.

5(4) Communications Procedures

Personnel in the Project Zone should remain in communication or within sight of the Project Team Leader. Any failure of communication requires an evaluation of whether personnel should leave the Exclusion Zone.

- A shout or other verbal warning is the emergency signal to indicate that all personnel should leave the work site or Exclusion Zone
- .
- The following standard hand signals will be used in case of failure of communications.

Hand griping throat ---------- Out of air, cannot breathe
Grip partner's wrist or
both hands around waist ----------Leave area immediately
Hands on top of head ---------- Need assistance
Thumbs up ---------- OK, I am all right, I Understand
Thumbs down ---------- No, Negative

5(5) Emergency Response

The following standard emergency procedures will be used by on-site personnel. The Site Safety Officer shall be notified of any on-site emergencies and be responsible for ensuring that the appropriate procedures are followed.

5(5.1) Personnel Injury at the Work Site: Upon notification of an injury at the work site, the designated emergency signal (verbal warning) shall be sounded. The Site Safety Officer and other competent personnel should evaluate the nature of the injury. The on-site EMT or other competent person shall initiate the appropriate first aid, and contact should be made for an ambulance and with the designated medical facility (if required). Activities at the work site will cease until the cause of the injury or symptoms is determined, and the hazard is eliminated or minimized.

5(5.2) Fire/Explosion: Upon notification of a fire or explosion on site, the designated emergency signal (a shout of "Fire!") shall be sounded and all site personnel will immediately leave the work site and assemble at a safe distance. The fire department shall be alerted (if available) and all personnel moved to a safe distance from the involved area.

5(5.3) Escape Routes: any unobstructed route.

In all situations, when an on-site emergency results in evacuation of the work area, personnel shall not re-enter until:

a. The conditions resulting in the emergency have been corrected.
b. The hazards have been reassessed.
c. The Site Safety Plan has been reviewed.
d. Site personnel have been briefed on any changes in the Site Safety Plan.

Attachment III - List of Acronyms:

DOD	Department of Defense
CCT&H	Central Council Tlingit & Haida
USACE	US Army Corps of Engineers
FAA	Federal Aviation Administration
ADEC	Alaska Department of Environmental Conservation
USCG	US Coast Guard
USFS	US Forest Service
NOB	Naval Operating Base
DOT/PF	Alaska Department of Transportation/Public Facilities
SAP	Sampling and Analysis Plan
FSP	Field Sampling Plan
QAPP	Quality Assurance Project Plan
SSHSP	Site Specific Health and Safety Plan
TCQAR	Tribal Chemical Quality Assurance Report
NALEMP	Native American Lands Environmental Mitigation Program
RRS	Radio Relay Station
UST	Underground Storage Tank
AST	Above-ground Storage Tank
DRO	Diesel Range Organics
RRO	Residual Range Organics
GRO	Gasoline Range Organics
PAH	Polyaromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
VOC	Volatile Organic Compounds
DQO	Data Quality Objective
BTEX	Benzine, Toluene, ehtylbenzene, and xylene
ARAR	Applicable or Relevant Appropriate Requirements
TBC	To Be Considered

Attachment IV - Resumes of Sampling Participants:

U.S. Army Corps of Engineers
Alaska District
Materials Section

Chris Floyd
Chemist

EDUCATION
Master of Science – Biochemistry & Molecular Biology
December 1988
Mississippi State University, Starkville, MS

Bachelor of Science – Biochemistry
May 1986
Mississippi State University, Starkville, MS

EXPERIENCE

Chemist
March 1992 to present, U.S. Army Corps of Engineers, Anchorage, AK.
- Provides review and advisory services on chemical aspects of Corps of Engineers environmental restoration projects. Writes work plans, performs field sampling, reviews chemical data, and prepares reports discussing the regulatory and toxicological significance of the data. Reviews technical reports and published literature for information relevant to Corps projects. Extensive field experience throughout Alaska, collecting samples soil, water, and other media, and ensuring proper preservation and transport of samples to the laboratory. Coordinates project data requirements of engineers, biologists, geologists, risk assessors, regulators, Native organization representatives, and other project team participants. Assists in the preparation and review of scopes-of-work for contractors, and reviews contractor work plans and reports.

Clinical Microbiologist
October 1991 to February 1992, Arkansas Department of Health, Little Rock, AR.
- Performed microbiological analyses at a public health clinic, to include staining techniques, immunological screening, and bright-field microscopy. Developed preliminary diagnoses, confirmed by physician. Developed quality assurance process for tracking and comparing preliminary diagnoses to confirmation test results.

Analytical Chemist
August 1990 to October 1991, Arkansas Power and Light Environmental Services Laboratories, Little Rock, AR.
- Analyzed environmental samples for radiological contamination, using chemical extraction and a variety of radioactivity detection instrumentation. Assisted with determinations of PCBs and

other toxic chemicals in transformer oil and water samples. Helped maintain computer databases and prepare reports to regulatory agencies.

Army Medical Specialist
November 1990 to May 1991, 148th Evacuation Hospital, Arkansas National Guard, North Little Rock, AR. - Helped establish and operate a clinical laboratory in an Army National Guard field hospital stationed in northern Saudi Arabia during Operation Desert Shield/Storm. Performed basic hematology, urinalysis, and blood chemistry analyses. Used civilian experience to initiate setup and quality control of new biomedical instrumentation, and trained coworkers in its use.

Cal Richert Forest Resource Specialist

Objective

To perform contaminant sampling of soil, water, and tissue relating to past DoD activities.

Education

B.S. Forest Management 1998

Oregon State University **Corvallis, OR. 97331-5710**

Professional experience

Forester – Central Council Tlingit & Haida 1999 – present

Duties include assisting Native Allotment owners with forestry related needs, timber sale administration, reforestation, tree pruning and thinning projects, GPS data collection and GIS mapping, timber cruising, and surveying and trespass investigations. Other duties include performing fisheries sampling, stream morphology measurements, and smolt and adult salmon weir operation.

Forestry Business Owner 1999 - present

Contracted forestry work including: tree planting, tree pruning, tree thinning, contract compliance administration & inspection, small logging operations, tree removal, pruning and topping services.

Forestry Sub-contractor 1998

GPS data capture: Established positions for 800 reference points and forest inventory plots; Warm Springs Indian Reservation, Oregon; Timberhill Mapping, Corvallis, OR. – Contractor. *Timber Cruising*: Grade Cruise – Oregon Coast Range; Olympic Resource Mngt., Mapleton, OR. – Contractor. Pre-sale cruise for USFS, Blue River Ranger District; Mantle Forest Consulting, Corvallis, OR. – Contractor. Inventory cruise for BLM; Ecosystems NW, Corvallis, OR. – Contractor.

Special skills and certifications

- Hazwopper certified – 2001
- Cert. pesticide/herbicide applicator (AK)
- NEPA training thru the BIA
- CPR/first aide training

Appendix B

Southwest Laboratory of Oklahoma, Inc. Data Tables

Results of soil sampling for dioxin near Ocean Cape, Yakutat, Alaska (2002), as calculated by Southwest Laboratory of Oklahoma, Inc. TEQ values were not based on the World Health Organizations calculations.

Method 8290
Dioxins and Furans
Yakutat 2002 Soil Samples

	Background - East	Background - West	South Ankau
LOCATION OF SAMPLE:	Khanntak Is.	Khanntak Is.	Saltchuck
DATE OF SAMPLE:	8/27/2002	8/27/2002	8/28/2002
TYPE OF SAMPLE:	soil	soil	soil
FIELD SAMPLE ID: 02YAKOC-	01-SO	02-SO	03-SO
TESTING LABORATORY:	SW Lab of Ok	SW Lab of Ok	SW Lab of Ok
LABORATORY SAMPLE ID:	50687.01	50687.02	50687.03
DATE RECEIVED:	8/29/2002	8/29/2002	8/29/2002
DATE ANALYZED:	9/12/2002	9/12/2002	9/12/2002
CONCENTRATION UNITS:	ng/kg (dry weight)	ng/kg (dry weight)	ng/kg (dry weight)
TEQ	0.007 B	0.090	2.051
2,3,7,8-TCDD	ND(0.441)	ND(0.761)	ND(0.812)
1,2,3,7,8-PeCDD	ND(0.407)	ND(1.052)	ND(0.789)
1,2,3,4,7,8-HxCDD	ND(0.643)	ND(1.443)	ND(1.153)
1,2,3,6,7,8-HxCDD	ND(0.548)	ND(1.231)	2.629
1,2,3,7,8,9-HxCDD	ND(0.558)	ND(1.253)	ND(1.001)
1,2,3,4,6,7,8-HpCDD	ND(0.581)	4.596	73.22
OCDD	~~7.265 B~~	41.63 B	744.2 B
2,3,7,8-TCDF	ND(0.328)	ND(0.545)	ND(0.557)
1,2,3,7,8-PeCDF	ND(0.275)	ND(0.629)	ND(0.524)
2,3,4,7,8-PeCDF	ND(0.292)	ND(0.668)	ND(0.557)
1,2,3,4,7,8-HxCDF	ND(0.453)	ND(0.923)	1.265
1,2,3,6,7,8-HxCDF	ND(0.442)	ND(0.901)	ND(0.658)
1,2,3,7,8,9-HxCDF	ND(0.527)	ND(1.073)	ND(0.784)
2,3,4,6,7,8-HxCDF	ND(0.596)	ND(1.213)	ND(0.887)
1,2,3,4,6,7,8-HpCDF	ND(0.397)	ND(0.611)	12.16
1,2,3,4,7,8,9-HpCDF	ND(0.532)	ND(0.819)	ND(0.545)
OCDF	ND(0.545)	2.291	63.84

EPA Region 9 Preliminary Remediation Goal in Residential Soils (10/1/02)
TEQ = 3.9 ng/kg (dry weight)

strikethrough = datum qualified
ng/kg: nanograms per kilogram (parts per trillion)
TEQ: Toxicity Equivalence Quotient
B: Analyte Detected in the associated method blank.
ND: Not Detected. (The number in parentheses is the method reporting limit).

Results of tissue sampling at Ocean Cape, Yakutat, Alaska (2002), as calculated by Southwest Laboratory of Oklahoma, Inc. TEQ values were not based on the World Health Organizations calculations.

Method 8290
Dioxins and Furans
Yakutat 2002 Shellfish Composite Tissue Samples

LOCATION OF SAMPLE:	Ankau Bridge Cockles	Ankau Bridge Clams	Ankau Bridge Mussels	(background) Ocean Cape Mussels	Culture Camp Clams
DATE OF SAMPLE:	8/28/2002	8/28/2002	8/28/2002	8/28/2002	8/28/2002
TYPE OF SAMPLE:	tissue	tissue	tissue	tissue	tissue
FIELD SAMPLE ID: 02YAKOC-	04-TS	05-TS	06-TS	07-TS	08-TS
TESTING LABORATORY:	SW Lab of Ok	SW Lab of Ok	SW Lab of Ok	SW Lab of Ok	SW Lab of Ok
LABORATORY SAMPLE ID:	50687.04	50687.05	50687.06	50687.07	50687.08
DATE RECEIVED:	8/29/2002	8/29/2002	8/29/2002	8/29/2002	8/29/2002
DATE ANALYZED:	9/12/2002	9/12/2002	9/12/2002	9/12/2002	9/12/2002
CONCENTRATION UNITS:	ng/kg (wet weight)	ng/kg (wet weight)	ng/kg (wet weight)	ng/kg (wet weight)	ng/kg (wet weight)
TEQ	0.553	0.397	0.24	0.027	3.467
2,3,7,8-TCDD	ND(0.957)	ND(1.490)	ND(1.218)	ND(1.066)	ND(1.050)
1,2,3,7,8-PeCDD	ND(1.197)	ND(1.406)	ND(4.163)	ND(1.110)	ND(1.180)
1,2,3,4,7,8-HxCDD	ND(1.482)	ND(1.018)	ND(1.758)	ND(1.773)	ND(1651)
1,2,3,6,7,8-HxCDD	ND(1.264)	ND(0.868)	ND(1.500)	ND(1.512)	4.203
1,2,3,7,8,9-HxCDD	ND(1.287)	ND(0.884)	ND(1.527)	ND(1.539)	ND(1.434)
1,2,3,4,6,7,8-HpCDD	25.32	14.15	11.46	ND(1.481)	121
OCDD	245.7	216.5	93.38	27.14	1358
2,3,7,8-TCDF	ND(0.701)	ND(1.059)	ND(0.950)	ND(0.710)	ND(0.764)
1,2,3,7,8-PeCDF	ND(0.676)	ND(0.843)	ND(0.622)	ND(0.695)	ND(0.611)
2,3,4,7,8-PeCDF	ND(0.718)	ND(0.896)	ND(0.661)	ND(0.738)	ND(0.649)
1,2,3,4,7,8-HxCDF	ND(1.052)	ND(1.296)	ND(1.112)	ND(1.087)	2.214
1,2,3,6,7,8-HxCDF	ND(1.027)	ND(1.264)	ND(1.085)	ND(1.061)	ND(0.952)
1,2,3,7,8,9-HxCDF	ND(1.222)	ND(1.506)	ND(1.292)	ND(1.264)	ND(1.133)
2,3,4,6,7,8-HxCDF	ND(1.382)	ND(1.703)	ND(1.461)	ND(1.429)	ND(1.282)
1,2,3,4,6,7,8-HpCDF	3.85	2.652	2.699	ND(0.861)	18.77
1,2,3,4,7,8,9-HpCDF	ND(1.047)	ND(1.280)	ND(1.278)	ND(1.155)	ND(1.213)
OCDF	15.09	11.95	5.306	ND(1.705)	69.37

US EPA "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories"
Risk based consumption limit for dioxins/furans, "unlimited meals"
TEQ = 0.019 ng/kg (wet weight)

ng/kg: nanograms per kilogram (parts per trillion)
TEQ: Toxicity Equivalence
Quotient
ND: Not Detected. (The number in parentheses is the method reporting limit).

Appendix C

Chemical Data Quality Review
(Summary of Yakutat Data only)

CHEMICAL DATA QUALITY REVIEW

CCTH NALEMP 2002

Soil and Tissue Sampling

Project #

02-098

Received: 12/5/02

Prepared for

Army Corps of Engineers - Alaska Division

Prepared by

ETHIX

1400 Carpenter Lane, Suite D
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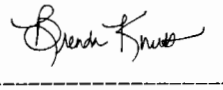
Table of Contents

1.0 Introduction

This report summarizes the technical review of analytical results generated in support of the CCTH NALEMP 2002 soil and tissue sampling event at the Sitka area and Yakutat area. The criteria applied for this review are consistent with analytical method protocols, in conjunction with the laboratory-established control limits. In cases where specific guidance was not available from either of these sources, the data have been evaluated using professional judgement consistent with industry standards. The review included evaluation of sample collection, holding time and summary information for blanks (to assess contamination), sample duplicates (to assess precision), laboratory control samples (to assess accuracy) and matrix spike and surrogate recoveries (to assess matrix effect). Instrument calibration review and raw data verification were not performed.

The report is arranged by method; within each method section is a sub-section addressing each data quality indicator. In situations where all applicable criteria were met, it will be stated. If criteria were not met, the non-compliance, qualifier and associated samples are listed. Appendices A and B list qualifier definitions and acronyms, respectively. Appendix C, the data summary table, displays all sample results, as well as qualifiers and descriptors that may apply. Appendix D includes a summary of all qualified data, by analysis type. All samples collected are identified in Table 1. Any discrepancies or deficiencies associated with sampling and analysis can be found in Table 2. Rejected data are identified in Table 3 (Appendix E). All remaining tables (Appendix E) list all qualified data by data quality indicator and analysis type as well as results that did not meet specific screening levels.

I certify that all data validation criteria described above were assessed, and any qualifications made to the data were in accordance with the cited reference documents.



Authorized Signature (209) 576-2621

2.0 Executive Summary

Twelve soil samples, five tissue samples, and one trip blank were collected by US Army Corps of Engineers in Anchorage, Alaska from August 20, 2002 to August 28, 2002. Samples were submitted to Shoalwater Bay Environmental Research Laboratory (SBEL) in Tokeland, Washington (Primary Laboratory) and Southwest Laboratories (SWOK) in Oklahoma (Primary Laboratory) within two to eight days of collection. Samples were subcontracted to Columbia Analytical Services (CAS) in Kelso, Washington and Spokane Tribal Laboratories (STL) in Spokane, Washington. A QA laboratory was not utilized for this project. Samples were analyzed for diesel/residual range organics, polychlorinated biphenyls, semivolatile organics, volatile organics, metals and dioxin/furans.

All samples analyzed for volatile organics were qualified due to temperature exceedance. Samples were received by the laboratory five days after sample collection at 20°C. Detected results may be biased low and false nondetects may have been reported.

All samples analyzed for semivolatile organics were qualified due to holding time exceedance. A significant amount of data (24.8%) were rejected due to low surrogate recovery or low LCS recoveries. Detected results may be biased low and false nondetects may have been reported.

Cooler receipt forms were not generated by SBEL and STL. Condition of samples upon receipt could not be evaluated.

7.0 Dioxins / Furans

The following number of samples were prepared and analyzed by the listed methods:

Laboratory: SWOK

# of Samples	Matrix	Prep Method	Analysis Method	Reporting Units
5	T	Not reported	8290	ng/Kg
3	S	Not reported	8290	ng/Kg

Samples analyzed by this method are identified in Table 1.

7.1 Holding Time

All samples were analyzed within the required technical holding time.

7.2 Internal Standards / Surrogates

All internal standard and surrogate recoveries were within the required limits except the following:

Laboratory: SWOK
Project ID: 50687

Lab ID	Field ID	Matrix	Dil Factor	Surrogate	% Rec	Recovery Limits [1]	Q [2]	Bias	RC
50687.01	02YAKOC-01-SO	S	1	37C1-2,3,7,8-TCDD	2153	40 - 135	NONE	NA	NA
50687.02	02YAKOC-02-SO	S	1	37C1-2,3,7,8-TCDD	2076	40 - 135	NONE	NA	NA
50687.03	02YAKOC-03-SO	S	1	37C1-2,3,7,8-TCDD	2178	40 - 135	NONE	NA	NA
50687.04	02YAKOC-04-TS	T	1	37C1-2,3,7,8-TCDD	2241	40 - 135	NONE	NA	NA
50687.05	02YAKOC-05-TS	T	1	37C1-2,3,7,8-TCDD	1896	40 - 135	NONE	NA	NA
50687.06	02YAKOC-06-TS	T	1	37C1-2,3,7,8-TCDD	2238	40 - 135	NONE	NA	NA
50687.07	02YAKOC-07-TS	T	1	37C1-2,3,7,8-TCDD	2300	40 - 135	NONE	NA	NA
50687.08	02YAKOC-08-TS	T	1	37C1-2,3,7,8-TCDD	2268	40 - 135	NONE	NA	NA

[1] Laboratory-established limits

[2] According to the Functional Guidelines for Organic Data Review, if the surrogate recovery is > UCL, flag detected results J; if the surrogate recovery is < LCL, flag detected results J and non-detects UJ; if the surrogate recovery is less than 10%, flag detected results J and non-detects UR

This internal standard was not a method requirement. In addition, the laboratory narrative noted that high recovery of 37C1-2,3,7,8-TCDD in all samples was caused due to incorrect spiking level therefore data were not impacted.

7.3 Blanks

Method blanks were analyzed at the minimum required frequency. All results were reported as nondetected except the following:

Labcode: **SWOK**
Project ID: **50687**
Prep Batch ID: BL0903SB
Matrix: S

Analyte	Result	PQL	Affected Samples		Result	PQL	Units	Q	Bias	RC
OCDD	4.203	0.722								
Action Level:	21.02									
			50687.01	02YAKOC-01-SO	7.265	0.722	ng/Kg	B	H	a

According to the National Functional Guidelines for Organic Data Review, any compound detected in a blank that was also detected in an associated sample is qualified if the sample result is less than 10x the blank concentration for common laboratory contaminants, or 5x for all other analytes. Flagging for this project is modified to "B" at the amount found in the sample.

Field blanks were not collected for analysis by these methods.

7.4 Matrix Spike/Matrix Spike Duplicates

MS/MSDs were not performed by this method.

7.5 Laboratory Control Samples

Laboratory control samples were analyzed at the required frequency. All recoveries and RPDs were within the required limits.

7.6 Quantitation Limits

The practical quantitation limits (PQLs) achieved by the laboratory met project-required limits by this method for soil samples; however, PQLs achieved by the laboratory did not meet project-required limits for tissue samples. All detected results reported were above the quantitation limit.

7.7 QC Duplicates

QC duplicates were not collected for analysis by this method.

7.8 Overall Assessment

Minor data quality deficiencies were found, resulting in an insignificant amount of qualified data. No data were rejected. Appendix E lists all qualified sample results, by data quality indicator and analysis type. Results that were qualified as estimated or nondetected are useable for limited purposes. All other data generated by this method should be considered useable as reported.

9.0 References

"USEPA Test Methods for Evaluating Solid Waste Physical/Chemical Methods", July 1992 (SW-846)

"National Functional Guidelines for Organic Data Review", October 1999

"National Functional Guidelines for Inorganic Data Review", February 1994

"State of Alaska Method AK102, Determination of Diesel Range Organics"

"State of Alaska Method AK103, Determination of Residual Range Organics"

"USACOE Chemical Quality Assurance for HTRW Projects", October 1997

"State of Alaska Department of Environmental Conservation 18AAC75", July 2002

Appendix A

Qualifier Definitions

B	The sample result is less than 5 or 10 times (for common laboratory contaminants) the associated blank contamination.
U	The analyte was analyzed for, but was not detected above the reported quantitation limit.
UJ	The analyte was not detected above the reported quantitation limit. However, the reported quantitation is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J/none	Sample results for the analyte are estimated for positive results; results reported below the quantitation limit are not qualified (high bias).
J/UJ	Sample results for the analyte are estimated for both positive results and results reported below the quantitation limit (low bias).
R/UR	The sample results are rejected for both positive results and results reported below the quantitation limit due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Appendix B

Acronyms

CAS -	Columbia Analytical Services, Inc.
CRQL -	Contract Required Quantitation Limit
H -	High Bias
L -	Low Bias
LCL -	Lower Control Limit
LCS/LCSD -	Laboratory Control Sample/Laboratory Control Sample Duplicate
MB -	Method Blank
MDL -	Method Detection Limit
MS/MSD -	Matrix Spike/Matrix Spike Duplicate
N -	No Bias Determined
NA -	Not Applicable
NE -	Not Established
NR -	Not Reported
PQL -	Practical Quantitation Limit
Q -	Qualifier
QA -	Quality Assurance
QC -	Quality Control
RPD -	Relative Percent Difference
RRL -	Required Reporting Limit
RSD -	Relative Standard Deviation
RTHT -	Required Technical Holding Time
S -	Soil
SBEL -	Shoalwater Bay Environmental Research Laboratory
SD -	Sample Duplicate
STL -	Spokane Tribal Laboratories
SW-846 -	EPA Test Methods for Evaluating Solid Waste
SWOK -	Southwest Laboratories, Oklahoma
T -	Tissue
UCL -	Upper Control Limit

Appendix C

Data Summary Table

QUALIFIER REASON CODES

a - The analyte was found in the method blank

a- - Negative drift observed in instrument calibration blanks

b - Surrogate spike recovery outside control limits

c - Matrix Spike/Matrix Spike Duplicate (MS/MSD) recovery outside control limits

d - Laboratory Control Sample (LCS) recovery outside control limits

e - Holding time exceeded

f - MS/LCS sample duplicate failed precision criteria

h - Second column results indicate that the environmental results were not confirmed

i - Instrument Calibration outside control limits

k - The analyte was found in the field blank

m - Numerical value between the MDL and PQL

n - Field duplicate precision problem

o - Result reported exceeds calibration range

p - Sample was not properly collected, preserved or shipped

s - Internal Standard outside control limits

t - Sample temperature outside acceptance criteria

(Note: Where multiple qualifiers have been applied the first qualifier corresponds to the first reason code)

DATA SUMMARY TABLE

	Sample ID	50687.01			50687.02			50687.03			50687.04			50687.05			50687.06		
	Field ID	02YAKOC-01-SO			02YAKOC-02-SO			02YAKOC-03-SO			02YAKOC-04-TS			02YAKOC-05-TS			02YAKOC-06-TS		
	Matrix	S			S			S			T			T			T		
	Date Collected	8/27/02			8/27/02			8/28/02			8/28/02			8/28/02			8/28/02		
	Units	ng/Kg			ng/Kg			ng/Kg			ng/Kg			ng/Kg			ng/Kg		
Analyte		**RESULT**	**Q**	**RC**	**RESULT**	**Q**	**RC**	**RESULT**	**Q**	**RC**	**RESULT**	**Q**	**RC**	**RESULT**	**Q**	**RC**	**RESULT**	**Q**	**RC**
1,2,3,4,6,7,8-HpCDD		0.581	U		4.596	J	b	73.22	J	b	25.32	J	b	14.15	J	b	11.46	J	b
1,2,3,4,6,7,8-HpCDF		0.397	U		0.611	U		12.16	J	b	3.85	J	b	2.652	J	b	2.699	J	b
1,2,3,4,7,8,9-HpCDF		0.532	U		0.819	U		0.545	U		1.047	U		1.28	U		1.278	U	
1,2,3,4,7,8-HxCDD		0.643	U		1.443	U		1.153	U		1.482	U		1.018	U		1.758	U	
1,2,3,4,7,8-HxCDF		0.453	U		0.923	U		1.265	J	b	1.052	U		1.296	U		1.112	U	
1,2,3,6,7,8-HxCDD		0.548	U		1.231	U		2.629	J	b	1.264	U		0.868	U		1.5	U	
1,2,3,6,7,8-HxCDF		0.442	U		0.901	U		0.658	U		1.027	U		1.264	U		1.085	U	
1,2,3,7,8,9-HxCDD		0.558	U		1.253	U		1.001	U		1.287	U		0.884	U		1.527	U	
1,2,3,7,8,9-HxCDF		0.596	U		1.213	U		0.887	U		1.382	U		1.703	U		1.461	U	
1,2,3,7,8-PeCDD		0.407	U		1.052	U		0.789	U		1.197	U		1.406	U		1.163	U	
1,2,3,7,8-PeCDF		0.275	U		0.629	U		0.524	U		0.676	U		0.843	U		0.622	U	
2,3,4,6,7,8-HxCDF		0.527	U		1.073	U		0.784	U		1.222	U		1.506	U		1.292	U	
2,3,4,7,8-PeCDF		0.292	U		0.668	U		0.557	U		0.718	U		0.896	U		0.661	U	
2,3,7,8-TCDD		0.441	U		0.761	U		0.812	U		0.957	U		1.49	U		1.218	U	
2,3,7,8-TCDF		0.328	U		0.545	U		0.557	U		0.701	U		1.059	U		0.95	U	
OCDD		7.265	BJ	a,b	41.63	J	b	744.2	J	b	245.7	J	b	216.5	J	b	93.38	J	b
OCDF		0.545	U		2.291	J	b	63.84	J	b	15.09	J	b	11.95	J	b	5.306	J	b
Total HpCDD		0.581	U		7.326	J	b	137.5	J	b	40.08	J	b	23.59	J	b	20.31	J	b
Total HpCDF		0.397	U		0.611	U		56.37	J	b	14.86	J	b	8.698	J	b	6.481	J	b
Total HxCDD		0.548	U		1.231	U		10.25	J	b	1.264	U		0.868	U		1.5	U	
Total HxCDF		0.442	U		0.901	U		16.61	J	b	4.019	J	b	1.264	U		1.085	U	
Total PeCDD		0.407	U		1.052	U		0.789	U		1.197	U		1.406	U		1.163	U	
Total PeCDF		0.275	U		0.629	U		0.524	U		0.676	U		0.843	U		0.622	U	
Total TCDD		0.441	U		0.761	U		0.812	U		0.957	U		1.49	U		1.218	U	
Total TCDF		0.328	U		1.72	J	b	0.557	U		0.701	U		1.059	U		0.95	U	

DATA SUMMARY TABLE

	Sample ID	50687.07			50687.08						
	Field ID	02YAKOC-07-TS			02YAKOC-08-TS						
	Matrix	T			T						
	Date Collected	8/28/02			8/28/02						
	Units	ng/Kg			ng/Kg						
Analyte		RESULT	Q	RC	RESULT	Q	RC				
1,2,3,4,6,7,8-HpCDD		1.481	U		121	J	b				
1,2,3,4,6,7,8-HpCDF		0.861	U		18.77	J	b				
1,2,3,4,7,8,9-HpCDF		1.155	U		1.213	U					
1,2,3,4,7,8-HxCDD		1.773	U		1.651	U					
1,2,3,4,7,8-HxCDF		1.087	U		2.214	J	b				
1,2,3,6,7,8-HxCDD		1.512	U		4.203	J	b				
1,2,3,6,7,8-HxCDF		1.061	U		0.952	U					
1,2,3,7,8,9-HxCDD		1.539	U		1.434	U					
1,2,3,7,8,9-HxCDF		1.429	U		1.282	U					
1,2,3,7,8-PeCDD		1.11	U		1.18	U					
1,2,3,7,8-PeCDF		0.695	U		0.611	U					
2,3,4,6,7,8-HxCDF		1.264	U		1.133	U					
2,3,4,7,8-PeCDF		0.738	U		0.649	U					
2,3,7,8-TCDD		1.066	U		1.05	U					
2,3,7,8-TCDF		0.71	U		0.764	U					
OCDD		27.14	J	b	1358	J	b				
OCDF		1.705	U		69.37	J	b				
Total HpCDD		1.481	U		192.7	J	b				
Total HpCDF		0.861	U		76.1	J	b				
Total HxCDD		1.512	U		4.203	J	b				
Total HxCDF		1.061	U		29.64	J	b				
Total PeCDD		1.11	U		1.18	U					
Total PeCDF		0.695	U		1.963	J	b				
Total TCDD		1.066	U		1.05	U					
Total TCDF		0.71	U		0.764	U					

Appendix D

Data Quality Summary

by Analysis Type

Data Quality Summary

Dioxins/Furans

		Data Points	% of Data	% of Qualified Data	Bias (low/none/high)
TOTAL DATA POINTS:		**200**	-	-	-
TOTAL QUALIFIED DATA POINTS:		**47**	23.5%	-	-
TOTAL REJECTED DATA POINTS:		**0**	0.0%	-	-
Qualified/Rejected as a result of:					
b	- Surrogate spike recovery outside control limits	46	23.0%	97.9%	H
a,b	- Multiple Reasons	1	0.5%	2.1%	H

Appendix E

Sample Table
Qualified Data Tables

by Data Quality Indicator and Analysis Type

Table 6 - Surrogate Qualifications (b)

Analysis Type: ***Dioxins/Furans***

Labcode: ***SWOK***

Lab ID	Field ID	Matrix	Analyte	Result	Units	Q	Bias	RC
50687.01	02YAKOC-01-S	S	OCDD	7.265	ng/Kg	BJ	H	a,b
50687.02	02YAKOC-02-S	S	1,2,3,4,6,7,8-HpCDD	4.596	ng/Kg	J	H	b
			OCDD	41.63	ng/Kg	J	H	b
			OCDF	2.291	ng/Kg	J	H	b
			Total HpCDD	7.326	ng/Kg	J	H	b
			Total TCDF	1.72	ng/Kg	J	H	b
50687.03	02YAKOC-03-S	S	1,2,3,4,6,7,8-HpCDD	73.22	ng/Kg	J	H	b
			1,2,3,4,6,7,8-HpCDF	12.16	ng/Kg	J	H	b
			1,2,3,4,7,8-HxCDF	1.265	ng/Kg	J	H	b
			1,2,3,6,7,8-HxCDD	2.629	ng/Kg	J	H	b
			OCDD	744.2	ng/Kg	J	H	b
			OCDF	63.84	ng/Kg	J	H	b
			Total HpCDD	137.5	ng/Kg	J	H	b
			Total HpCDF	56.37	ng/Kg	J	H	b
			Total HxCDD	10.25	ng/Kg	J	H	b
			Total HxCDF	16.61	ng/Kg	J	H	b
50687.04	02YAKOC-04-T	T	1,2,3,4,6,7,8-HpCDD	25.32	ng/Kg	J	H	b
			1,2,3,4,6,7,8-HpCDF	3.85	ng/Kg	J	H	b
			OCDD	245.7	ng/Kg	J	H	b
			OCDF	15.09	ng/Kg	J	H	b
			Total HpCDD	40.08	ng/Kg	J	H	b
			Total HpCDF	14.86	ng/Kg	J	H	b
			Total HxCDF	4.019	ng/Kg	J	H	b
50687.05	02YAKOC-05-T	T	1,2,3,4,6,7,8-HpCDD	14.15	ng/Kg	J	H	b
			1,2,3,4,6,7,8-HpCDF	2.652	ng/Kg	J	H	b
			OCDD	216.5	ng/Kg	J	H	b
			OCDF	11.95	ng/Kg	J	H	b
			Total HpCDD	23.59	ng/Kg	J	H	b
			Total HpCDF	8.698	ng/Kg	J	H	b
50687.06	02YAKOC-06-T	T	1,2,3,4,6,7,8-HpCDD	11.46	ng/Kg	J	H	b
			1,2,3,4,6,7,8-HpCDF	2.699	ng/Kg	J	H	b
			OCDD	93.38	ng/Kg	J	H	b
			OCDF	5.306	ng/Kg	J	H	b
			Total HpCDD	20.31	ng/Kg	J	H	b
			Total HpCDF	6.481	ng/Kg	J	H	b
50687.07	02YAKOC-07-T	T	OCDD	27.14	ng/Kg	J	H	b
50687.08	02YAKOC-08-T	T	1,2,3,4,6,7,8-HpCDD	121	ng/Kg	J	H	b
			1,2,3,4,6,7,8-HpCDF	18.77	ng/Kg	J	H	b

Table 6 - Surrogate Qualifications (b)

Analysis Type: ***Dioxins/Furans***

Labcode: ***SWOK***

Lab ID	Field ID	Matrix	Analyte	Result	Units	Q	Bias	RC
50687.08	02YAKOC-08-T	T	1,2,3,4,7,8-HxCDF	2.214	ng/Kg	J	H	b
			1,2,3,6,7,8-HxCDD	4.203	ng/Kg	J	H	b
			OCDD	1358	ng/Kg	J	H	b
			OCDF	69.37	ng/Kg	J	H	b
			Total HpCDD	192.7	ng/Kg	J	H	b
			Total HpCDF	76.1	ng/Kg	J	H	b
			Total HxCDD	4.203	ng/Kg	J	H	b
			Total HxCDF	29.64	ng/Kg	J	H	b
			Total PeCDF	1.963	ng/Kg	J	H	b

Table 7 - Laboratory Blank Qualifications (a)

Due to laboratory blank contamination, the following detected results are qualified as nondetected:

Analysis Type: ***Dioxins/Furans***

Labcode: ***SWOK***

Lab ID	Field ID	Matrix	Analyte	Result	Units	Q	Bias	RC
50687.01	02YAKOC-01-S	S	OCDD	7.265	ng/Kg	BJ	H	a,b

Table 12 - RLs Not Meeting Project-Required RLs

The following reporting limits did not meet the project-required reporting limits:

Analysis Type: Dioxins/Furans

Laboratory: **SWOK**
Project ID: **50687**

Sample ID	Field I	Matrix	Dil Factor	Analyte	PQL	CRQL	Units	factor > CRQL
50687.04	02YAKOC-04-TS	T	1	1,2,3,4,7,8,9-HpCDF	1.047	0.019	ng/Kg	55
				1,2,3,4,7,8-HxCDD	1.482	0.019	ng/Kg	78
				1,2,3,4,7,8-HxCDF	1.052	0.019	ng/Kg	55
				1,2,3,6,7,8-HxCDD	1.264	0.019	ng/Kg	67
				1,2,3,6,7,8-HxCDF	1.027	0.019	ng/Kg	54
				1,2,3,7,8,9-HxCDD	1.287	0.019	ng/Kg	68
				1,2,3,7,8,9-HxCDF	1.382	0.019	ng/Kg	73
				1,2,3,7,8-PeCDD	1.197	0.019	ng/Kg	63
				1,2,3,7,8-PeCDF	0.676	0.019	ng/Kg	36
				2,3,4,6,7,8-HxCDF	1.222	0.019	ng/Kg	64
				2,3,4,7,8-PeCDF	0.718	0.019	ng/Kg	38
				2,3,7,8-TCDD	0.957	0.019	ng/Kg	50
				2,3,7,8-TCDF	0.701	0.019	ng/Kg	37
				Total HxCDD	1.264	0.019	ng/Kg	67
				Total PeCDD	1.197	0.019	ng/Kg	63
				Total PeCDF	0.676	0.019	ng/Kg	36
				Total TCDD	0.957	0.019	ng/Kg	50
				Total TCDF	0.701	0.019	ng/Kg	37
50687.05	02YAKOC-05-TS	T	1	1,2,3,4,7,8,9-HpCDF	1.28	0.019	ng/Kg	67
				1,2,3,4,7,8-HxCDD	1.018	0.019	ng/Kg	54
				1,2,3,4,7,8-HxCDF	1.296	0.019	ng/Kg	68
				1,2,3,6,7,8-HxCDD	0.868	0.019	ng/Kg	46
				1,2,3,6,7,8-HxCDF	1.264	0.019	ng/Kg	67
				1,2,3,7,8,9-HxCDD	0.884	0.019	ng/Kg	47
				1,2,3,7,8,9-HxCDF	1.703	0.019	ng/Kg	90
				1,2,3,7,8-PeCDD	1.406	0.019	ng/Kg	74
				1,2,3,7,8-PeCDF	0.843	0.019	ng/Kg	44
				2,3,4,6,7,8-HxCDF	1.506	0.019	ng/Kg	79
				2,3,4,7,8-PeCDF	0.896	0.019	ng/Kg	47
				2,3,7,8-TCDD	1.49	0.019	ng/Kg	78
				2,3,7,8-TCDF	1.059	0.019	ng/Kg	56
				Total HxCDD	0.868	0.019	ng/Kg	46
				Total HxCDF	1.264	0.019	ng/Kg	67
				Total PeCDD	1.406	0.019	ng/Kg	74
				Total PeCDF	0.843	0.019	ng/Kg	44
				Total TCDD	1.49	0.019	ng/Kg	78
				Total TCDF	1.059	0.019	ng/Kg	56

Table 12 - RLs Not Meeting Project-Required RLs

Analysis Type: Dioxins/Furans

Laboratory: **SWOK**
Project ID: **50687**

Sample ID / Field I		Matrix	Dil Factor	Analyte	PQL	CRQL	Units	factor > CRQL
50687.06	02YAKOC-06-TS	T	1	1,2,3,4,7,8,9-HpCDF	1.278	0.019	ng/Kg	67
				1,2,3,4,7,8-HxCDD	1.758	0.019	ng/Kg	93
				1,2,3,4,7,8-HxCDF	1.112	0.019	ng/Kg	59
				1,2,3,6,7,8-HxCDD	1.5	0.019	ng/Kg	79
				1,2,3,6,7,8-HxCDF	1.085	0.019	ng/Kg	57
				1,2,3,7,8,9-HxCDD	1.527	0.019	ng/Kg	80
				1,2,3,7,8,9-HxCDF	1.461	0.019	ng/Kg	77
				1,2,3,7,8-PeCDD	1.163	0.019	ng/Kg	61
				1,2,3,7,8-PeCDF	0.622	0.019	ng/Kg	33
				2,3,4,6,7,8-HxCDF	1.292	0.019	ng/Kg	68
				2,3,4,7,8-PeCDF	0.661	0.019	ng/Kg	35
				2,3,7,8-TCDD	1.218	0.019	ng/Kg	64
				2,3,7,8-TCDF	0.95	0.019	ng/Kg	50
				Total HxCDD	1.5	0.019	ng/Kg	79
				Total HxCDF	1.085	0.019	ng/Kg	57
				Total PeCDD	1.163	0.019	ng/Kg	61
				Total PeCDF	0.622	0.019	ng/Kg	33
				Total TCDD	1.218	0.019	ng/Kg	64
				Total TCDF	0.95	0.019	ng/Kg	50

Table 12 - RLs Not Meeting Project-Required RLs

Analysis Type: Dioxins/Furans

Laboratory: **SWOK**
Project ID: **50687**

Sample ID / Field I		Matrix	Dil Factor	Analyte	PQL	CRQL	Units	factor > CRQL
50687.07	02YAKOC-07-TS	T	1	1,2,3,4,6,7,8-HpCDD	1.481	0.019	ng/Kg	78
				1,2,3,4,6,7,8-HpCDF	0.861	0.019	ng/Kg	45
				1,2,3,4,7,8,9-HpCDF	1.155	0.019	ng/Kg	61
				1,2,3,4,7,8-HxCDD	1.773	0.019	ng/Kg	93
				1,2,3,4,7,8-HxCDF	1.087	0.019	ng/Kg	57
				1,2,3,6,7,8-HxCDD	1.512	0.019	ng/Kg	80
				1,2,3,6,7,8-HxCDF	1.061	0.019	ng/Kg	56
				1,2,3,7,8,9-HxCDD	1.539	0.019	ng/Kg	81
				1,2,3,7,8,9-HxCDF	1.429	0.019	ng/Kg	75
				1,2,3,7,8-PeCDD	1.11	0.019	ng/Kg	58
				1,2,3,7,8-PeCDF	0.695	0.019	ng/Kg	37
				2,3,4,6,7,8-HxCDF	1.264	0.019	ng/Kg	67
				2,3,4,7,8-PeCDF	0.738	0.019	ng/Kg	39
				2,3,7,8-TCDD	1.066	0.019	ng/Kg	56
				2,3,7,8-TCDF	0.71	0.019	ng/Kg	37
				OCDF	1.705	0.019	ng/Kg	90
				Total HpCDD	1.481	0.019	ng/Kg	78
				Total HpCDF	0.861	0.019	ng/Kg	45
				Total HxCDD	1.512	0.019	ng/Kg	80
				Total HxCDF	1.061	0.019	ng/Kg	56
				Total PeCDD	1.11	0.019	ng/Kg	58
				Total PeCDF	0.695	0.019	ng/Kg	37
				Total TCDD	1.066	0.019	ng/Kg	56
				Total TCDF	0.71	0.019	ng/Kg	37
50687.08	02YAKOC-08-TS	T	1	1,2,3,4,7,8,9-HpCDF	1.213	0.019	ng/Kg	64
				1,2,3,4,7,8-HxCDD	1.651	0.019	ng/Kg	87
				1,2,3,6,7,8-HxCDF	0.952	0.019	ng/Kg	50
				1,2,3,7,8,9-HxCDD	1.434	0.019	ng/Kg	75
				1,2,3,7,8,9-HxCDF	1.282	0.019	ng/Kg	67
				1,2,3,7,8-PeCDD	1.18	0.019	ng/Kg	62
				1,2,3,7,8-PeCDF	0.611	0.019	ng/Kg	32
				2,3,4,6,7,8-HxCDF	1.133	0.019	ng/Kg	60
				2,3,4,7,8-PeCDF	0.649	0.019	ng/Kg	34
				2,3,7,8-TCDD	1.05	0.019	ng/Kg	55
				2,3,7,8-TCDF	0.764	0.019	ng/Kg	40
				Total PeCDD	1.18	0.019	ng/Kg	62
				Total TCDD	1.05	0.019	ng/Kg	55
				Total TCDF	0.764	0.019	ng/Kg	40

Appendix D

USACE and ADEC comments on Draft Report

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
P.O. BOX 6898
ELMENDORF AFB, ALASKA 99506-6898

REPLY TO ATTENTION OF:

NOV 5 2003

Programs and Project Management Division
Civil Works Branch

Ms. Desiree Duncan
Central Council of Tlingit and
Haida Indian Tribes of Alaska
320 W. Willoughby Way
Juneau, Alaska 99801

Dear Ms. Duncan:

Enclosed are comments prepared at the Alaska District concerning the document entitled 'Ocean Cape Radio Relay - F10AK0747, Draft Contaminant Sampling Report, dated March 2003. This document was prepared through Cooperative Agreement NALEMP-01-0003 between Central Council of Tlingit and Haida Indian Tribes of Alaska and the Department of Defense.

I understand you have forwarded a report copy directly to the Yakutat Tlingit Tribe for their review and comment. Upon receipt, we will forward the final report and comments to the Office of Secretary of Defense via our headquarters office in Washington D.C. for entering information into the Native American Environmental Tracking System (NAETS).

Please call me at (907) 753-5606 with any questions.

Sincerely,

Richard Jackson
FUDS Project Manager

Enclosure

CEPOA-PM-C (200-1f) October 10, 2003

MEMORANDUM FOR CEPOA-PM-C

SUBJECT: Review of Draft Contaminant Sampling Report, Ocean Cape Radio Relay (F10AK0747)

1. A Draft Contaminant Sampling Report, Ocean Cape Radio Relay , prepared by the Central Council of the Tlingit and Haida Indian Tribes of Alaska (CCTHITA), dated March 2003 was reviewed by PM-C.

2. Specific comments related to this report follow.

3. [General] According to the enclosed Sampling Plan, the planned sampling included Fort Pierce, Fort Ray, and Yakutat Ocean Cape Radio Relay. The Introduction should provide a reference to the separate Sampling Report document which covers the Fort Pierce and Fort Ray field activities.

4. [Page 4, Section 1.0] Please cite the referenced report (Final 2000 Remedial Investigation Report, Yakutat Area, Alaska, February 2003.)

5. [Page 4, Section 1.0] Please change sentence (soil samples were ~~only~~ taken on site, so the CCTHITA contaminant sampling plan ~~also~~ integrated 3 soil samples off-site of the Ocean Cape Radio Relay station ~~to be considered~~ for consideration as background samples.)

6. [Page 9, Section 5.0, first paragraph] Please change sentence (The results of this study ~~indicate~~ suggest that some ~~soil remediation for dioxins needs to occur~~ soils at the Ocean Cape Radio Relay Site are anomalously high in dioxins.)

7. [Page 9, Section 5.0, second paragraph] Please delete third sentence (Given the nature of dioxins .....).

8. [Page 9, Section 5.0, second paragraph] Please change fourth sentence (However, the sampling results therein show ~~much~~ higher levels of dioxin contamination within Ankau Saltchuck,).

9. [Page 9, Section 5.0, fourth paragraph] Please change fifth sentence (Contamination from past military activities at this site not only impact their Native lands and resources, but ~~have direct implications~~ also may be impacting the health of their tribal members.

10. If you have any questions concerning the information in this memorandum, please contact Carey Cossaboom, Project Manager, at (907) 753-2689 phone, (907) 753-5626 fax.

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES PROGRAM

FRANK H. MURKOWSKI, GOVERNOR
555 Cordova Street
Anchorage, AK 99501
PHONE: (907) 269-7503
FAX: (907) 269-7649
http://www.state.ak.us/dec/home.htm

October 20, 2003

Bertrand Adams, Jr.
Yakutat Tlingit Tribe
PO Box 418
Yakutat AK 99689

Dear Mr. Adams:

RE: Ocean Cape Radio Relay – F10AK0747 – Draft Contaminant Sampling Report, dated March 2002

Thank you for providing the Alaska Department of Environmental Conservation (DEC) with a copy of the Ocean Cape Radio Relay - F10AK0747 - Draft Contaminant Sampling Report dated March 2002. The DEC received the report on September 30, 2003. The report summarizes the data and presents recommendations for further sampling.

I would like to suggest some clarifications for the data and its presentation. While the report presents the Toxicity Equivalency (TEQ) as reported from the laboratory, no reference for the source is given. I have attempted to obtain the reference from the lab without success. The TEQs that are in the report do not agree with the values calculated from the TEF (Toxicity Equivalency Factors) that were developed by the World Health Organization (WHO) which the DEC recommends. These can be found at: http://www.who.int/pcs/docs/dioxin-exec-sum/exe-sum-final.html. I have included a copy of the table with this letter for your reference.

Using the WHO TEF values, the results for the samples are calculated as:

Sample ID		02YAKO C-01-SO	02YAKO C-02-SO	02YAKO C-03-SO	02YAKO C-04-TS	02YAKO C-05-TS	02YAKO C-06-TS	02YAKO C-07-TS	02YAKO C-08-TS
Location		North End of Khantaak Soil	South End of Khantaak Soil	Upstream of Culture Camp Soil	Cockles Ankau Slough	Clams Ankau Slough	Mussels Ankau Slough	Mussels Outer Shore Rocks Ocean Cape	Clam Culture Camp Tidelands
Compound	TEF								
2,3,7,8-TCCD	1								
1,2,3,7,8 PeCDD	1								
1,2,3,4,7,8 HxCCD	0.1								
1,2,3,6,7,8 HxCCD	0.1			0.2629					0.4203
1,2,3,7,8,9 HxCCD	0.1								
1,2,3,4,6,7,8 HpCDD	0.01		0.04596	0.7322	0.2532	0.1415	0.1146		1.21
OCDD	0.0001	0.000727	0.004163	0.07442	0.02457	0.02165	0.009338	0.002714	0.1358
2,3,7,8 TCDF	0.1								
1,2,3,7,8PeCDF	0.05								
2,3,4,7,8 PeCDF	0.5								
1,2,3,4,7,8 HxCDF	0.1			0.1265					0.2214
1,2,3,6,7,8 HxCDF	0.1								
2,3,4,6,7,8HxCDF	0.1								
1,2,3,7,8,9 HxCDF	0.1								
1,2,3,4,6,7,8 HpCDF	0.01			0.1216	0.0385	0.02652	0.02699		0.1877
1,2,3,4,7,8,9 HpCDF	0.01								
OCDF	0.0001		0.0002291	0.006384	0.001509	0.001195	0.000531		0.006937
Total TEQ		0.0007	0.0504	1.3240	0.3178	0.1969	0.1515	0.0027	2.1821

These TEQ values, for each of the samples, are slightly lower than those shown in the draft report but still above the screening levels.

The risk-based fish value of 0.019 ppt TEQ for unlimited consumption that was developed by the EPA is based on the WHO values cited above. The EPA also developed consumption limits in terms of meals per month in their report Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Volume 2, Risk Assessment and Fish Consumption Limits, Third Edition APA 823-B-00-008, November 2000. I have included the table here for comparison to the TEQs that were obtained during this sampling event.

Table 4-25. Monthly Fish Consumption Limits for Carcinogenic Health Endpoint - Dioxins/Furans

Risk Based Consumption Limit[a]	Noncancer Health Endpoints[b]	Cancer Health Endpoints[c]
Fish Meals/Month	Fish Tissue Concentrations (*ppm, wet weight*)	Fish Tissue Concentrations (*ppt[e]-TEQ, wet weight*)
Unrestricted (>16)	NA	0 - 0.019
16	NA	>0.019 - 0.038
12	NA	>0.038 - 0.05
8	NA	>0.05 - 0.075
4	NA	>0.075 - 0.15
3	NA	>0.15 - 0.2
2	NA	>0.2 - 0.3
1	NA	>0.3 - 0.6
0.5	NA	>0.6 - 1.2
None (<0.5)	NA	>1.2

[a] The assumed meal size is 8 oz (0.227 kg). The ranges of chemical concentrations presented are conservative, e.g., the 12-meal-per-month levels represent the concentrations associated with 12 to 15.9 meals.
[b] Chronic, systemic effects. An RfD is not available (NA) for this compound.
[c] Cancer values represent tissue concentrations at a 1 in 100,000 risk level.
[e] Concentration reported in parts per trillion (nanogram per kg or 10^{-9} g/kg

Notes:
1. Consumption limits are based on an adult body weight of 70 kg and a cancer slope factor (CSF) of 1.56×10^{5} $(mg/kg\text{-}d)^{-1}$. No RfD available (June 1999).
2. None = No consumption recommended.
3. In cases where >16 meals per month are consumed, refer to Equations 3-1 and 3-2, Section 3.2.1.2, for methods to determine safe consumption limits.
4. The detection limit for dioxins/furans is 1×10^{-4} mg/kg.
5. Instructions for modifying the variables in this table are found in Section 3.3.
6. Monthly limits are based on the total dose allowable over a 1-month period (based on the RfD). When the monthly limit is consumed in less than 1 month (e.g., in a few large meals), the daily dose may exceed the RfD (see Section 2.3).

The DEC would like the report to be modified so that it includes the TEQs calculated based on the WHO values. If you have any questions on this letter please contact me at 269-0298.

Sincerely,

Deb Caillouet
Environmental Specialist

Attachment: WHO's TEF Table 3 For Human Risk Assessment

Cc Carey Cossaboom
Richard Jackson

Table 3. WHO TEFs for human risk assessment based on the conclusions of the World Health Organization meeting in Stockholm, Sweden, 15-18 June 1997 (Van den Berg et al., 1998).

Congener	TEF value	Congener	TEF value
Dibenzo-p-dioxins		*Non-ortho PCBs*	
2,3,7,8-TCDD	1	PCB 77	0.0001
1,2,3,7,8-PnCDD	1	PCB 81	0.0001
1,2,3,4,7,8-HxCDD	0.1	PCB 126	0.1
1,2,3,6,7,8-HxCDD	0.1	PCB 169	0.01
1,2,3,7,8,9-HxCDD	0.1		
1,2,3,4,6,7,8-HpCDD	0.01	*Mono-ortho PCBs*	
OCDD	0.0001	PCB 105	0.0001
		PCB 114	0.0005
Dibenzofurans		PCB 118	0.0001
2,3,7,8-TCDF	0.1	PCB 123	0.0001
1,2,3,7,8-PnCDF	0.05	PCB 156	0.0005
2,3,4,7,8-PnCDF	0.5	PCB 157	0.0005
1,2,3,4,7,8-HxCDF	0.1	PCB 167	0.00001
1,2,3,6,7,8-HxCDF	0.1	PCB 189	0.0001
1,2,3,7,8,9-HxCDF	0.1		
2,3,4,6,7,8-HxCDF	0.1		
1,2,3,4,6,7,8-HpCDF	0.01		
1,2,3,4,7,8,9-HpCDF	0.01		
OCDF	0.0001		

Van den Berg, M., Birnbaum, L., Bosveld, B.T.C., Brunström, B., Cook, P., Feeley, M., Giesy, J.P., Hanberg, A., Hasegawa, R., Kennedy, S.W., Kubiak, T., Larsen, J.C., van Leeuwen, F.X.R., Liem, A.K.D.,Nolt, C., Peterson, R.E., Poellinger, L., Safe, S., Schrenk, D., Tillitt,D., Tysklind, M., Younes, M., Waern, F.,Zacharewski, T. Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife. Environmental Health Perspective, 106 (12), 775-792, 1998

Appendix E

Contaminant Sampling Pictures

Pictures from Ocean Cape Relay Station Dioxin Sampling Event

Cal Richert collecting background soil samples

Cockles collected for tissue sampling

Cal Richert collecting mussels at Ocean Cape for tissue samples

Cal Richert collecting clams at the Culture camp for tissue samples