NORTHWEST AREA

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY

CLEAN

ENGINEERING FIELD ACTIVITY
NORTHWEST, NAVAL FACILITIES
ENGINEERING COMMAND
CONTRACT #N62474-89-D-9295

WESTERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND

THE URS TEAM

URS Consultants

Science Applications International Corp.

B&V Waste Science and Technology Corp.

Shannon & Wilson, Inc.

CTO #0051

Revised Site Inspection White Alice Site

Northeast Cape
St. Lawrence Island, Alaska

Final Report

April 27, 1992

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FINAL
REVISED SITE INSPECTION REPORT

FOR THE

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN PROGRAM) NORTHWEST AREA

WHITE ALICE SITE
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
CONTRACT TASK ORDER #0051

PREPARED BY:
URS CONSULTANTS, INC.
ANCHORAGE, ALASKA

PREPARED FOR:
ENGINEERING FIELD ACTIVITY, NORTHWEST
WESTERN DIVISION, NAVAL FACILITIES ENGINEERING COMMAND
SILVERDALE, WASHINGTON

APRIL 27, 1992

REVISED SITE INSPECTION
TITLE PAGE

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Organization Title: Address:	Engineering Field Activity, Northwest Naval Facilities Engineering Command 3505 NW Anderson Hill Road Silverdale, WA 98383 (206) 476-5775
Prime Contractor: Address:	URS Consultants, Inc. 1100 Olive Way, Suite 200 Seattle, Washington 98101 (206) 623-1800

Quality Assurance Manager: Justin Freed
Telephone: (206) 623-1800

Project Manager: James P. Swing, P.E.
Telephone: (907) 563-3559

Concurrences:

Name: James P. Swing, P.E.
Title: Project Manager, CLEAN
URS Consultants, Inc.

Signature: James P Swing Date: 4/27/92

Name: Justin Freed
Title: Quality Assurance Manager, CLEAN
URS Consultants, Inc.

Signature: Justin Freed Date: 4/27/92
(Per verbal approval)

Approval for Navy:

Name: Lt. Brian Scott, CEC, USN
Title: Contracting Officer's Technical Representative
Engineering Field Activity, Northwest

Signature: _____ Date: _____

EXECUTIVE SUMMARY

A site inspection (SI) was performed by URS Consultants, Inc. (URS) at the White Alice Site, Northeast Cape (WASNC), Saint Lawrence Island, Alaska, as part of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62474-89-D-9295, Task Order No. 0051 (CTO #0051). The results of this supplemental site inspection are reported in this document as a revised SI. The objective of CTO #0051 was to generate sampling and other field data to augment information collected in a previous SI (CTO #0019). Soil samples, as well as wipe and concrete chip samples, were taken from the historic transformer pads and surrounding soils, and analyzed for volatile organic compounds, polychlorinated biphenyls (PCB), and pesticides. All usable data from both CTOs was combined and analyzed to determine (1) if a threat or potential threat to public health or the environment exists, and (2) if further action or investigations are warranted.

The results of the supplemental sampling verified the presence of significant levels of PCBs at each of the site areas, both in soils and on the concrete transformer pads, as indicated in the initial SI. Significant levels of 4,4-DDT, methoxychlor, and endrin aldehyde (all pesticides) were also found at the Lower Tram Site (Site 2). No other significant levels of contaminants were detected.

Because of the most recent sampling efforts, WASNC transformer sites appear to have relatively low amounts of contamination, with the exception of high concentrations of PCBs on and immediately adjacent to all the former transformer pads. However, outer-sampling grid-boundary contamination is evident from this sampling effort and from the sampling effort conducted in the previous SI (CTO #0019). Therefore, it is likely that sampling did not fully delineate the lateral extent of contaminated soils. The presence or absence of contaminants at other locations of the WASNC facility has not been investigated under this CTO.

The initial SI (CTO #0019) had unvalidated data, which indicated hydrocarbons in the soil at the Tramway Drumfield and at the Upper Camp Drumfield. At that time, stream samples did not appear to detect water contamination. Asbestos-containing materials were also identified in that effort in the Upper Camp Radome Building (Building 221), Building 124, Building 1001, the arctic walkway, the tram hallway, and at Antennas #2, #3, and #4 at the lower camp.

Utilizing the information contained in this revised SI and the usable data from the original SI (CTO #0019), we recommend that a further investigation under a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation/Feasibility Study (RI/FS) be conducted to delineate the contaminant extent and concentrations, and to evaluate appropriate cleanup procedures. The RI/FS should address delineation (laterally and at depth) of existing PCB-contaminated areas, and identification and delineation of additional potential source areas that may have contributed to the PCB or semi-volatile tentatively identified compound (TIC) contamination that was detected. Polychlorinated biphenyls, dioxin/furan, and semi-volatile tests should be conducted on surficial materials, with at-depth sample analysis adding volatile organic testing. In addition, total petroleum compounds/total petroleum hydrocarbons (TPC/TPH) testing should be performed on surficial samples to ascertain the need for hydrocarbon-spill remedial actions, and on subsurface samples at sites with detected surface-hydrocarbon contamination to enable evaluation of the potential extent of any such spills.

It is postulated that a limited-area cleanup at the transformer pads would result in removal of the high-level PCB contamination that was detected. Such an action would remove the highest level contaminants known onsite, which contribute, based on the information to date, the vast majority of the site risk from hazardous materials contamination.

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ACRONYMS

ACM	Asbestos-Containing Material
ADEC	Alaska Department of Environmental Conservation
ARAR	Applicable or Relevant and Appropriate Requirements
bgs	below ground surface
BLM	Bureau of Land Management
BNA	Base-Neutral-Acid Semi-Volatile Analysis
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
CTO	Contract Task Order
EPA	U.S. Environmental Protection Agency
F	Fahrenheit
H&S	Health and Safety
IRP	Installation Restoration Program
MCL	Maximum Contaminant Level
mph	miles per hour
NEESA	Naval Energy and Environmental Support Activity
NIOSH	National Institute of Occupational Safety and Health
NOSC	Naval Ocean System Center
OSHA	Occupational Safety and Health Administration

ACRONYMS (continued)

PA	Preliminary Assessment
PCB	Polychlorinated Biphenyls
PPE	Personal Protective Equipment
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RA	Removal Action
RI/FS	Remedial Investigation/Feasibility Study
SARA	Superfund Amendments and Reauthorization Act of 1986
SI	Site Inspection
SVOA	Semivolatile Organic Analysis
TCE	Trichloroethylene
TIC	Tentatively Identified Compound
TPC	Total Petroleum Compounds
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control Act
TWA	Time-Weighted Average
URS	URS Consultants, Inc.
USGS	United States Geological Survey
VOC	Volatile Organic Compound

ACRONYMS (continued)

WASNC	White Alice Site, Northeast Cape
XFMR	Transformer

1.0 INTRODUCTION

The Engineering Field Activity, Northwest, Naval Facilities Engineering Command requested that engineering services be provided by URS Consultants, Inc. (URS) to perform a revised site inspection (SI) for three sites at the White Alice Site, Northeast Cape (WASNC), St. Lawrence Island, Alaska. The revised SI was performed under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract, N62474-89-D-9295, Task Order No. 0051 (CTO #0051).

This report presents the results of the summer 1991 WASNC sampling effort, incorporating data from the 1990 initial SI sampling. Details of the 1990 sampling procedures (CTO #0019) are not provided in this report. Basically, the chemical (as opposed to asbestos-containing materials [ACM]) results based on the CTO #0019 lab analyses failed validation due to laboratory procedure errors.

Therefore, CTO #0051 involved resampling and retesting the WASNC site, and incorporating those results with the usable CTO #0019 data.

2.0 PROJECT PURPOSE AND OBJECTIVES

The purposes and scope of work, as stated in the Contract Task Order (CTO) scope of work were:

> "The objective of CTO-51 is to revise the Site Inspection for the Northeast Cape White Alice Site to determine if a threat or potential threat to public health and the environment exists.
>
> The Site Inspection is an on-site investigation to determine whether there is a release or potential release and the nature of the associated threats. The purpose of the SI is to augment data collected in the Preliminary Assessment and to generate sampling and other field data to determine if further action or investigation is appropriate....
>
> Soil samples from the grids established around the transformer pads by the Site Investigation Work Plan shall be obtained and analyzed for volatile organic compounds and PCBs/chlorinated pesticides. Concrete samples and swipe samples shall be obtained from the pads and analyzed for PCBs/chlorinated pesticides.
>
> All samples collected for determination of environmental contamination shall be submitted to a Navy certified laboratory for analysis.
>
> The contractor shall review data obtained during the field sampling and laboratory analysis for data quality and shall enter this information in a database for future reference.
>
> The contractor shall prepare a revised Site Inspection Report which incorporates all available and relevant information collected [as part of this CTO]..."

The usefulness of the CTO #0019 data in determining the degree of contamination at this site was limited. The analytical laboratory could not demonstrate that proper procedures were followed in analyzing the samples from the site in the course of the CTO #0019 work. Therefore, the data was not suitable for use in quantitative determinations of the existence, extent, or severity of site contamination. The 1990 SI report stated that contamination appeared to be present at the site, but was unable to quantify contamination levels with validated data. The purpose of CTO #0051 was to provide credible data on contamination levels present at the site.

CTO #0051 utilized the Quality Assurance Project Plan (QAPP) (URS 1990B) and Site Safety and Health Plan (URS 1990C) from CTO #0019. The Work Plan (URS 1990D) presented the tasks and rationale used to conduct the revised SI. Only the sampling plan portion of the Project Plans (URS 1990D) for the original SI was revised, to extend sampling areas (as shown in subsequent figures) and to reflect the modified sampling scope.

The objectives of the project were to collect (1) soil samples adjacent to three transformer bank electrical substations, and (2) wipe and concrete samples from the transformer pads at the following three sites identified in the Scope of Work for CTO #0051:

- Site 1 - White Alice Transformer Bank No. 1
- Site 2 - Lower Tram Transformer Bank No. 2
- Site 3 - Upper Camp Transformer Bank No. 3

The scope of work was limited to the three transformer pads, and did not involve sampling or evaluation of any other areas or facilities. Therefore, the qualitative results of CTO #0019 (including sampling of areas not covered in the scope of this CTO) must be considered in conjunction with this report when assessing overall site risk and contamination levels.

3.0 PROJECT DESCRIPTION

3.1 SITE BACKGROUND

The facilities at WASNC (Figure 3-1) were constructed in 1952 for the U.S. Air Force and used as part of the high-energy-pulse tropospheric scatter system located throughout coastal Alaska. Excess property of the original Air Force facility (16,213 acres) was relinquished to the Bureau of Land Management (BLM) on March 14, 1958, and conveyed to the Gambell and Savoonga Native Corporation on June 27, 1979. White Alice Site, Northeast Cape (WASNC) was used by the Air Force until it was closed in 1975, when the White Alice communication sites became obsolete with the introduction of communications satellites. After its closure, an additional 4,855 acres of the remaining base property were relinquished to the BLM on August 20, 1975, and conveyed to the Gambell and Savoonga Native Corporation on June 27, 1979.

On July 12, 1982, 26 acres of property were transferred from the Air Force to the U.S. Navy. The transferred property consisted of the lower antenna site (White Alice Lower Camp), the lower tramway terminal, the tramway up Mount Kangukhsam, and the upper camp complex.

On July 29, 1982, the Naval Ocean System Center (NOSC) accepted control of the 26 acres of property. The Naval Ocean System Center (NOSC) originally planned to use the WASNC facilities as part of experiments run by the Arctic Submarine Laboratory; however, the Navy has not used the property (NEESA 1990).

3.2 SITE DESCRIPTION

3.2.1 Location

WASNC is located on St. Lawrence Island, Alaska (Figure 3-1), which lies in the Bering Sea with its southern and northern limits marked by 62° 52' and 63° 52' North latitude, and between 168° 30' and 172° 00' West longitude, respectively. The island is approximately 100 miles in length and averages about 20 miles in width. The distance to the nearest point in Siberia, Cape Chaplin, is about 40 miles to the northwest of Gambell, while the distance to the nearest point on the Alaskan mainland at Cape Rodney on the Seward Peninsula is 118 miles to the northeast of Northeast Cape.

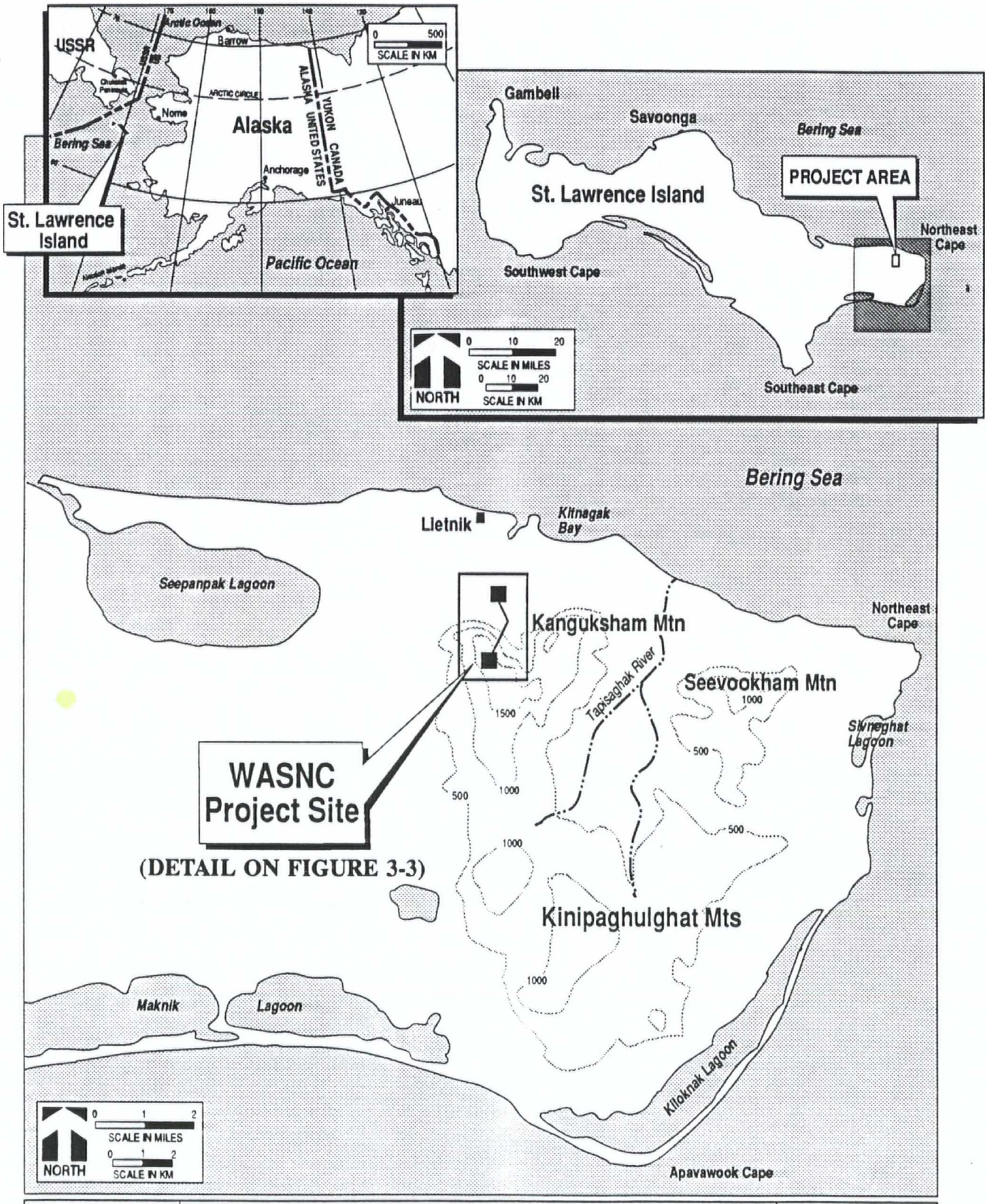

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Figure 3-1
St. Lawrence Island
Location Map

Source: (USGS, 1974 and NEESA, 1990)

CTO 0051
St. Lawrence Island
Alaska

The topography of Northeast Cape begins at the coastal plain at the Bering Sea. A transition from the seaside rolling terrain leads to the Kinipaghulghat Mountains with Kangukhsam Mountain at 1,820 feet above mean sea level as the highest local peak. The mountain is steep, with exposed weathered talus slopes.

The two population centers of Saint Lawrence Island are Savoonga and Gambell. A number of campsites are scattered along the shoreline of the island. One of these sites is Lietnik, located to the west of the runway, which appears to be an abandoned native site recognized by the United States Geological Survey (USGS).

All present-day fishing and hunting activities take place out of the Kitnagak Bay fish camp located to the east of the WASNC runway. Kitnagak Bay is the former lighterage area for material and supplies for the WASNC when it was an active facility. Local native people from Savoonga and Gambell use the camp at Kitnagak Bay for seasonal fishing and hunting.

3.2.2 Climate

The weather on the island is characterized by a typically arctic maritime climate, with a relatively milder winter and a relatively cooler summer than arctic continental areas at a similar latitude. Measurable precipitation as rain or snow is recorded about 250 days out of the year. The greatest precipitation is recorded during the months of August and September. Mean precipitation for these months at Savoonga (the nearest of the two villages) is 1.98 and 1.78 inches, respectively. The months with the lowest mean precipitation are April, May, and June with means of 0.36, 0.45, and 0.55 inches, respectively. However, most months have significant precipitation.

Winter temperatures seldom fall below -10° Fahrenheit (F), and summer temperatures above 55°F are infrequent and of short duration. The record minimum temperature of the villages of Gambell and Savoonga is -34°F recorded in February 1929, and the maximum is 69°F recorded in July of 1987 (AEIDC 1989).

Located in a stormy sea with water temperatures that vary only a few degrees from 32°F throughout the year, the island is characterized by cold winds of gale and occasionally, hurricane force. Commonly, the chill factor created by high winds, sometimes up to 100 miles per hour (mph), produce effective temperatures of -70°F. These winds can also produce severe winter blizzards that cause whiteout conditions. Prevailing winds are from the southwest and northwest in summer, and northerly in winter. The average annual hourly wind velocity is 17.8 mph. The average velocity in January is 19.4 mph and in July the average is 11.0 mph.

The growing season extends from early June through late August, but there may be snow and freezing temperatures in any month. The first autumn snowfall and formation of freshwater ice generally occur in October, and sea ice usually forms in late November. The spring icepack breakup usually occurs in the first two weeks of June, and some ice and snow may remain until July or later in certain localities (NEESA 1990).

3.2.3 Geology

The eastern part of the island is a broad, wave-cut bedrock platform now elevated to nearly 100 feet above mean sea level. The surface of the platform is covered with numerous small shallow lakes and blanketed by a thin veneer of water-saturated mossy turf and peat.

Several isolated groups of talus-covered hills containing ancient sea cliffs rise to elevations of 1,000 to 2,000 feet above mean sea level. These hills, which consist of the Kinipaghulghat Mountains in the vicinity of Northeast Cape, are formed by the Kinipaghulghat pluton. This pluton is Cretaceous in age (65 to 136 million years old) and consists predominantly of quartz monzonite and other granitic rock types. Towards the northeast of the pluton, a contact exists with undifferentiated volcanic rocks of Cretaceous and/or Tertiary (2 to 70 million years old) age (Figure 3-2).

The pluton and volcanic rocks are surrounded by Quaternary (<2 million years old) age surficial deposits consisting of gravel, sand, silt, and peat, which overlie the wave-cut bedrock platform (Patton and Csejtey 1980).

3.2.4 Hydrology

The principal surface-water feature at the site is the Bering Sea, which is located (at the closest point) approximately 1.5 miles to the north and east of the Main Electronics Center (Figure 3-1). All surface-water run-off from the area investigated in this report discharges to the Bering Sea.

The lowland areas of Northeast Cape are typical of a subarctic coastal plain where flat topography, frozen soils, and wet tundra have created numerous shallow thaw lake basins and peat in-filled thaw lake basins. These lakes are clear but tannic in color. In addition, there are numerous glacial run-off streams throughout the area. These clear flowing streams have vegetated, incised banks, with sandy gravel streambeds, and range from a few feet to 20 to 30 feet in width. These streams are braided in the lowlands in contrast to high-velocity single-channel streams in the mountainous areas.

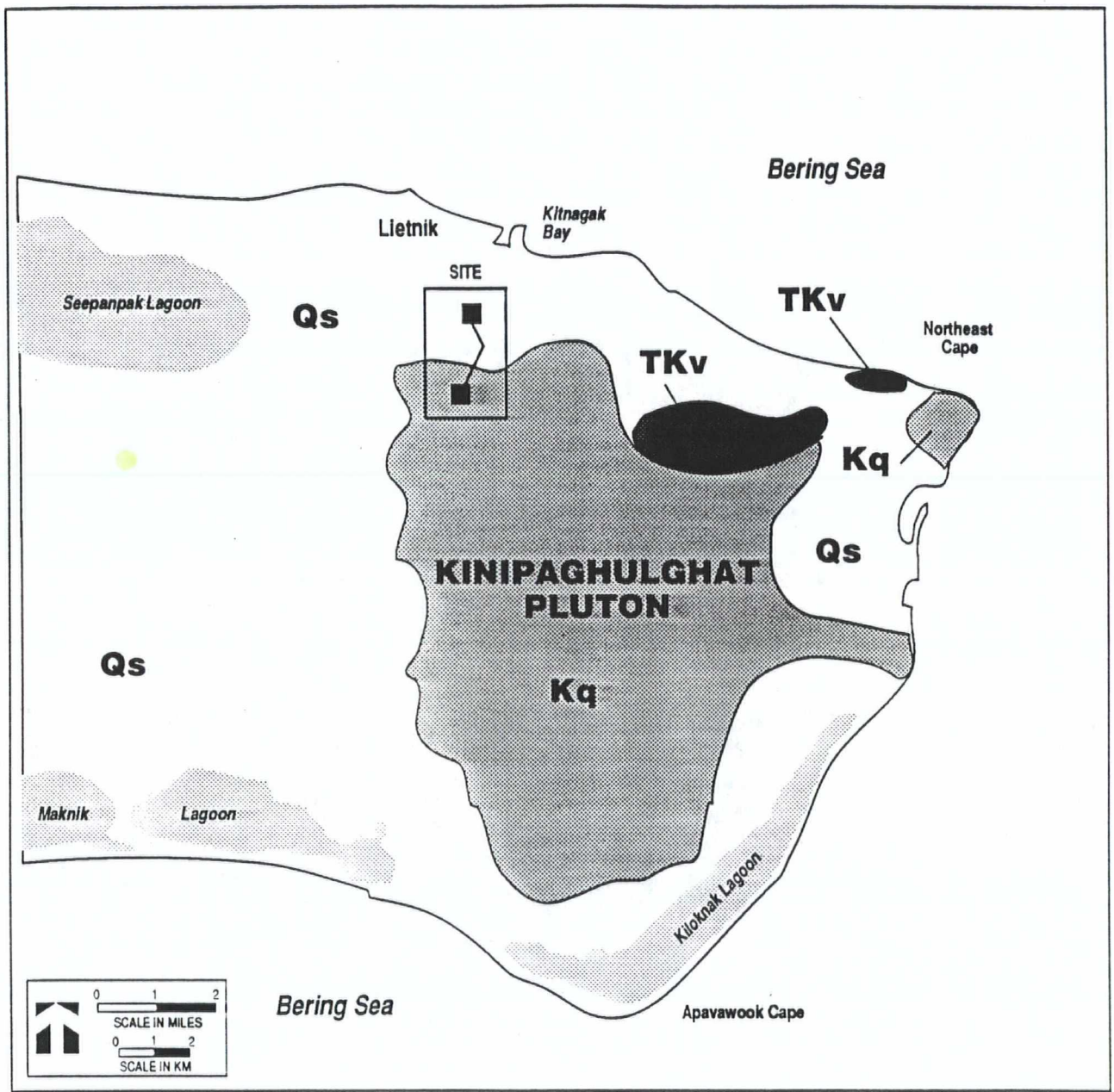

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Figure 3-2
Site Geology

Source: (NEESA, 1990)

CTO 0051
St. Lawrence Island
Alaska

A water supply well was drilled at the lower tramway terminal (Figure 3-3) in September 1962 to a depth of 68 feet. Bedrock consisting of decomposed granitic rocks was encountered at a depth of 32 feet, with the primary source of water located in a fractured zone from 61 to 65 feet below ground surface (bgs). At the time of drilling, the static water level was 25 feet bgs and the well sustained a yield of 12 gallons per minute for at least seven and a half hours. Several weeks after the well was tested, the water level dropped to a depth of 58 feet bgs and the well became unusable. It appears that seasonal fluctuations of the water table made the well usable only during the summer and early fall months. The well was eventually abandoned (U.S. Army Corps of Engineers 1962).

According to files of the USGS, Water Resources Division in Anchorage, Alaska, records exist for nine wells drilled on the island. Two of these were drilled by the Air Force in the vicinity of Northeast Cape and have been abandoned. The others appear to have been at locations away from the area under investigation. The nearest water supply well to WASNC, according to USGS records, is approximately 100 miles to the west in Gambell (USGS 1990).

3.2.5 Ecology

The vegetation of Northeast Cape is classified as alpine tundra, which is dominated by white mountain avens, mat-forming herbs, grasses, and sedges. Indigenous shrubs include alpine bearberry, dwarf birch, Labrador tea, willows, heaths, and cassipes. The lowland area is mainly wet tundra with lakes, bogs, and generally poorly drained soils. Vegetation at higher, drier areas is sparse to almost nonexistent. Steep slopes, lack of soils, and harsh climate make plant populations and densities low.

Arctic fox may be found at sea on pack ice during the winter and are present on the island year-round. Red fox, short-tailed weasels (ermine), and arctic ground squirrels are also permanent residents. Smaller mammals are numerous and provide the primary spring diet to migratory raptors, foxes, and jaegers (aggressive seabirds) when the snow first begins to leave the tundra. These small mammals include the tundra shrew, Greenland collared lemming, the red-backed vole, and the tundra vole.

Walrus, sea lion, minke, beluga and killer whales, harbor porpoise, bearded seals, and possibly ribbon seals are present during open water (July to September). Walrus frequently haul out at Northeast Cape, which is also a minor haul-out area for sea lions. Ringed seals breed and pup on shorefast ice during late winter (March to April) at Northeast Cape between Kangighsak Point and Apavawook Cape. Polar bears are likely to be present in winter on ice pack and/or on shore. There is a minor bowhead whale (April to May) and

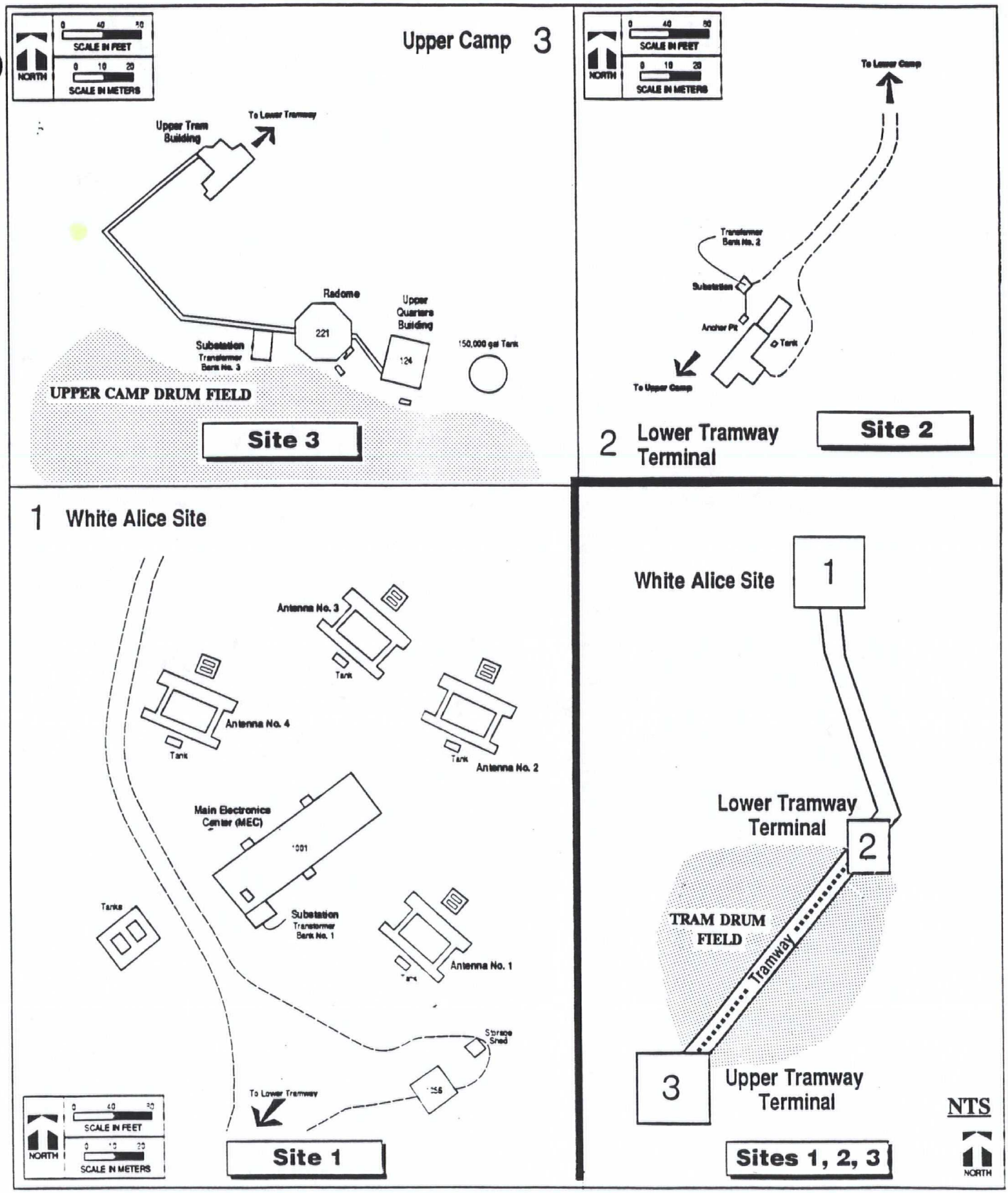

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Figure 3-3
Site Location Map

Source: (NEESA, 1990)

CTO 0051
St. Lawrence Island
Alaska

gray whale (May to June) migration route off the eastern coast of the island. A gray whale summer feeding area is located northeast of the island. Walrus and bearded, ringed, and spotted seals are also harvested in this area by the native population.

Most of the island provides important summer/fall nesting and molting habitat for migratory waterfowl. It also provides habitat for a major part of the seabird population in the northern Bering Sea. The waters surrounding the island are the major seabird concentration and foraging area. Three seabird colonies at the Northeast Cape area are located at Kinipaghulghat Mountain, Punuk Island, and Seevookhan Mountain. At each location, only a few pairs of a handful of species are present.

There have been sightings of peregrine falcons on the island, but they are listed as accidental and irregular visitors.

A small, few-flowered primula (Primula tschuktschorum), restricted to the Chukchi and Seward Peninsulas and St. Lawrence Island, is listed as an endangered species candidate. While current knowledge suggests that this species may be threatened or endangered, data to fully support this sentiment is not available.

There are eleven known historic and prehistoric sites of Eskimo and Punuk affiliation on the island. Site features include house pits, house remains, middens, and artifacts. These sites are located on wet tundra areas along the coast. There are probably numerous other undiscovered sites throughout the area (NEESA 1990).

3.2.6 Types and Behavior of Contaminants Present

Electricity for WASNC was obtained from the main power plant located in the housing and operations area approximately 3/4 mile by road from the White Alice Site lower camp. On the present Navy property, power was delivered to three separate transformer banks, located in the substation of Building 1001 (Figure 3-4), the Lower Tramway Transformer Building (Figure 3-5), and the Upper Camp Transformer Building as shown in Figure 3-6. For emergency service in case of normal power source failure, there were two diesel-engine-driven emergency generators located near each of the transformer banks. The electrical system was abandoned in 1975 when the Air Force ceased operations at Northeast Cape.

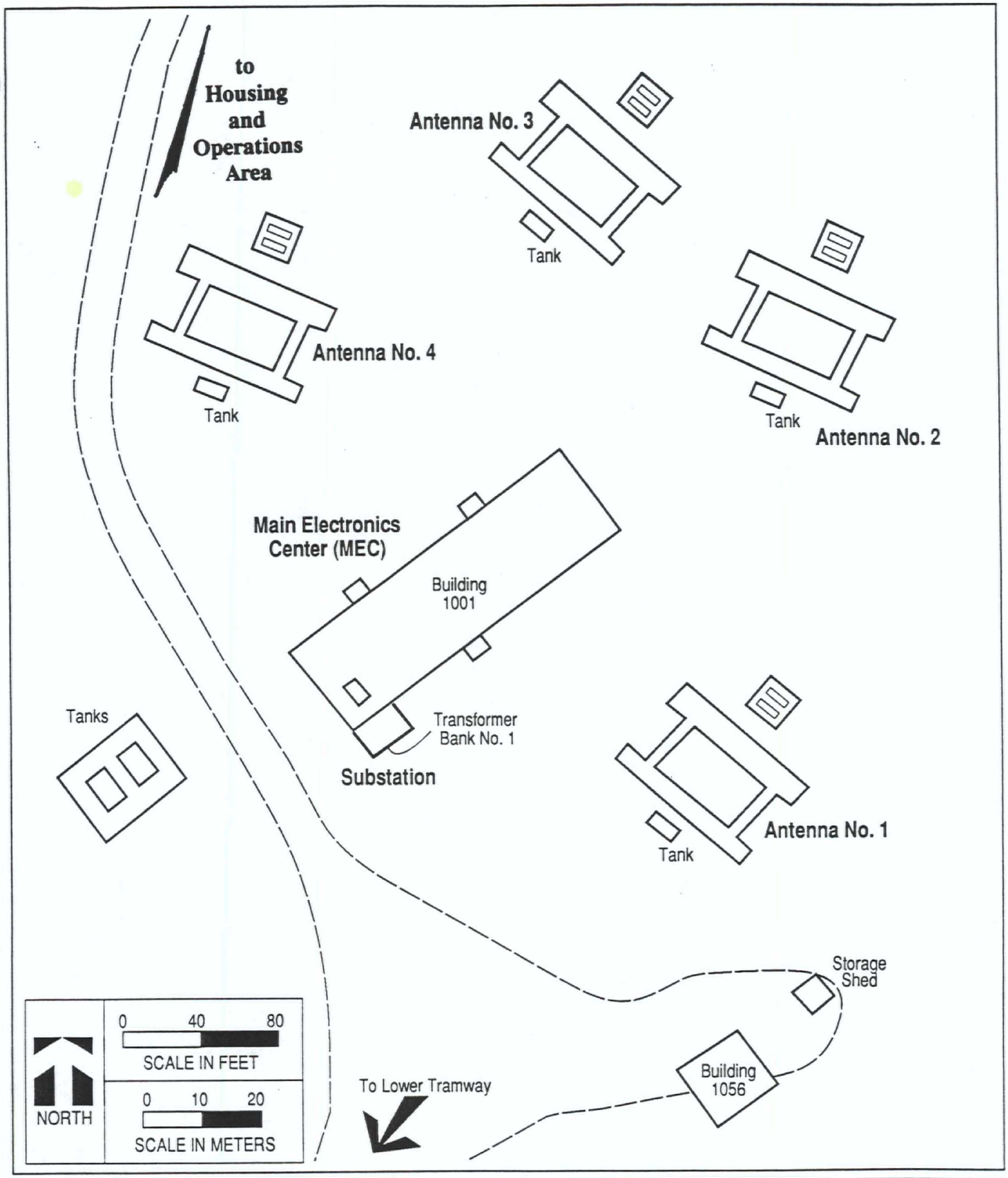

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Figure 3-4
Lower Camp/White Alice Site
Site 1
Source: (NEESA, 1990)

CTO 0051
St. Lawrence Island
Alaska

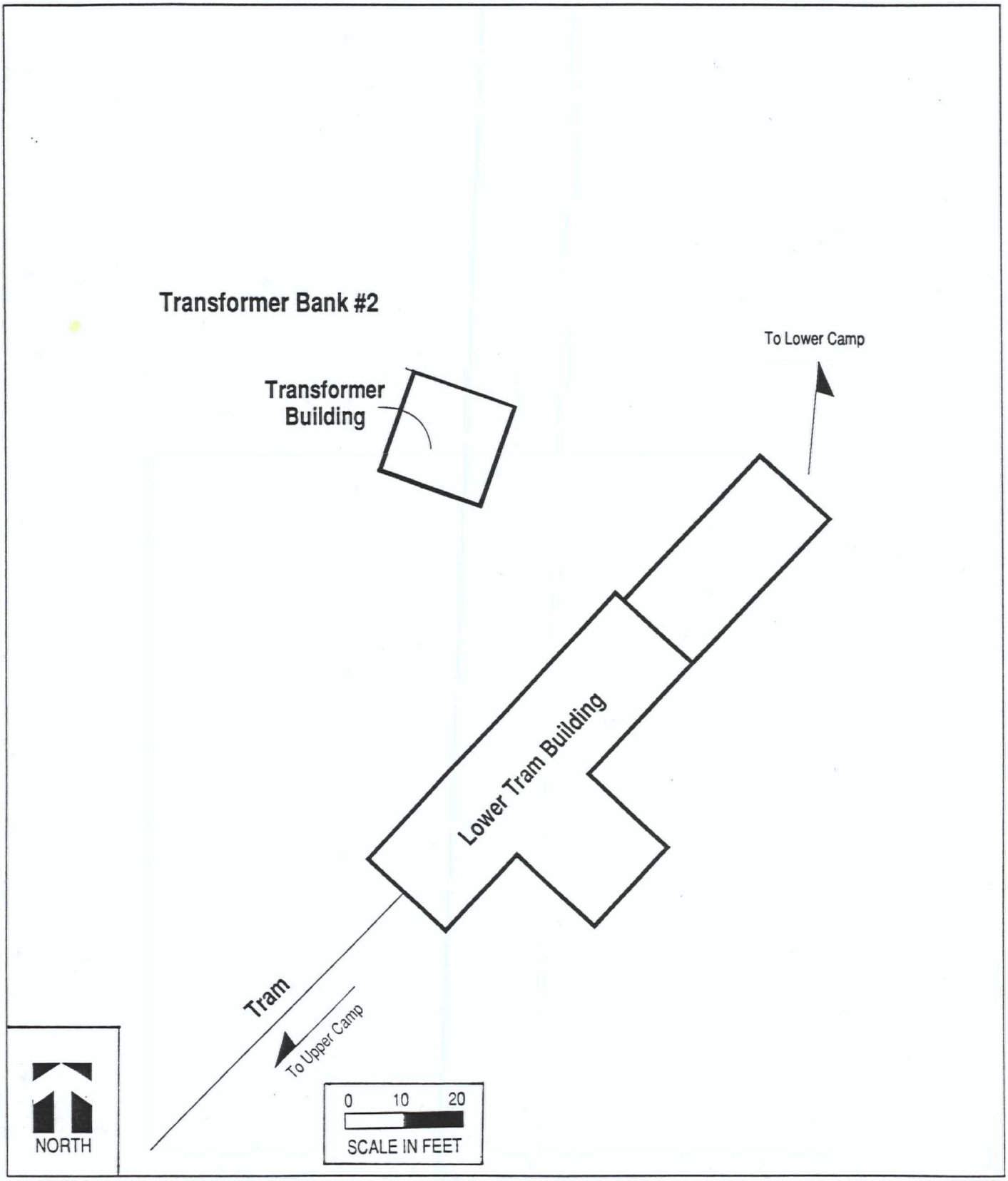

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Figure 3-5
Lower Tram
Site 2

CTO 0051
St. Lawrence Island
Alaska

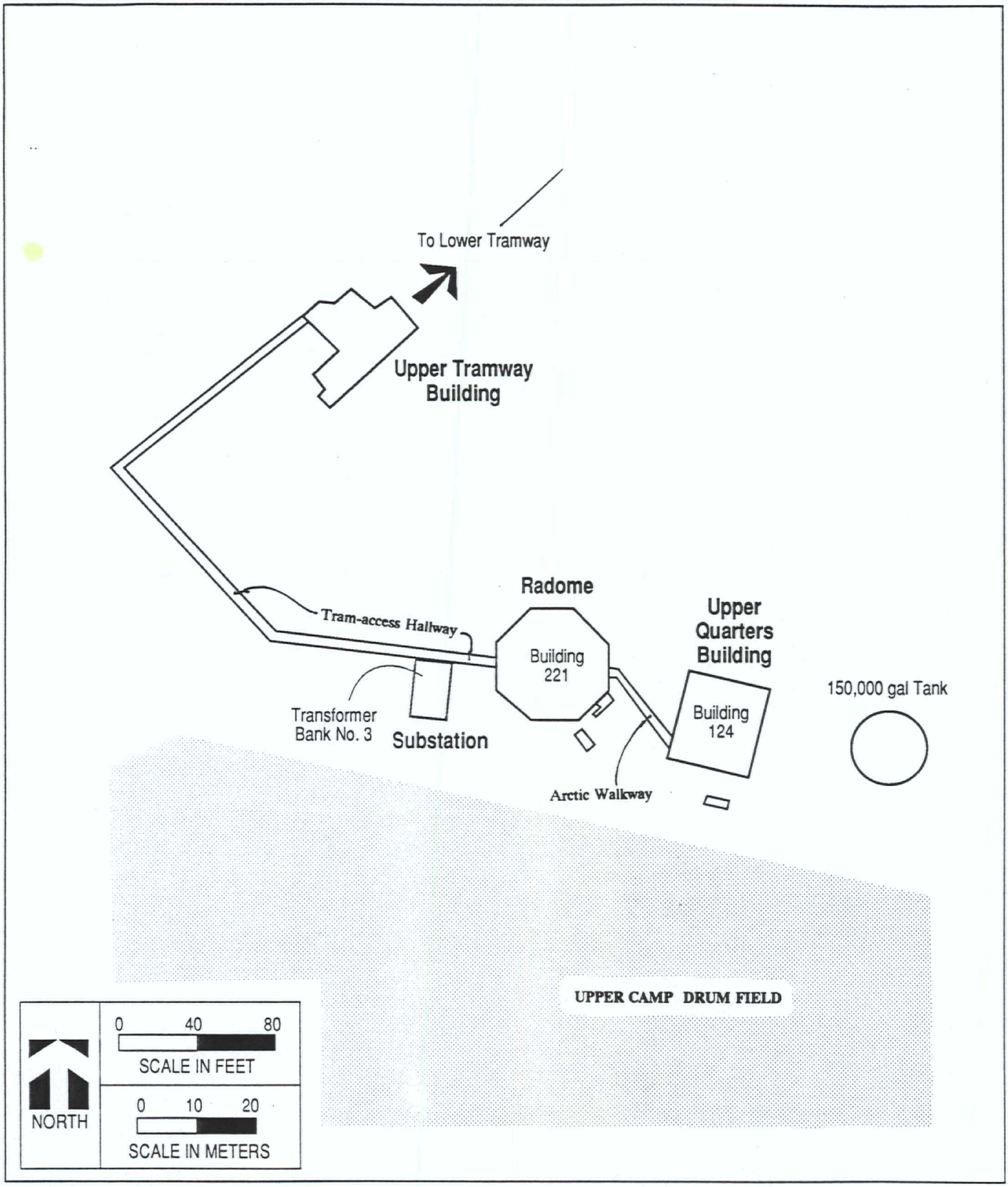

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Figure 3-6
Upper Camp/Upper Tramway Terminal
Site 3
Source: (NEESA, 1990)

CTO 0051
St. Lawrence Island
Alaska

Because the equipment at the White Alice sites was a high-power-pulse system, it reportedly would occasionally seriously overheat, and at times transformer fires would occur. When this would happen, the burned dielectric fluid was reportedly dumped onto the ground outside the building and the transformer was flushed with the solvent trichloroethylene (TCE) and refilled with fresh oil. There are no known records of the number, amount, or time period of these reported releases of dielectric fluid and flushing material. No physical records were produced to show dielectric fluid oil with PCB; however, the results of the Removal Action (RA) of CTO #0018 showed the transformers to have "ASKAREL" stamped on the face plates. Because of the stamped data statement, the transformers' oil and flush-oil were assumed to be over 500 ppm, and manifested and shipped accordingly. Records do not indicate if any of the dielectric fluid contained PCBs (although it is likely considering the years of operation), or the amount(s) and/or location(s) of these reported releases.

PCB are thermally and chemically stable compounds with dielectric properties, specifically developed as a transformer and high-energy dielectric and electrical-equipment immersion coolant. In 1974, regulations limited PCB use in the United States to closed systems, with approximately seventy percent of the PCB produced reportedly used in capacitors and the remaining thirty percent utilized in transformers (NEESA 1990).

The environmental behavior of PCB mixtures is a function of the individual chlorinated biphenyl species. In general, as chlorine content increases, sorption increases while transport and transformation processes decrease. Adsorption onto building materials, soils, and sediments is the major fate process affecting PCB in the environment. Soil material adsorption capacity is normally directly related to organic content, specific soil surface area, and clay content (NEESA 1990).

Air Force sites in Alaska also commonly utilized a variety of chemicals for cleaning purposes. In addition to various phosphates and ammoniated cleaning materials, solvents such as napthene, toluene, alcohols, trichloroethylene, acetone, carbon tetrachloride, sulfuric acid, trichlorophenoxy acetic acid (2,4,5-T), trichloroethane, trichloroethene, hexane, and various chlorobenzenes. Most of these chemicals were volatiles, so tests for volatile organic compounds (VOC) are the best detectors. In some cases, base-neutral-acid extractable semi-volatile analysis (BNA) tests will also detect constituents of these cleaning compounds.

TCE was widely used as an industrial solvent. It is highly volatile in aqueous solutions, moderately soluble in water, and not strongly adsorbed or bioaccumulated. TCE on the soil surface is likely to volatilize, but that portion not removed by volatilization is likely to become mobile in groundwater.

Pesticides (particularly rodenticides, larvacides, and insecticides) were also commonly utilized at remote sites. Some remote sites have records of herbicide use to reduce grass and weed growth. Use of these materials at WASNC is not in records reviewed by URS, but is a viable potential source of contamination.

Antifreeze compounds, including acetic acids, glycols, alcohol, silicates (aluminated and glycolated), and salts were also common. Metals (inorganics analysis) tests will commonly detect various metallic wastes from maintenance activities, metal-based greases and other lubricants, and from deterioration of the scrap metals that were commonly discarded at the White Alice sites. Asbestos is common at the site, in the possible forms of building, duct, and pipe insulation; ceiling tiles; floor tiles; and shingles.

3.2.7 General Waste-Handling Practices

Past material handling and waste disposal at the WASNC caused contamination at several locations around the WASNC site. Although many of these disposal practices were considered acceptable at the time, unexpected long-term problems may result from releases of pollutants into soil, groundwater, surface water, or the air. Generally, remote sites like WASNC did not have deliberate waste-disposal procedures, so wastes tend to be widely distributed around the facilities with only limited information on waste-generation rates and types. Wastes commonly generated from operations included waste petroleum, oil lubricants, chlorinated and non-chlorinated solvents, and batteries. Pesticides were also used at the facility.

No large-scale industrial operations were conducted at the various areas within the WASNC site. Past industrial operations at the WASNC were broken into two activities. The White Alice Building 1001, the antennas, the tram unit and the upper camp area were primarily for electronic transmission and receiving. The lower main base camp area was for site personnel, aircraft, aircraft support, automotive, fire and total maintenance of all ground support equipment to the WASNC.

The majority of incoming material was shipped in 55-gallon metal drums. Occasionally, material was shipped in small drums or 5-gallon metal containers. The drums typically contained petroleum products, PCB-containing dielectric and/or cooling fluid, cleaning solvents, alcohol, and other substances. No known generation of hazardous waste, other than degradation of steel drums on site, has taken place since WASNC was abandoned in 1975. Exact quantities of potential waste generated over the life of the project is unknown, but potentially could run into the tens of thousands of gallons, based on the number of discarded drums.

3.3 PREVIOUS INVESTIGATIONS

The Navy Installation Restoration Program (IRP) is designed to assess, clean up, or control contamination from past hazardous-waste-disposal operations and hazardous-material spills at Navy and Marine Corps facilities. The U.S. Navy has adopted terminology used by the U.S. Environmental Protection Agency (EPA) pursuant to the Superfund Amendments and Reauthorization Act of 1986 (SARA). The NOSC at San Diego, California, had requested in a letter dated November 17, 1988, that the Naval Energy and Environmental Support Activity (NEESA) perform a Preliminary Assessment (PA) at the WASNC as part of the initial phase of the IRP.

The principal purpose of the PA was to collect existing information to be used (1) in assessing the presence of hazardous waste at the site, and (2) to evaluate the potential for offsite migration. The NEESA team visited the site from July 16 to July 22, 1989, and produced a report that identified ACM, transformers, compressed gas cylinders, and 55-gallon drums containing various fuels and solvents that might pose a threat to human health and/or the environment.

A Removal Action (CTO #0018) was performed by URS in July and August of 1990. All drums, transformers, and gas cylinders from eight locations identified in the PA were removed. The 1990 SI (CTO #0019) was conducted by URS immediately following the completion of the Removal Action to determine the presence of hazardous materials remaining at the sites identified in the PA.

The results of the SI indicated significant PCB contamination at each of the transformer pad areas. The lateral extent or penetration into the soil of the PCBs was not delineated. Pesticides (including 4,4-DDT; 4,4-DDE; 4,4-DDD; and endrin aldehyde) were also detected in low concentrations in the same areas, and several low-concentration dioxin and furan samples were also detected.

Sampling at the drum fields (along the tramway and at the upper camp) revealed levels of total petroleum hydrocarbons (TPH), which were generally below 100 ppm -- the soil cleanup criteria established by the Alaska Department of Environmental Conservation (ADEC). Various typical solvent materials, including benzene, toluene, xylenes, methylene chloride, and sporadic encounters with semi-volatile compounds, were recorded at the drum fields.

No contaminants were noted in the analysis of the stream water samples collected down-gradient from the WASNC areas.

4.0 SAMPLING AND ANALYSIS

This section identifies the location, number, and types of samples collected to fulfill the objectives of this investigation. Details on sampling methodology and quality assurance/quality control (QA/QC) measures are provided in the CTO #0019 Project Plans (URS 1990A, 1990B, 1990C, 1990D, 1990E) and in the Standard Operating Procedures (URS 1990F). More detailed descriptions of the specific areas, and the historic uses and facilities, may be found in the CTO #0019 SI report (URS 1991A).

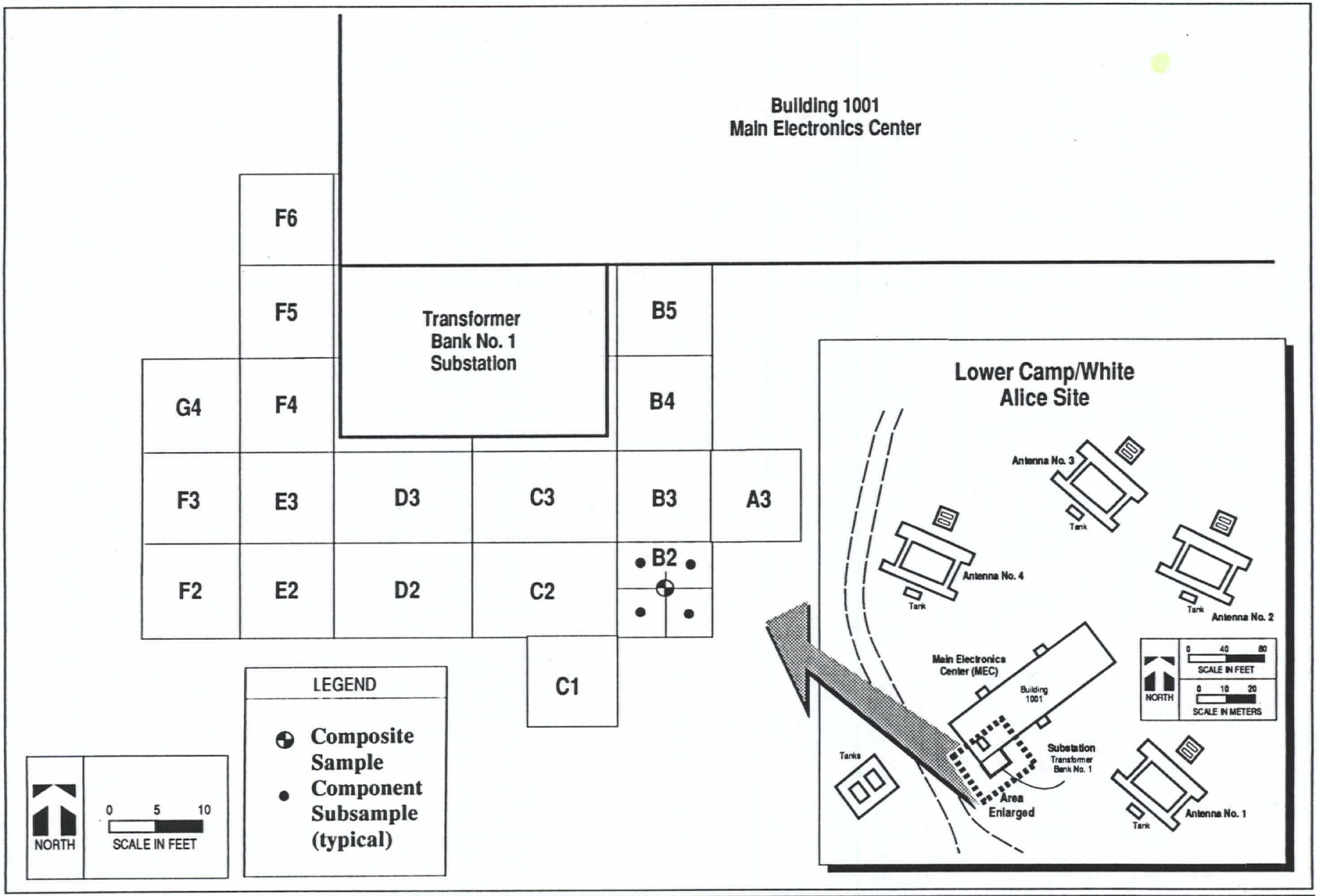
4.1 SOIL AND MATRIX SAMPLING

Sampling grids were developed (Figures 4-1, 4-2, and 4-3) and soil sampling was performed in the three areas adjacent to the substations where PCB-laden fluid was allegedly disposed. Because there were no records of actual disposal location, a grid space of five feet by five feet was selected. This spacing was chosen because it approximates the sampling density to detect a hypothetical PCB spill area. Based upon the grid spacing and assumed diameter of the spill area, a probability factor of greater than 80 percent of detecting any indications of PCB spillage is expected (EPA 1987). Sampling was performed utilizing a four-point system, with one sample from the center of each quadrant of each grid cell. The four samples were composited into one sample and submitted for analysis. Samples from all three sites were analyzed for VOCs, PCBs, and pesticides.

4.1.1 Site 1

Site 1, located at Building 1001, consists of (1) a wood structure on a concrete pad that previously housed transformers, and (2) the soils adjacent to the entrance of Transformer Bank Number 1 (Figure 3-3).

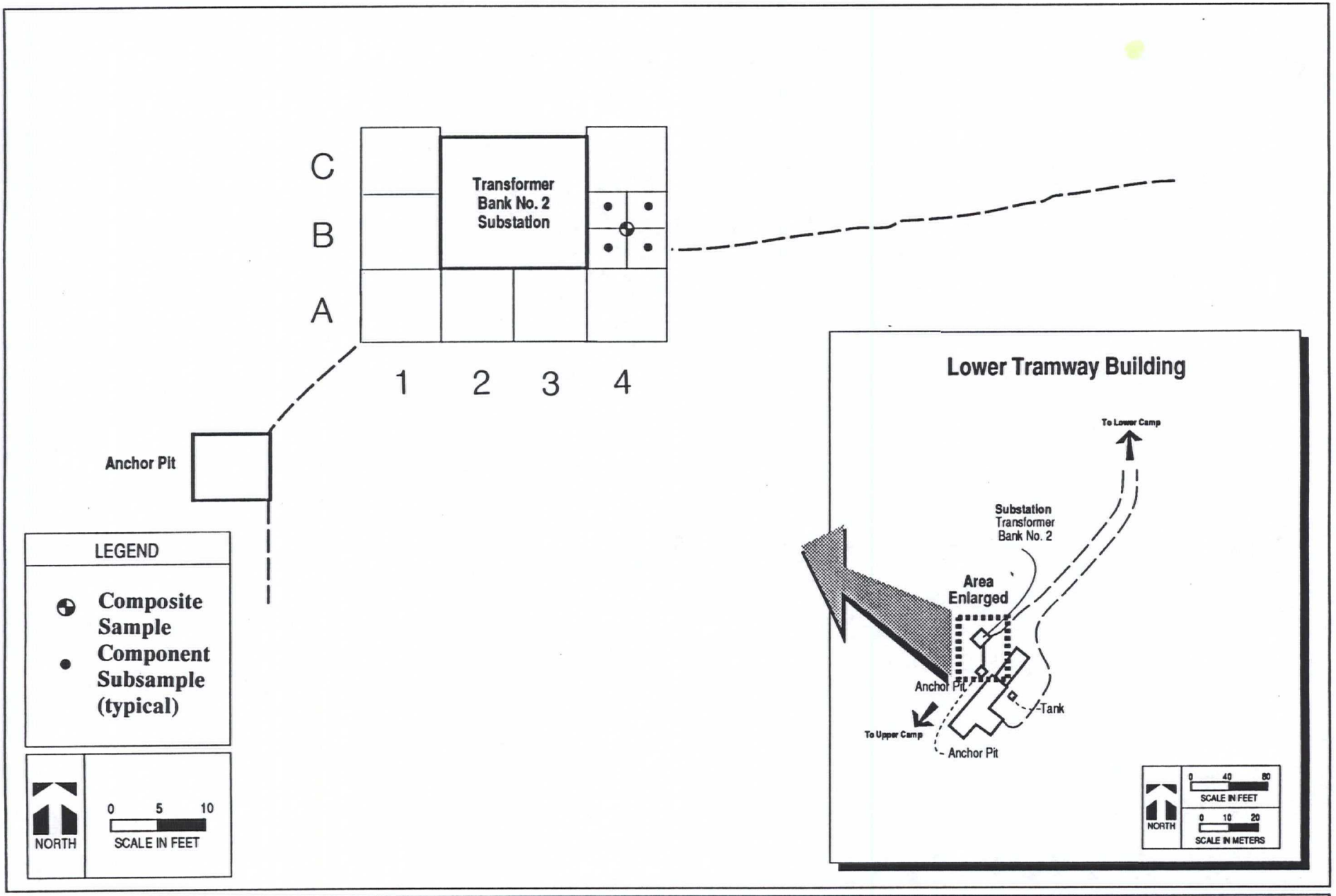
The grid layout for the soil-sampling effort of Site 1 was identical to the grid established during the previous SI Sampling Plan (URS 1990E) with the exception of three additional sample-point locations shown as shaded boxes in Figure 4-1. The sample grid was extended to add one composite sample each to the southwest, southeast, and east sides of the grid where previous sampling efforts had indicated the presence of contamination (URS 1991). This extension was intended to identify whether the contamination limit was immediately adjacent to the prior grid boundary, or if the contamination was more widespread.



URS CONSULTANTS

Figure 4-1
Location and Sampling Grid Layout for Transformer Bank No. 1

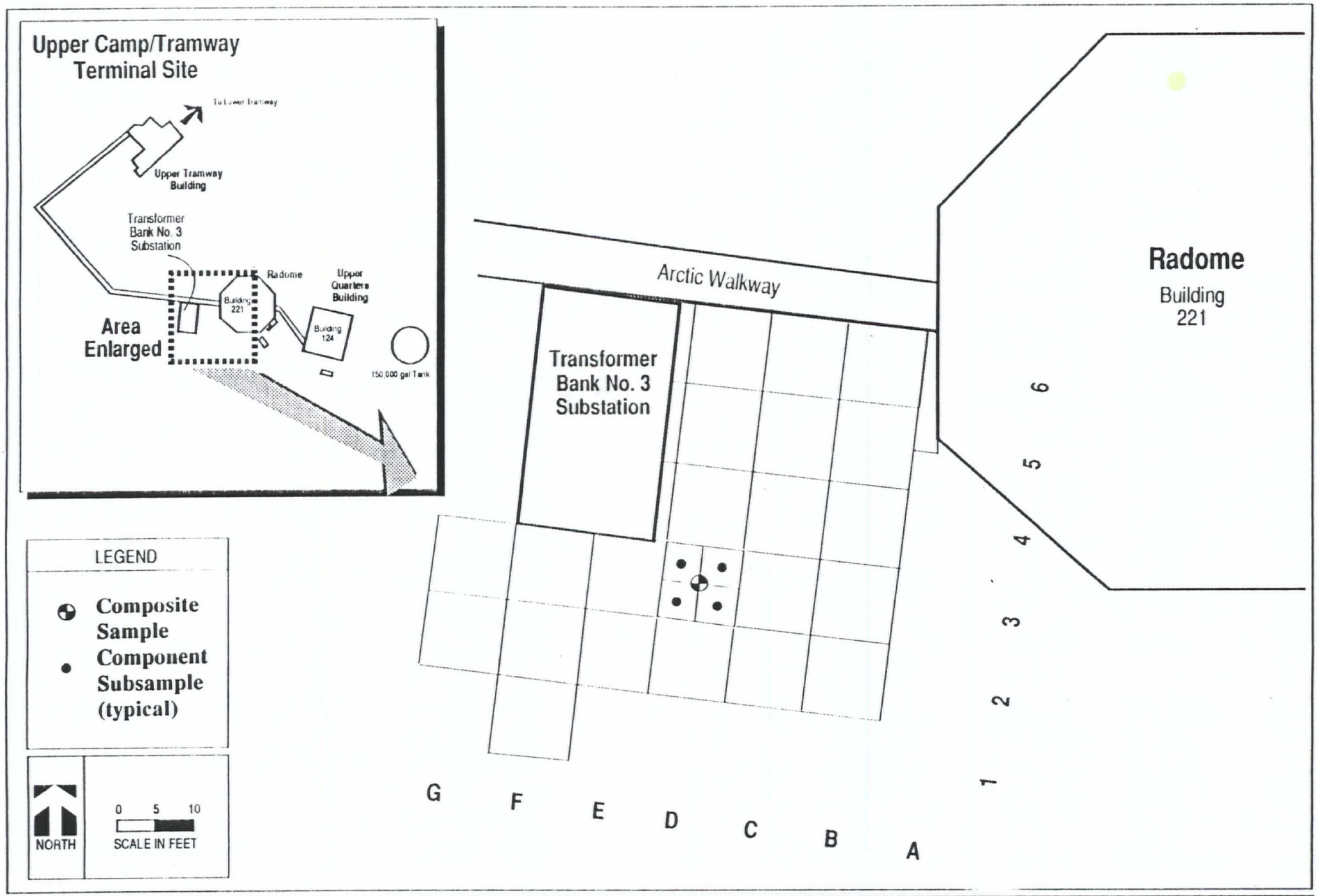
CTO 0051
St. Lawrence Island
Alaska



URS CONSULTANTS

Figure 4-2
Location and Sampling Grid Layout for Transformer Bank No. 2

CTO 0051
St. Lawrence Island
Alaska



URS CONSULTANTS

Figure 4-3
Original Location and Sampling Grid Layout
for Transformer Bank No. 3

CTO 0051
St. Lawrence Island
Alaska

Eighteen soil samples -- one from each grid point -- were submitted for analysis of VOCs and PCB/pesticides.

The electrical substation at Site 1 consists of an 8.8-foot by 13.9-foot building over a concrete pad. Previous wipe and concrete chip samples indicated the presence of PCB, aldrin, and heptachlor. Therefore, four wipe and four concrete chip samples were collected from the concrete pad and analyzed for PCB/pesticides (Figures B-2 and B-3).

4.1.2 Site 2

Site 2 is located at Transformer Bank Number 2, adjacent to the Lower Tram Building (Figure 4-2). Site 2 consists of (1) an 18.6-foot by 19.0-foot concrete pad within a wood structure that previously housed transformers, and (2) the soils adjacent to the entrance of Transformer Bank Number 2. No evidence was obtained from the previous sampling effort that indicated PCB soil contamination in this area. Current sampling indicated low levels of pesticide contamination on the concrete pad, and one wipe sample contained 390,000 ppb of Aroclor 1260 (URS 1991A).

All soil sample grid locations established in the previous SI (CTO #0019) remained the same and were resampled (Figure 4-2). A total of eight composite soil samples were collected from the sample grid area outside of the transformer building (Figure B-4) and submitted for analysis of VOCs and PCB/pesticides. Two wipe (Figure B-5) and four concrete chip samples (Figure B-6) were obtained from the concrete pad within the building and analyzed for PCB/pesticides. Four composite soil samples (Figure B-7) were obtained from soils within the building (an unconcreted floor area) and analyzed for PCB/pesticides.

4.1.3 Site 3

Site 3 is located at the Upper Camp Transformer Bank Number 3 (Figure 4-3). Site 3 consists of (1) a concrete pad within a wood structure that previously housed transformers, and (2) the soils adjacent to the entrance of Transformer Bank Number 3. The previous SI (CTO #0019) sampling effort indicated that Aroclor 1260 was evident in four composite soil samples. Several pesticides were detected, including 4,4-DDE; 4,4-DDT; and 4,4-DDD. The concrete pad contained evidence of Aroclor 1260 in both the wipe and chip samples.

The grid layout for the soil sampling effort of Site 3 was identical to the grid established during the previous SI performed in 1990 under CTO #0019, with the exception of four additional sample point locations (Figure 4-3). The sample grid was extended to add three composite samples to the southwest side of the grid and one composite sample to the northeast side of the grid where previous sampling efforts indicated the possible presence of PCB contamination (URS 1991). This extension was intended to determine if the contamination extended significantly beyond the initial sample grid. A total of 23 composite soil samples from the grid were submitted for analysis of VOCs and PCB/pesticides (Figure B-8).

The electrical substation at Site 3 consists of a 16.2-foot by 29.5-foot concrete pad. Four wipe and six concrete chip samples were collected from the pad and analyzed for PCB/pesticides (Figures B-9 and B-10).

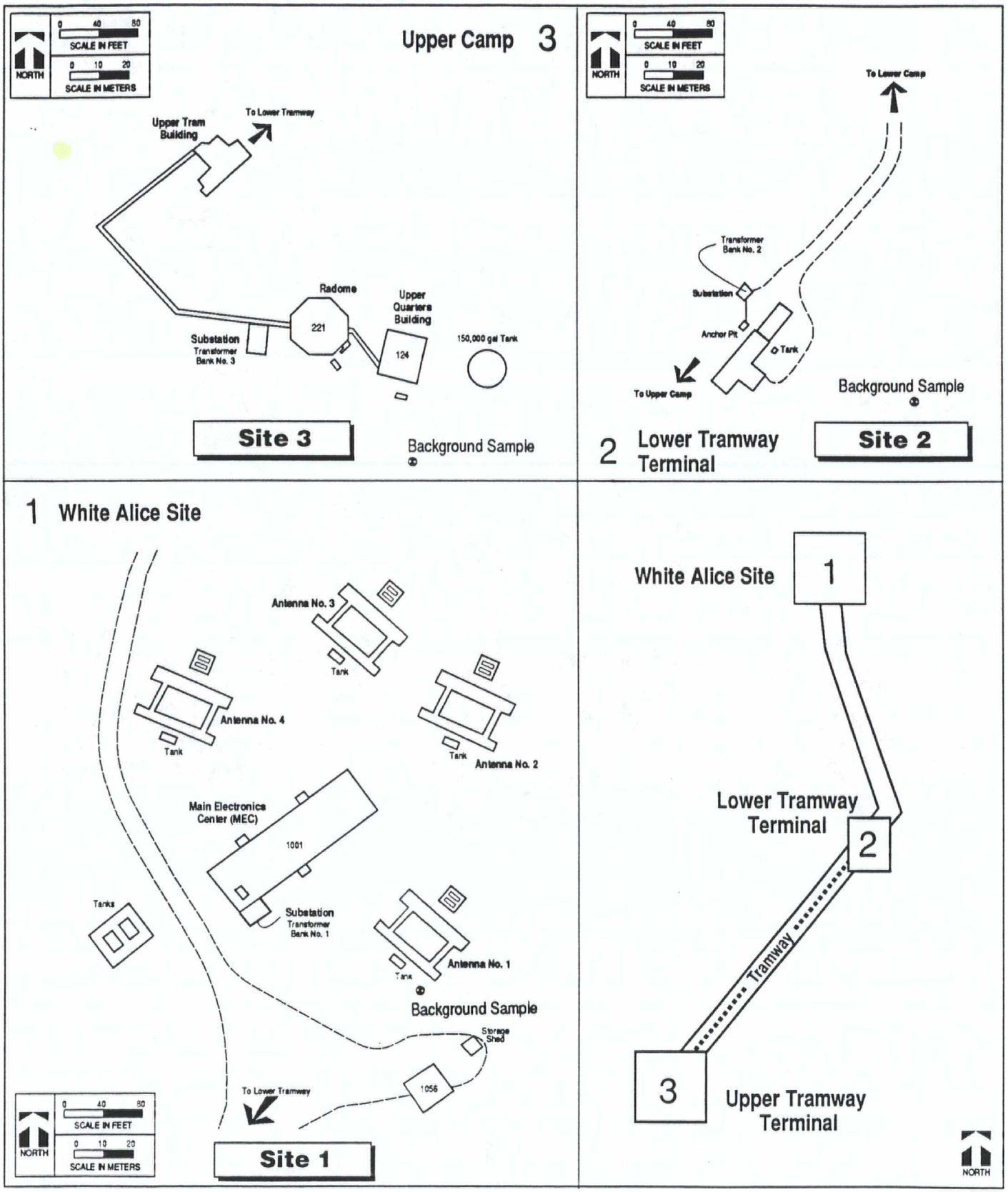
4.1.4 Background Samples

The following samples were collected as a background reference for comparison, and analyzed for VOCs and PCB/pesticides (Locations are indicated in Figure 4-4.):

- Site 1 (Sample #8427) - approximately 100 feet south and slightly upgradient from the site. Background contaminants detected consisted of Aroclor 1260 at 90 ppb and a tentatively identified compound (TIC) at 7 ppb.

- Site 2 (Sample #8447) - approximately 150 feet south and upgradient of the site. No contaminants were detected in Sample 8447.

- Site 3 (Sample #8482) - approximately 75 feet south and across a flat, rocky field. Background contaminants detected consisted of Aroclor 1254 at 140 ppb, concentrations of benzene at 12 ppb, and naphalene at 20 ppb.



URS CONSULTANTS	Figure 4-4 Background Sample Location Map Source: (NEESA, 1990)	CTO 0051 St. Lawrence Island Alaska

5.0 SAMPLING RESULTS

The results of analyses from this site inspection, presented as sample data summaries, are detailed in this section. All sample data used in this report was reviewed according to EPA guidelines and compared with the data quality objectives presented in CTO #0019 Project Plans (EPA 1988A, EPA 1988B, URS 1990B, C, D, E). The CTO #0019 results in the drum fields and streams are not discussed because CTO #0051 did not resample these areas.

5.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Federal and state public health and environmental standards considered to be indicative of potential, albeit generally conservative, comparison or screening-level values for this field investigation are presented with each sample result as appropriate (Table A-1). Definitive site Applicable or Relevant and Appropriate Requirements (ARARs) or cleanup standards have not been developed for WASNC.

5.2 SAMPLE ANALYSIS RESULTS

This field investigation consisted of 83 collected samples, which were comprised of 50 composite soil samples, 10 wipes, 14 concrete chip samples, 3 background soil samples, and 6 QA/QC samples. Each of the collected samples were analyzed by Eureka Laboratory in California for VOCs (Method V-CLP [2/88]) and PCB/pesticides (Method 8080). Sample data results are tabulated in Appendix A and discussed in the following sections. The sample locations are provided in Appendix B. The sample test results are provided in Appendix C. Section 5.3 discusses the data validation processes and the data quality problems encountered. Appendix D presents the data validation reports, which detail the lab procedure and data quality qualifications and limitations.

5.2.1 Volatile Organic Compounds

Only one VOC contaminant -- 1,1,1-trichloroethane (Sample #8433) -- was definitively detected at 1 ppb at Site 2 (Lower Tram) in Cell B-1 (Figure B-4 and Table A-1). The VOC contamination level is well below the ADEC action level of 200 ppb, and could be a trace sampling or lab contaminant rather than an indication of actual contaminant presence. Previous sampling (CTO #0019) had reported methylene chloride, chloroform, TCE, xylene, and styrenes. These were not detected in the current sampling. However, several TICs

were identified, some of which are volatiles (Table A-2). The greatest detected concentration of any TIC was 170 ppb, so no major volatile contamination was detected at the sites sampled.

5.2.2 PCB/Pesticides

On the concrete pad at Site 1, in one concrete chip sample (#8425), Aroclor 1260 was detected at 470,000 ppb and in one wipe sample (#8421) Aroclor 1260 was detected at 3,200 ppb, both at Location C (Figures B-2 and B-3 and Table A-1). However, all 28 samples detected PCB, ranging from 90 ppb (for the background sample) to 470,000 ppb. The Toxic Substances Control Act (TSCA) action levels for PCB in soil are 1,000 ppb, whereas the ADEC states that soils must be cleaned to background levels. The levels for soil and mixed media at all three sites are well above these accepted levels. Therefore, these detected levels would appear to require remedial action. CTO #0019 reported aldrin and heptachlor at Site 1, but these were not reported in the CTO #0051 results.

At Site 2, the following pesticide contaminants were detected in the wipe samples collected from the concrete pad (Figure B-5 and Table A-1).

•	4,4-DDT	(Sample #8437)	2,970 ppb	Location A
•	Methoxychlor	(Sample #8438)	5,170 ppb	Location B
•	Endrin Aldehyde	(Sample #8438)	4,500 ppb	Location B

CTO #0019 had also reported endosulfan I, which was not detected in the current testing.

In addition, at Site 2 (location D), Aroclor 1260 (Sample #8442) was detected in a concrete chip sample at a high level of 390,000 ppb. Other hits included values from 130 to 2,100 ppb. A total of 6 of the 20 site samples at Site 2 detected PCB. All these values are substantially above commonly accepted action levels.

The only contaminant of concern at Site 3 was Aroclor 1260 (Sample #8475) in a concrete pad wipe at Location D (Sample #8475). Aroclor 1260 was detected at a level of 2,200 ppb, which exceeds commonly accepted action levels (Figure B-9 and Table A-1). CTO #0019 had also reported low levels of dioxins, furans, and a range of pesticides.

5.2.3 Semivolatile Organic Compounds

The Statement of Work dated May 7, 1991, did not request semi-volatile organic analysis (SVOA) sampling and analysis. However, 36 TICs (including potential VOCs and semi-VOCs) were identified at the White Alice Site, Site 1 (Table A-2). Some of these values exceeded probable action levels, although overall concentrations were apparently relatively low. The highest concentration detected for a TIC was 170 ppb.

5.2.4 Dioxins/Furans

Dioxin and furan contaminants were identified only at Site 3, as noted in the CTO #0019 SI. The dioxin and furan contaminant levels in the CTO #0019 validated data are considered usable data. The four dioxin samples and the three furan samples in the grid correlate to the PCB "hits" of the revised CTO #0051 SI (Figure B-11). Dioxins and furans generally have non-detectable concentration cleanup standards. Detected levels were very low; less than 10 ppb in all cases.

5.2.5 Asbestos-Containing Materials

The CTO #0019 sampling detected ACMs in the Radome Building (221); Building 124; the Arctic Walkway; the Tram Hallway (all in the Upper Camp); Building 1001; and Antennas #2, #3, and #4 at the Lower Camp. Details of the sampling and results are presented in the CTO #0019 Report (URS 1991A).

5.2.6 Background Samples

Background samples were taken at each of the three (3) sites and included in the analyses of contaminants. Site 2 did not detect contaminants in the background sample, whereas the other two sites have contaminants present, indicating what appears to be a wide spread contamination problem.

Site 1 background (Sample #8427) was taken approximately 100' south and slightly upgradient from the main site. Background contaminants detected consisted of Aroclor 1260 at 90 ppb, and a Tentatively Identified Compound (TIC) at 7 ppb.

Site 2 background (Sample #8447) was taken approximately 150' south and upgradient of the site. No contaminants were detected.

Site 3 background (Sample #8482) was taken approximately 75' south across a flat, rock field. Background contaminants detected consisted of Aroclor 1254 at 140 ppb and concentrations of benzene at 12 ppb and naphthalene at 20 ppb.

5.3 LABORATORY VALIDATION

The sample validation program was performed in accordance with the *Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program*, under the purview of the URS Quality Assurance Coordinator.

The laboratory sample validation reports (excluding data sheets with validation amendments) are included in Appendix D. These sheets explain validation results, detail changes made in data results by the validators, and provide a discussion of unique test validation issues such as dilution samples and results of sample and shipping blank tests. The validation recommended changes have been included on the summary test data sheets in Appendix A, and the data summary in Appendix C.

This SI report has been prepared based on certain assumptions (reflected in CTO #0019) regarding site conditions and contamination presence, as presented in previous site- assessment work. This previous work has been referenced where applicable, and has been relied upon by URS in preparation of its work plan, SI sampling, and report writing.

This report presents the results of SI activities at WASNC, and is intended to provide the Navy with data and preliminary conclusions for use in future studies and potential remediation activities. The conclusions and recommendations are preliminary in nature because of the need for more in-depth and comprehensive discrete sampling and evaluation of the sites, as required by various sections of 40 CFR and the Navy CLEAN program.

The purpose of the validation process is to eliminate unacceptable analytical data, and to designate with data qualifiers any data whose quality is subject to limitation. In some instances, the qualified analytical data may be used only for approximation purposes, while in other cases the data is usable, subject to minor limitations on statistical quantifications. Data-validation summary reports are filed with the data and describe the usability of the data for further technical interpretations. Data-usability review determines the degree to which validated data are suitable for the purposes intended, and whether the data are useful for other purposes. Sample validation analyses for this CTO was performed by C.C. Johnson & Malhotra, P.C., Lakewood, Colorado.

Certain data was flagged in validation with a "J" qualifier. This does not invalidate the use of the data, although strict reliance on reported quantitative data would not be recommended. The majority of the samples were composite samples rather than discrete samples; therefore, strict quantitative reliance is not possible. This does not invalidate or hinder use of this data for SI screening purposes, which was the intent of the project.

Due to lab procedural and calibration difficulties, and due to reported hydrocarbon masking, a large percentage of the lab data was "J" qualified. Therefore, while the data can be used qualitatively, strict adherence to quantitative values is, in many cases, not advised.

The following "hits" were ignored as they were consistently at or near detection limits in multiple samples and were flagged during validation as probable lab or transit contamination of the samples: methylene chloride, 2-butanone, and a TIC with retention time of 22.8. Some samples were flagged "R" as unusable because of problems with overlap contamination or lab procedure. In these cases, it is therefore unknown whether or not these samples were contaminated.

6.0 SITE SAFETY

During the CTO #0051 site-inspection tasks, all health and safety guidelines outlined in the Site Safety and Health Plan were implemented (URS 1990C). A brief summary of safety issues is presented below.

6.1 WORK ZONES

Safe work zones were established around all hazardous-waste areas in accordance with 29 CFR 1910.120. Because of the remote, uninhabited location, no intrusion events or risk of public exposure occurred.

6.2 PERSONAL PROTECTIVE EQUIPMENT USAGE

During all sample activities, disposable personal protective equipment (PPE) was available. The modified Level D PPE consisted of Tyvek suits, silver sheaths over nitro gloves, and boot covers.

6.3 FINAL WASTE DISPOSITION

All modified Level D PPE (Tyveks, gloves, and boot covers) was removed during decontamination and remained in the Exclusion Zone. The sampling equipment and used PPE were stored within one of the contaminated buildings and became part of the existing "debris pile" waste unit. It will be disposed during future remediation activities.

7.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents a summary discussion of CTO #0051 site inspection, assessing the extent of soil contamination in accordance with EPA and State of Alaska potential ARARs.

The revised SI verified that the previously suspected PCB/pesticide contaminants are present in the soil immediately surrounding each transformer bank, as well as existing in very high concentrations in the concrete transformer bank pads and their corresponding surfaces. In addition, outer-boundary grid contamination is evident from this sampling effort as well as the previous SI (CTO #0019). Therefore, it is likely that the sampling did not delineate the full extent of contaminated soils. Since the site was abandoned in 1975, the majority of VOCs have probably volatilized, but this conclusion cannot be verified due to a lack of subsurface soil analysis. In the Site 2 grid (Lower Tram), one VOC was detected at a very low concentration. Multiple TICs were detected in the soil grid at Site 1, adjacent to the White Alice electronics building. Of the three background samples, only the one for Site 2 did not demonstrate a contaminant in the revised sampling effort, indicating that contamination may be widespread. Dioxin and furan contaminants, collected in the original SI, were in evidence in the Site 3 grid surrounding the transformer building. These specific contaminants were also evident in grid cells that contain PCB contaminants, as would be expected if they were the result of disposal of burned PCB-treated dielectric fluids.

Utilizing the information contained in the revised SI and the usable data from the original SI, it is recommended that further remedial actions be considered for the future. The remoteness of the site and the presence of a large formerly used defense site (the former Air Force Housing and Operations Area) adjacent to the site which has not yet been investigated, indicate that it would be in the Federal Government's interest to coordinate remedial activities on the Navy and formerly used defense sites to achieve economies of scale on mobilization, transportation, and disposal costs.

If a CERCLA RI/FS is conducted to delineate the contaminant levels and the contaminant boundaries and evaluate appropriate cleanup levels, it should determine the lateral and vertical extent of existing PCB-contaminated areas and additional source areas which may have contributed to BNA TIC hits, as well as the extent of contamination inside the buildings and in the drum fields. Therefore, PCB, dioxin/furan, and semi-volatiles tests should be conducted, along with TPX/TPH tests to ascertain the need for hydrocarbon remedial actions.

An interim cleanup action on a limited area at the transformer pads may also be considered. This cleanup, by cleaning concrete (or removing it) and removing adjacent contaminated soils, could result in removal of the high-level PCB contamination that was detected. Such an action would remove the highest detected levels of contaminants onsite, which comprise, based on current information, the majority of the site contamination risk. It is also possible that removing PCBs, as a selected analyte of concern, would also incorporate simultaneous removal of other associated contamination.

8.0 REFERENCES

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APPENDIX A

CTO #0051 Laboratory Data Summary

Appendix A
CTO #0051 SI Data Summary

The tables in Appendix A present the maximum detected contaminant levels (MCL) for each site for use in preliminary site-contamination evaluation. These values are not representative or average values, nor are they necessarily the highest level present on each site.

The determination of "threshold limit" or acceptable MCL "no-action" values of various hazardous materials and substances is highly dependent on the exposure factors at the site; whether the public or workers are regularly exposed to the potential hazards; continually changing regulatory thresholds; and various site-exposure, risk-severity, and related factors. Therefore, the weighted averages or MCLs at which an action to remediate to an ARAR is required demands information that is not available until at least an HRS (II) ranking is performed, and possibly until an RI/FS is performed at the site.

The "comparison value" in Appendix A represents a tentative threshold value for use in evaluating relative significance of the compounds detected at the various sites. In general, the comparison values generally represent EPA or National Institute of Occupational Safety and Health (NIOSH) action levels or regulatory levels from Toxicity Characteristic tables. (Reference from which comparison level was extracted is noted in parentheses.) Where such values are not available, State of Alaska or Occupational Safety and Health Administration (OSHA) time-weighted-average (TWA) values have been used for comparative purposes. In some cases, levels for closely related derivatives have been listed in lieu of specific isomer guidelines, where isomer-specific data is not available.

The values presented as comparison values should not be considered equivalent to remedial action or emergency action threshold limits, nor to "safe" or "permissible" levels. Such determination requires a deliberate site ranking, establishment and agency concurrence with site ARAR, and accomplishing screening-quality sampling and testing, which is not fully satisfied by the samples represented in the data in these tables.

SYMBOL DESIGNATION

(1) 40 CFR 257.4. Appendix I, eff 10/15/79, 7/1/89 edition (levels for wastes) and 40 CFR 264.94 Table 1.

(2) 40 CFR 261.24. Table 1 - Maximum Concentration of Contaminants for Characteristics of EP Toxicity (EP Toxicity Extraction Levels). 7/1/89 edition.

(3) 40 CFR 260.41. Table CCWE - Constituent Concentrations in Waste Extract.

(4) Summary of General PCB Regulations. EPA Region 10. February 1990.

(5) EPA Region 10. Supplemental Risk Assessment Guidance. August 1991. (Regulated MCL, Risk = 10^{-6} concentration if no regulated MCL).

(6) EPA Region 10. Supplemental Risk Assessment Guidance, August 1991. Table II-2, Soil Cheat Sheet: Risk-based Concentrations.

(7) Toxicity Characteristic Based on TCLP (Sept. 90 tentative list) - regulated levels.

(8) Internal URS Anchorage composite summary notebook of Federal/ACGIH TLV standards.

(9) NIOSH Pocket Guide to Chemical Hazards. U.S. Public Health Service, CDC. June 1990. (value listed is Exposure Limit, usually TWA, for occupational exposure).

(10) CERCLA Compliance with Other Laws Manual, Interim Final. EPA, EPA/540/G-89-006, August 1988.

(11) Interim Guidance for Non-UST Contaminated Soil Cleanup Levels, Appendix I: Final and Proposed Maximum Contaminant Levels (MCL) for Selected Organic and Inorganic Contaminants, Alaska Department of Environmental Conservation.

Table A-1 (page 1 of 7)
White Alice Site, Northeast Cape
Sites 1, 2, 3
Maximum Detected Contaminant Concentrations

TEST METHOD: 8080 (pesticides)

CTO: 0051
LOCATION: ST. LAWRENCE ISLAND, ALASKA

SITE Compound:	CAS #	Comparison Value ug/l (ppb)	White Alice	Lower Tram	Top Camp
alpha-BHC	319-84-6	.0092 (10)	nd	nd	nd
beta-BHC	319-85-7	.00012 (10)	nd	nd	nd
delta-BHC	319-86-8	.00012 (10)	nd	nd	nd
gamma-BHC (Lindane)	58-89-9	0.2 (1)	nd	nd	nd
Heptachlor	76-44-8	.00028 (10)	nd	nd	nd
Aldrin	309-00-2	.000074 (10)	nd	nd	nd
Heptachlor epoxide	1024-57-3	.00028 (10)	nd	nd	nd
Endosulfan I	959-98-8	<10 (6)	nd	nd	nd
Dieldrin	60-57-1	40 (6)	nd	nd	nd

nd = non detected
N/A = not available as published standard, or exposure/contamination standards not yet established.
X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)
DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.
(s) = soil matrix, (w) = water matrix
R = sample data rejected in qualification procedure, value suspect.

Designation codes:
e.g., 130 (s) J /75 (w) J = 130 J soil; 75 J water sample

Table A-1 (page 2 of 7)
White Alice Site, Northeast Cape
Sites 1, 2, 3
Maximum Detected Contaminant Concentrations

TEST METHOD: 8080 (pesticide)		CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA			
SITE Compound:	CAS #	Comparison Value ug/l (ppb)	White Alice	Lower Tram	Top Camp
4,4'-DDE	72-55-9	2,000 (6)	nd	nd	nd
Endrin	72-20-8	0.18 (10)	nd	nd	nd
Endosulfan II	33213-65-9	10 (10)	nd	nd	nd
4,4'-DDD	72-54-8	2,000 (6)	nd	nd	nd
Endosulfan sulfate	1031-07-8	N/A (6)	nd	nd	nd
4,4'-DDT	50-29-3	.000024 (10)	nd	2,970 (wipe)	nd
Methoxychlor	72-43-5	.03 (10)	nd	5,170 (wipe)	nd
Endrin aldehyde	53494-70-5	N/A (6)	nd	4,500 (wipe)	nd
alpha-Chlordane	5103-71-9	.0046 (10)	nd	nd	nd

nd = non detected
N/A = not available as published standard, or exposure/contamination standards not yet established.
X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)
DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.
(s) = soil matrix, (w) = water matrix
R = sample data rejected in qualification procedure, value suspect.

Designation codes:
e.g., 130 (s) J /75 (w) J = 130 J soil; 75 J water sample

Table A-1 (page 3 of 7)
White Alice Site, Northeast Cape
Sites 1, 2, 3
Maximum Detected Contaminant Concentrations

TEST METHOD: 8080 (pesticides)		CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA			
SITE Compound:	CAS #	Comparison Value ug/l (ppb)	White Alice	Lower Tram	Top Camp
gamma-Chlordane	5103-74-2	0.0046 (10)	nd	nd	nd
Toxaphene	8001-35-2	.00071 (10)	nd	nd	nd
Aroclor-1016	12674-11-2	0.5 (11)	nd	nd	nd
Aroclor-1221	11104-28-2	0.5 (11)	nd	nd	nd
Aroclor-1232	11141-16-5	0.5 (11)	nd	nd	nd
Aroclor-1242	53469-21-9	0.5 (11)	nd	nd	nd
Aroclor-1248	12672-29-6	0.5 (11)	nd	nd	nd
Aroclor-1254	11097-69-1	0.5 (11)	nd	180 (s) J	1,400 (s)
Aroclor-1260	11096-82-5	0.5 (11)	470,000 (c) J 3,200 (s) J	390,000 (chip)	2,200 (wipe)

nd = non detected
N/A = not available as published standard, or exposure/contamination standards not yet established.
X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)
DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.
(s) = soil matrix, (w) = water matrix
R = sample data rejected in qualification procedure, value suspect.

Designation codes:
e.g., 130 (s) J /75 (w) J = 130 J soil; 75 J water sample

Table A-1 (page 4 of 7)
White Alice Site, Northeast Cape
Sites 1, 2, 3
Maximum Detected Contaminant Concentrations

TEST METHOD: V-CLP		CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA			
SITE Compound:	CAS #	Comparison Value ug/l (ppb)	White Alice	Lower Tram	Top Camp
Chloromethane	74-87-3	50,000 (6)	nd	nd	nd
Bromomethane	74-83-9	5,000 (8)	nd	nd	nd
Vinyl Chloride	75-01-4	2 (10)	nd	nd	nd
Chloroethane	75-00-3	N/A (6)	nd	nd	nd
Methylene Chloride	75-09-2	20 (3)	nd	nd	nd
Acetone	67-64-1	50 (3)	nd	nd	nd
Carbon Disulfide	75-15-0	1,000 (8)	nd	nd	nd
1,1-Dichloroethene	75-34-4	1,000 (6)	nd	nd	nd
1,1-Dichloroethane	75-34-3	100,000 (8)	nd	nd	nd

nd = non detected
N/A = not available as published standard, or exposure/contamination standards not yet established.
X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)
DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.
(s) = soil matrix, (w) = water matrix
R = sample data rejected in qualification procedure, value suspect.

Designation codes:
e.g., 130 (s) J /75 (w) J = 130 J soil; 75 J water sample

Table A-1 (page 5 of 7)
White Alice Site, Northeast Cape
Sites 1, 2, 3
Maximum Detected Contaminant Concentrations

TEST METHOD: V-CLP		CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA			
SITE Compound:	CAS #	Comparison Value ug/l (ppb)	White Alice	Lower Tram	Top Camp
trans-1,2-Dichloroethene	156-60-5	5,000 (8)	nd	nd	nd
cis-1,2-Dichloroethene	156-59-2	N/A (6)	nd	nd	nd
Chloroform	67-66-3	0.19 (10)	nd	nd	nd
1,2-Dichloroethane	107-06-2	0.94 (10)	nd	nd	nd
2-Butanone	78-93-3	200,000 (8)	nd	nd	nd
1,1,1-Trichloroethane	71-55-6	200 (11)	nd	1 (s) J	nd
Carbon Tetrachloride	56-23-5	0.4 (10)	nd	nd	nd
Vinyl Acetate	108-05-4	10,000 (8)	nd	nd	nd
Bromodichloromethane	75-27-4	5,000 (6)	nd	nd	nd

nd = non detected
N/A = not available as published standard, or exposure/contamination standards not yet established.
X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)
DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.
(s) = soil matrix, (w) = water matrix
R = sample data rejected in qualification procedure, value suspect.

Designation codes:
e.g., 130 (s) J /75 (w) J = 130 J soil; 75 J water sample

Table A-1 (page 6 of 7)
White Alice Site, Northeast Cape
Sites 1, 2, 3
Maximum Detected Contaminant Concentrations

TEST METHOD: V-CLP		CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA			
SITE Compound:	CAS #	Comparison Value ug/l (ppb)	White Alice	Lower Tram	Top Camp
1,2-Dichloropropane	78-87-5	5 (11)	nd	nd	nd
cis-1,3-Dichloropropene	10061-01-5	87 (10)	nd	nd	nd
Trichloroethene	79-01-6	62 (3)	nd	nd	nd
Dibromochloromethane	124-48-1	8,000 (6)	nd	nd	nd
1,1,2-Trichloroethane	79-00-5	0.6 (10)	nd	nd	nd
Benzene	71-43-2	0.66 (10)	nd	nd	nd
trans-1,3-Dichloropropene	10061-02-6	1,000 (8)	nd	nd	nd
Bromoform	75-25-2	500 (8)	nd	nd	nd
4-Methyl-2-Pentanone	108-10-1	50,000 (8)	nd	nd	nd

nd = non detected
N/A = not available as published standard, or exposure/contamination standards not yet established.
X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)
DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.
(s) = soil matrix, (w) = water matrix
R = sample data rejected in qualification procedure, value suspect.

Designation codes:
e.g., 130 (s) J /75 (w) J = 130 J soil; 75 J water sample

Table A-1 (page 7 of 7)
White Alice Site, Northeast Cape
Sites 1, 2, 3
Maximum Detected Contaminant Concentrations

TEST METHOD: V-CLP		CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA			
SITE Compound:	CAS #	Comparison Value ug/l (ppb)	White Alice	Lower Tram	Top Camp
2-Hexanone	591-78-6	N/A (6)	nd	nd	nd
Tetrachloroethane	127-18-4	.79 (3)	nd	nd	nd
1,1,2,-Tetrachloroethane	79-31-5	170 (10)	nd	nd	nd
Toluene	108-88-3	1,120 (6)	nd	nd	nd
Chlorobenzene	108-90-7	100 (11)	nd	nd	nd
Ethylbenzene	100-41-4	50 (3)	nd	nd	nd
Styrene	100-42-5	20,000 (6)	nd	nd	nd
Xylene (total)	1330-20-7	50 (3)	nd	nd	nd

nd = non detected
N/A = not available as published standard, or exposure/contamination standards not yet established.
X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)
DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.
(s) = soil matrix, (w) = water matrix
R = sample data rejected in qualification procedure, value suspect.

Designation codes:
e.g., 130 (s) J /75 (w) J = 130 J soil; 75 J water sample

Table A-2 (page 1 of 3)
White Alice Site, Site 1
Tentatively Identified Compounds

SEMI VOA TICs (Isomers; base compound listed)		CTO: 0051 LOCATION:	ST. LAWRENCE ISLAND, ALASKA
PRODUCT	**CAS #**	**Comparison Value ug/l (ppb)**	**QUANTITY**
Cyclohexane	7058-05-1	.012 (10)	36 J
Cyclohexene	1003-64-1	9,200 (10)	44 J
Naphthalene	493-02-7	10,000 (8)	170 J
Cyclohexane	61141-80-8	0.12 (10)	37 J
Naphthalene	2958-76-1	10,000 (5)	150 J
Cyclopropane	61142-25-4	N/A	14 J
Naphthalene	1750-51-2	10,000 (8)	79 J
Benzene	17851-27-3	.1 (10)	48 J
Naphthalene	91-17-8	10,000 (8)	8 J
Naphathalene	2958-76-1	10,000 (8)	13 J
Benzene	2050-24-0	1,400 (10)	18 J
Benzene	4132-72-3	1,400 (10)	12 J
Naphthalene	25419-33-4	10,000 (8)	7 J

TIC = tentatively identified compound

Table A-2 (page 2 of 3)
White Alice Site, Site 1
Tentatively Identified Compounds

SEMI VOA TICs (Isomers; base compound listed)		CTO: 0051 LOCATION:	ST. LAWRENCE ISLAND, ALASKA
PRODUCT	**CAS #**	**Comparison Value ug/l (ppb)**	**QUANTITY**
Naphthalene		10,000 (8)	42 JN
Cyclohexane		.012 (10)	10 JN
Naphthalene		10,000 (10)	43 JN
2-Cyclohexane		0.012 (10)	46 JN
Naphthalene		10,000 (8)	14 JN
Camphor		2,000 (9)	27 JN
4,5-Nonadiene		N/A	92 JN
Naphthalene		10,000 (10)	35 JN
Naphthalene		10,000 (10)	20 JN
Undecane		N/A	26 JN
2,5-Octadiyne		N/A	19 JN
Nonane,1-chloro	2473-01-0	N/A	7 J
Pentane, 3-methylene	760-21-4	10,000 (8)	8 J

TIC = tentatively identified compound

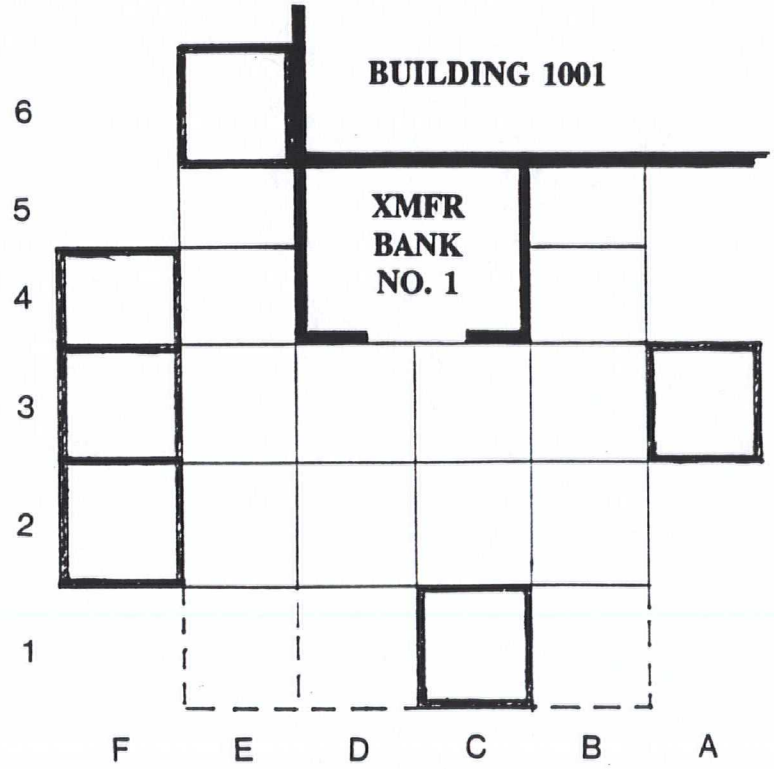
Table A-2 (page 3 of 3)
White Alice Site, Site 1
Tentatively Identified Compounds

SEMI VOA TICs (Isomers; base compound listed)		CTO: 0051 LOCATION:	ST. LAWRENCE ISLAND, ALASKA
PRODUCT	**CAS #**	**Comparison Value ug/l (ppb)**	**QUANTITY**
Cyclohexane, 1,4-dimethyl	624-29-3	.012 (10)	8 J
Cyclohexane, 1-ethyl-2, 3-dim	7058-05-1	9,200 (10)	24 J
Cyclopentene, 1-isopropyl-2	7112-73-4	N/A	20 J
4-Decane, 9-methyl-(E)-9	62338-49-2	N/A	33 J
Naphthalene, decahydro (8CI)	493-07-2	10,000 (8)	100 J
Cyclohexane (1,1-dimethylpr)	31797-64-5	.012 (10)	25 J
Naphthalene, decahydro-2-me	2958-76-1	10,000 (8)	51 J
Spiro(3,5)nonan-1-one,5-me	65147-56-0	N/A	6 J
Naphthalene, decahydro-2,6-d	1618-22-0	10,000 (8)	46 J
Naphthalene, decahydro-1,6-d	1750-51-2	10,000 (8)	88 J

TIC = tentatively identified compound

APPENDIX B

CTO #0051 Site Grids and Associated Sample Numbers



BACKGROUND SAMPLE APPROXIMATELY 100'

Grid Number (sample location)	Sample Number
A-3	8401
B-2	8402
B-3	8403
B-4	8404
B-5	8405
C-1	8406
C-2	8407
C-3	8408
D-2	8409
D-3	8410

Grid Number (sample location)	Sample Number
E-2	8411
E-3	8412
F-2	8413
F-3	8414
F-4	8415
F-5	8416
F-6	8417
G-4	8418
background	8427
duplicate	8428

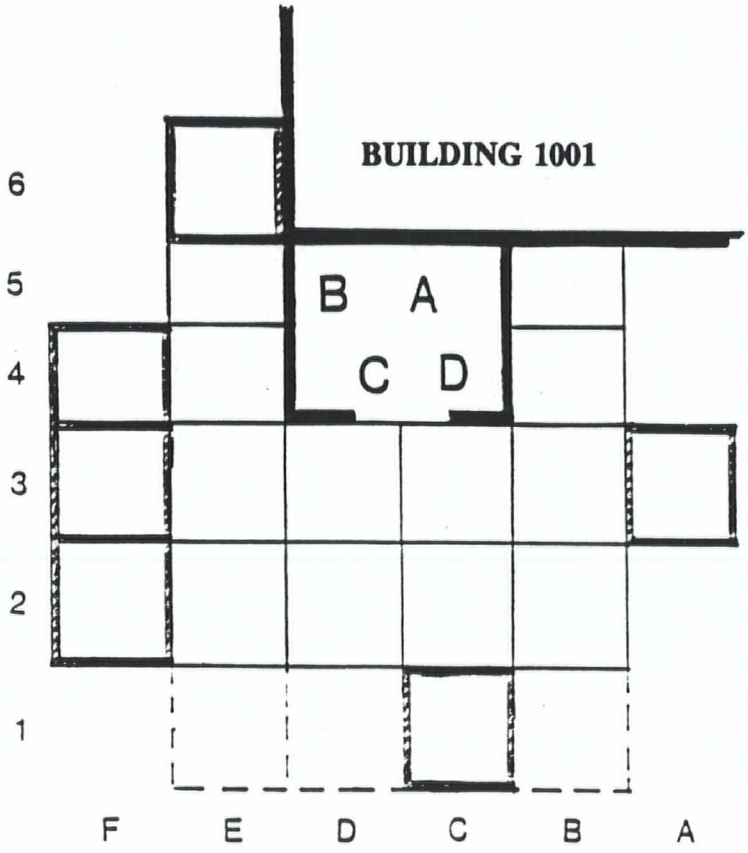
GRID SIZE 5' X 5'

Location on Figure 4-1

URS CONSULTANTS

FIGURE B-1
SITE 1 - LOWER CAMP
Soil Sample Locations

CTO 0051
St. Lawrence Island
Alaska

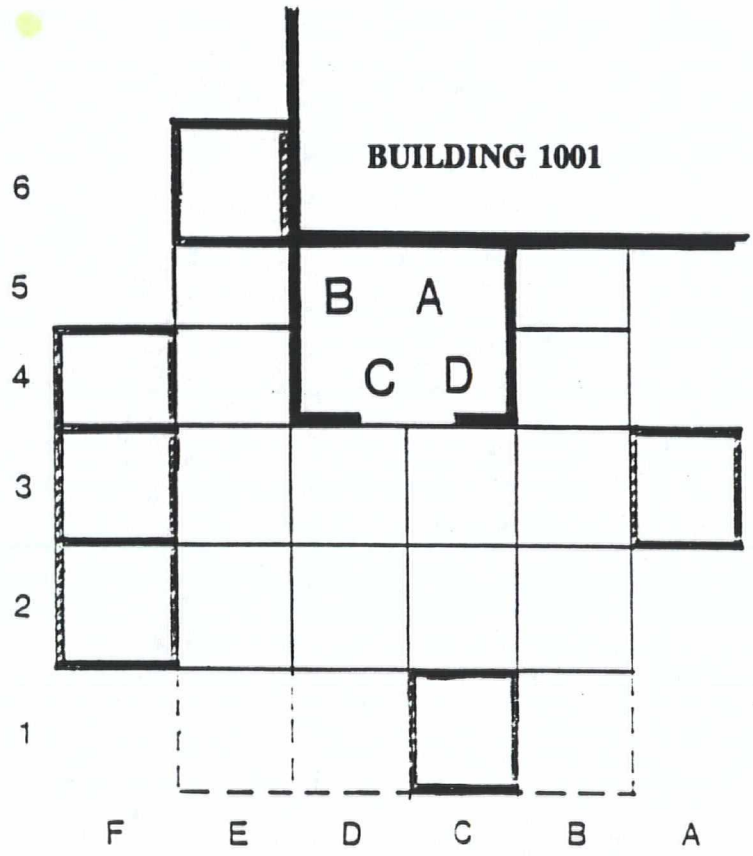


Grid Number (sample location)	Sample Number
A	8419
B	8420
C	8421
D	8422

GRID SIZE 5' X 5'

Location on Figure 4-1

URS CONSULTANTS	**FIGURE B-2** **SITE 1 - LOWER CAMP** **Wipe Sample Locations**	CTO 0051 St. Lawrence Island Alaska



Grid Number (sample location)	Sample Number
A	8423
B	8424
C	8425
D	8426

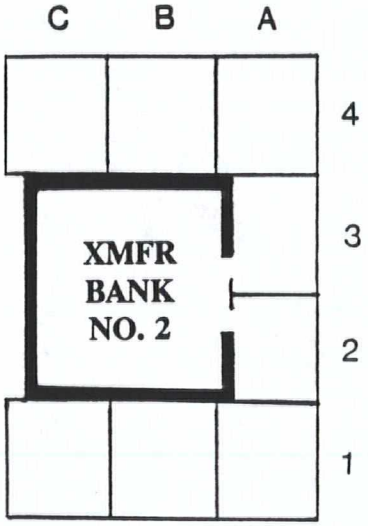
GRID SIZE 5' X 5'

Location on Figure 4-1

URS CONSULTANTS

FIGURE B-3
SITE 1 - LOWER CAMP
Concrete Chip Sample Locations

CTO 0051
St. Lawrence Island
Alaska



BACKGROUND SAMPLE APPROXIMATELY 150'

Grid Number (sample location)	Sample Number
A-1	8429
A-2	8430
A-3	8431
A-4	8432
B-1	8433
B-4	8434
C-1	8435
C-4	8436
background	8447

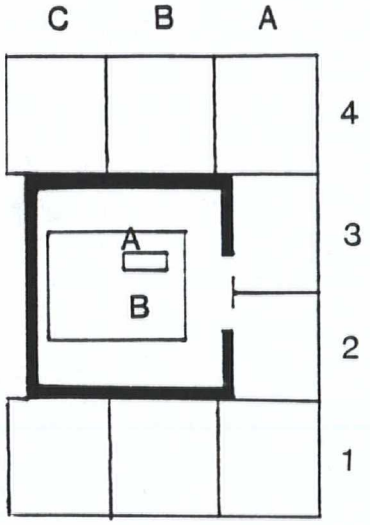
GRID SIZE 5' X 5'

Location on Figure 4-2

URS CONSULTANTS

FIGURE B-4
SITE 2 - LOWER TRAMWAY TERMINAL
Soil Sample Locations

CTO 0051
St. Lawrence Island
Alaska



Grid Number (sample location)	Sample Number
A	8437
B	8438

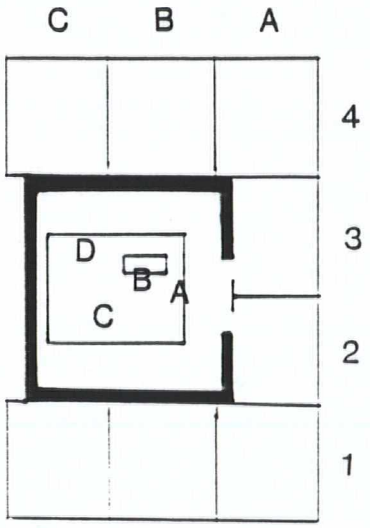
GRID SIZE 5' X 5'

Location on Figure 4-2

URS CONSULTANTS

FIGURE B-5
SITE 2 - LOWER TRAMWAY TERMINAL
Wipe Sample Locations

CTO 0051
St. Lawrence Island
Alaska



Grid Number (sample location)	Sample Number
A	8439
B	8440
C	8441
D	8442

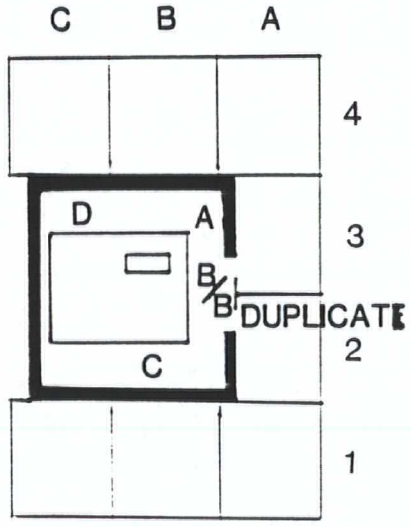
GRID SIZE 5' X 5'

Location on Figure 4-2

URS CONSULTANTS

FIGURE B-6
SITE 2 - LOWER TRAMWAY TERMINAL
Concrete Chip Sample Locations

CTO 0051
St. Lawrence Island
Alaska

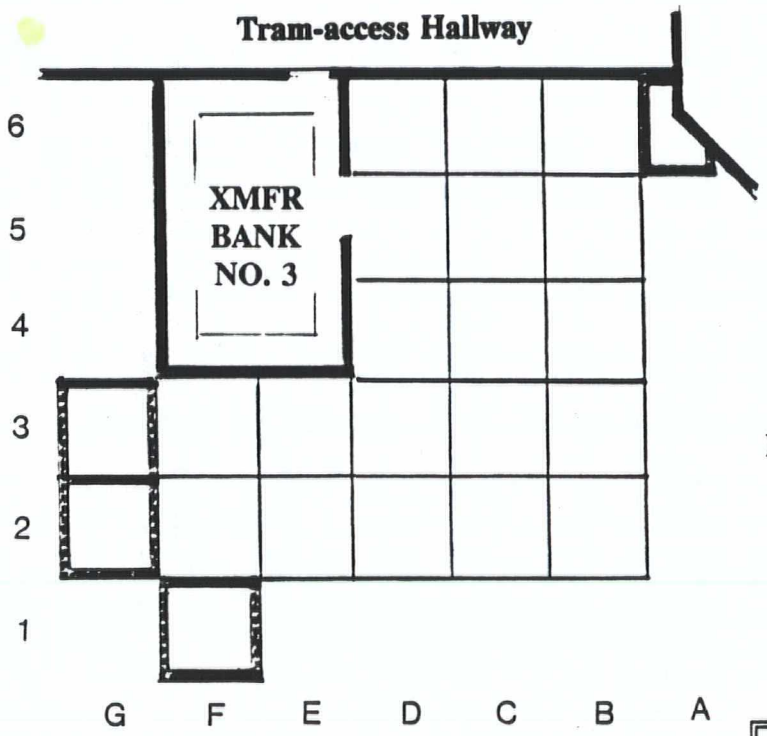


Grid Number (sample location)	Sample Number
A	8443
B	8444
C	8445
D	8446
B/B	8448

GRID SIZE 5' X 5'

Location on Figure 4-2

URS CONSULTANTS	**FIGURE B-7** **SITE 2 - LOWER TRAMWAY TERMINAL** **Interior Soil Sample Locations**	CTO 0051 St. Lawrence Island Alaska



BACKGROUND SAMPLE APPROXIMATELY 75'

Grid Number (sample location)	Sample Number
A-6	8449
B-2	8450
B-3	8451
B-4	8452
B-5	8453
B-6	8454
C-2	8455
C-3	8456
C-4	8457
C-5	8458
C-6	8459
D-2	8460
D-3	8461

Grid Number (sample location)	Sample Number
D-4	8462
D-5	8463
D-6	8464
E-2	8465
E-3	8466
F-1	8467
F-2	8468
F-3	8469
G-2	8470
G-3	8471
background	8482
duplicate	8483

NORTH

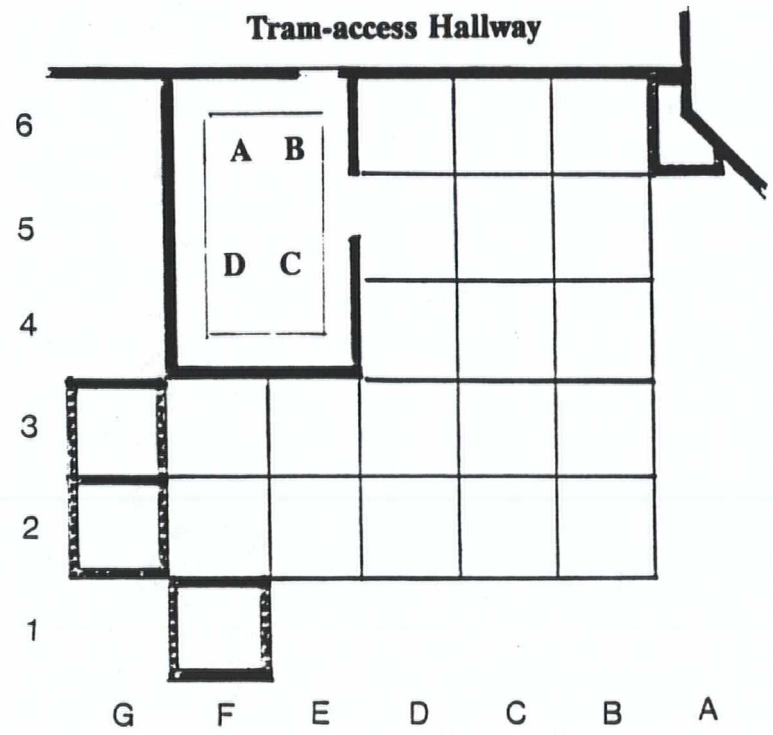
GRID SIZE 5' X 5'

Location on Figure 4-3

URS CONSULTANTS

FIGURE B-8
SITE 3 - UPPER CAMP
Soil Sample Locations

CTO 0051
St. Lawrence Island
Alaska



Grid Number (sample location)	Sample Number
A	8472
B	8473
C	8474
D	8475

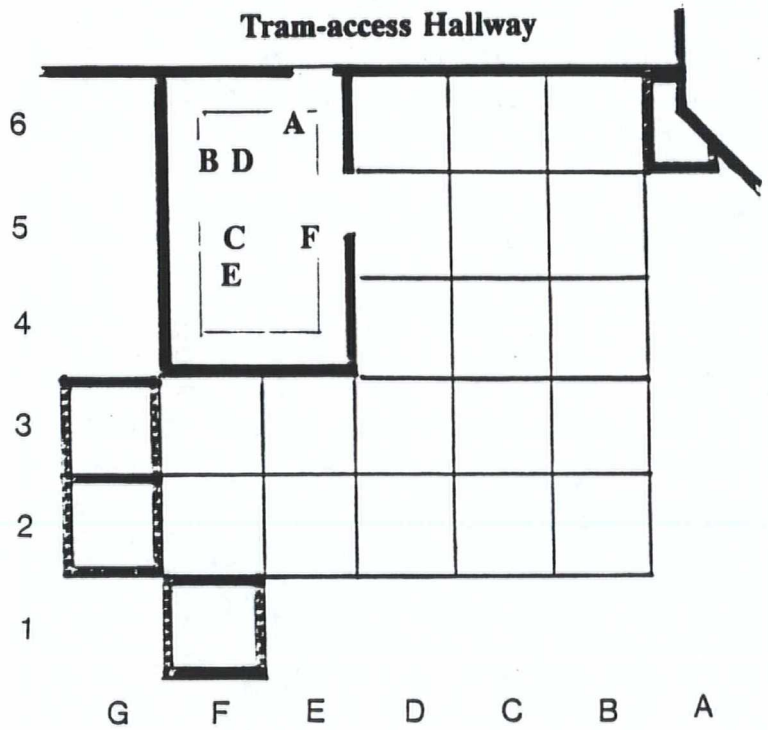
GRID SIZE 5' X 5'

Location on Figure 4-3

URS CONSULTANTS

FIGURE B-9
SITE 3 - UPPER CAMP
Wipe Sample Locations

CTO 0051
St. Lawrence Island
Alaska



Grid Number (sample location)	Sample Number
A	8476
B	8477
C	8478
D	8479
E	8480
F	8481

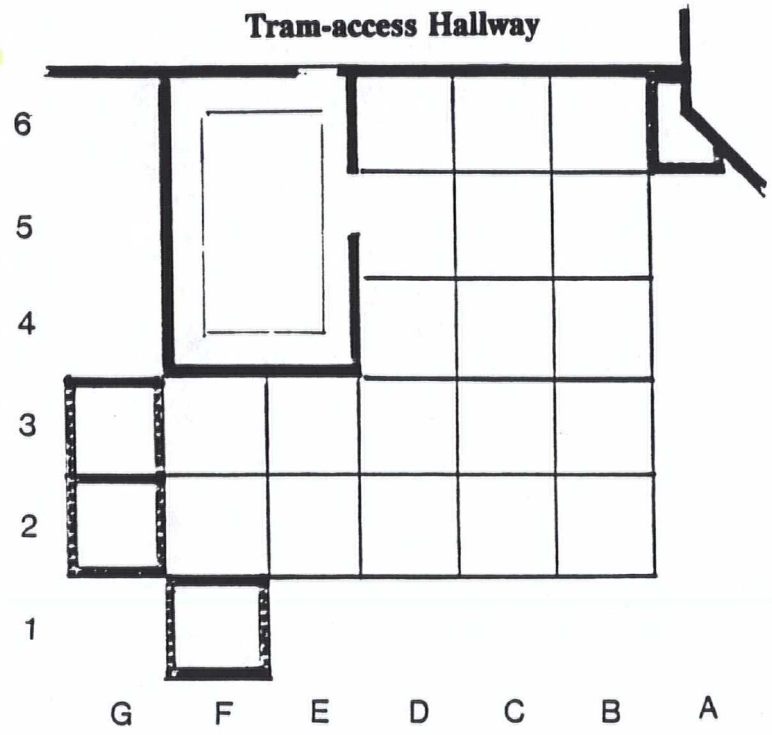
GRID SIZE 5' X 5'

Location on Figure 4-3

URS CONSULTANTS

FIGURE B-10
SITE 3 - UPPER CAMP
Concrete Chip Sample Locations

CTO 0051
St. Lawrence Island
Alaska



Grid Number (sample location)	Sample Number (0019)	Sample Number (0051)	Dioxins	Furans	PCB 1260
			(ppb)		
A-6		8449			1400 J
B-2	2121	8450	0.46		190 J
D-2	2131		1.5	0.89	85 J
D-3					
D-6	2135	8464	7.8	4.3	
F-1		8467			74 J
F-2		8468			180 J
F-3	2139		1.5	1.1	

GRID SIZE 5' X 5'

Location on Figure 4-3

URS CONSULTANTS

FIGURE B-11
SITE 3 - UPPER CAMP
Dioxin, Furan and PCB Comparison

CTO 0051
St. Lawrence Island
Alaska

APPENDIX C

CTO #0051 Contaminant Distribution by Sample Number

Table C-1 (page 1 of 3)
White Alice Site (Lower Camp), Northeast Cape
Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	**ANALYTE**	**DETECTED QUANTITY**	**MATRIX**
8401	Aroclor 1260	660 J	s
8402	Aroclor 1260	1,100 J	s
8403	Aroclor 1260	1,700 J	s
8404	Aroclor 1260	490 J	s
	TIC	14 J	s
8405	Aroclor 1260	480 J	s
	TIC	7 J	s
8406	Aroclor 1260	1,000 J	s
8407	Aroclor 1260	980 J	s
	2 TICs	13 J, 6 J	s
8408	Aroclor 1260	790 J	s
	20 TICs	12 to 170 J	s
8409	Aroclor 1260	730 J	s

nd = non detected
J,R = lab validation qualifiers
s = soil matrix, w = wipe, c = chip

Table C-1 (page 2 of 3)
White Alice Site (Lower Camp), Northeast Cape
Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	**ANALYTE**	**DETECTED QUANTITY**	**MATRIX**
	TIC	16 J	s
8410	Aroclor 1260	960 J	s
	13 TICs	7 to 28 J	s
8411	Aroclor 1260	340 J	s
8412	Aroclor 1260	1,200 J	s
	20 TICs	6 to 100 J	s
8413	Aroclor 1260	200 J	s
	TIC	10 J	s
8414	Aroclor 1260	1,600 J	s
8415	Aroclor 1260	1,000 J	s
	6 TICs	4 to 17 J	s
8416	Aroclor 1260	920 J	s
8417	Aroclor 1260	190 J	s

nd = non detected
J, R = lab validation qualifiers
s = soil matrix, w = wipe, c = chip

Table C-1 (page 3 of 3)
White Alice Site (Lower Camp), Northeast Cape
Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	**ANALYTE**	**DETECTED QUANTITY**	**MATRIX**
	14 TICs	10 to 92 J	s
8418	Aroclor 1260	250 J	s
	TIC	4 J	s
8419	Aroclor 1260	64,000 J	w
8420	Aroclor 1260	2,000 J	w
8421	Aroclor 1260	3,200 J	w
8422	Aroclor 1260	73,000 J	w
8423, 24, 25	Aroclor 1260	470,000 J	c
8426		nd	c
8427	Aroclor 1260	90 J	bkgds
	TIC	7 J	
8428	Aroclor 1260	870 J	dup s

nd = non detected
J, R = lab validation qualifiers
s = soil matrix, w = wipe, c = chip

Table C-2 (page 1 of 2)
Lower Tram Site, Northeast Cape
Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	**ANALYTE**	**DETECTED QUANTITY**	**MATRIX**
8429	TIC	10 J	s
8430		nd	s
8431		nd	s
8432		nd	s
8433	1,1,1,-Trichloroethane	1 J	s
8434		nd	s
8435		nd	s
8436		nd	s
8437	Aroclor 1260	2,100 J	w
8438	Aroclor 1260	1,800 J	w
8439		nd	c
8440	Aroclor 1260	330 J	c
8441		nd	c

nd = non detected
J, R = lab validation qualifiers
s = soil matrix, w = wipe, c = chip

Table C-2 (page 2 of 2)
Lower Tram Site, Northeast Cape
Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	**ANALYTE**	**DETECTED QUANTITY**	**MATRIX**
8442	Aroclor 1260	390,000 J	c
8443	Aroclor 1254	180 J	s
8444		R	s
8445	Aroclor 1260	130 J	s
8446		nd	s
8447		nd	bkgd s
8448		R	dup s

nd = non detected
J, R = lab validation qualifiers
s = soil matrix, w = wipe, c = chip

Table C-3 (page 1 of 3)
Top Camp Site, Northeast Cape
Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	ANALYTE	DETECTED QUANTITY	MATRIX
8449	Aroclor 1254	1,400 JP	s
8450	Aroclor 1260	190 J	s
8451	Aroclor 1254	410 J	s
8452	Aroclor 1254	150 J	s
8453	Aroclor 1254	220 J	s
8454	Aroclor 1254	790 J	s
8455	Aroclor 1260	88 J	s
	TIC	45 J, 16 J	s
8456	TIC	20 J, 5 J	s
8457	Aroclor 1254	54 J	s
8458	Aroclor 1254	93 J	s
	3 TICs	5 to 33 J	s
8459	Aroclor 1254	230 J	s

nd = non detected
J, R = lab validation qualifiers
s = soil matrix, w = wipe, c = chip

Table C-3 (page 2 of 3)
Top Camp Site, Northeast Cape
Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	ANALYTE	DETECTED QUANTITY	MATRIX
8460		nd	s
8461	Aroclor 1260	85 J	s
8462	Aroclor 1254	67 J	s
8463	Aroclor 1254	74 J	s
8464	Aroclor 1254	65 J	s
8465	Aroclor 1254	63 J	s
8466	Aroclor 1260	57 J	s
8467	Aroclor 1254	74 J	s
8468	Aroclor 1254	180 J	s
8469		nd	s
8470		nd	s
8471	TIC	7 J, 7 J	s
8472		nd	w

nd = non detected
J, R = lab validation qualifiers
s = soil matrix, w = wipe, c = chip

Table C-3 (page 3 of 3)
Top Camp Site, Northeast Cape
Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	ANALYTE	DETECTED QUANTITY	MATRIX
8473		nd	w
8474		nd	w
8475	Aroclor 1260	2,200 J	w
8476		R	c
8477		nd	c
8478		R	c
8479		R	c
8480		R	c
8481		R	c
8482	Aroclor 1254	140 J	bkgd s
	3 TICs	12 to 20 J	
8483	Aroclor 1260	97 J	dup s

nd = non detected
J, R = lab validation qualifiers
s = soil matrix, w = wipe, c = chip

APPENDIX D

CTO #0051 Laboratory Sample Validation Reports

CCJM
ENVIRONMENTAL ENGINEERS & SCIENTISTS

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SILVER SPRING
CHICAGO
DENVER
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GRAND RAPIDS

DOCUMENT NO.: 068NCODS.RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

Case No. 0051 URS TDCN 3001436 Project No. CTO-0051

Site Name St. Lawrence Island, AK Project Name N.E. Cape

Contract Laboratory Eureka Laboratories, Inc.

Sample Delivery Group (SDG) 8401 Sampling Date (Month/Year) 8/91

Sample Matrix 20 low level soils

Type of Analyses Volatile Organics, Pesticide/PCB (see page 2)

Data Reviewer Roger Simon/Alan Alai Date 12/28/91

QA Review by Jeralyn Guthrie Date 12/28/91

CCJM Approval by Richard Cheatham Date 12/28/91

Telephone logs/correspondence attached? Yes ____ No ____ Not Appl. X

Laboratory case narrative attached? Yes X No ____ Not Avail. ____

Required deliverables provided? Yes ____ No X Not Appl. ____

Airbill enclosed? Yes X No ____ Not Avail. ____

CLP SOW used by laboratory for analysis 3/90

Remarks: Report is based on resubmissions (rec'd 12/19/91) and is considered as final.

Note:

-- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, the EPA's Functional Guidelines for Organics Analysis and method specific references have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.

-- Please see data flagging definitions on the last page of this report.

Sample Number	Sample Matrix	VOA	Pest/PCB
8401	soil	X	X
8402	soil	X	X
8403	soil	X	X
8404	soil	X	X
8405	soil	X	X
8406	soil	X	X
8407	soil	X	X
8408	soil	X	X
8409	soil	X	X
8410	soil	X	X
8411	soil	X	X
8412	soil	X	X
8413	soil	X	X
8414	soil	X	X
8415	soil	X	X
8469	soil	X	X
8470	soil	X	X
8471	soil	X	X
8482	soil	X	X

(continued next page)

X = Analysis has been provided for validation.
0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

(continued from page 2)

Sample Number	Sample Matrix	VOA	Pest/PCB
8483	soil	X	X
8411MS	soil	X	--
8411MSD	soil	X	--
8410MS	soil	--	X
8410MSD	soil	--	X

X = Analysis has been provided for validation.
0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. Deliverables

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes _____ No __X__

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY
X Included in package
O Not included and/or Not available
NA Not applicable or Not required
RS Provided as resubmission

X Method blank spikes with each batch
X/O Control chart developed by lab
X Sample results - Form 1 or spreadsheet
X/O CLP data flags used by laboratory
X Sample chromatograms and mass spectra
X/RS Holding times (sampling, prep and analysis dates provided)
X System Monitoring Compound (SMC) and Surrogate recoveries - Form 2
X Matrix spike/matrix spike duplicate (MS/MSD) - Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
X Method blank summary - Form 4
X Report form for method blank results (Form 1 or spreadsheet)
X GC/MS tuning - Form 5
X Initial calibration data and Resolution Summary - Form 6
X Continuing calibration data and Verification Summary - Form 7
X Internal standard area summary and analytical sequence, Form 8
X Pesticide Florisil Cartridge Check and GPC Calibration

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines or SW846 holding time requirements. See the following table for a summarization of sample holding times.

Yes _____ No __X__

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or UJ).

Holding Time Summary

Sample Number	Sampling Date	VTSR	VOA Analysis	Pesticide Extract	Pesticide Analysis
8401+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8402+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8403+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8404+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8405+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8406+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8407+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8408+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8409+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8410+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8410MS	8/23/91	8/27	9/04	---	---
8410MSD	8/23/91	8/27	9/04	---	---
8411+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8411MS	8/23/91	8/27	9/04	9/4 (*5)	10/01
8411MSD	8/23/91	8/27	9/04	9/4 (*5)	10/01
8412+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8413***	8/23/91	8/28	9/05	9/4 (*5)	10/01
8414***	8/23/91	8/28	9/05	9/4 (*5)	10/01
8415***	8/23/91	8/28	9/05	9/4 (*5)	10/01
8469	8/23/91	8/27	9/05	9/4 (*5)	10/01
8470	8/23/91	8/27	9/05	9/4 (*5)	10/01
8471	8/23/91	8/27	9/05	9/4 (*5)	10/01
8482+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8483+	8/23/91	8/27	9/04	9/4 (*5)	10/01

\+ COC's provided as resubmission

** all analyses with exception of samples 8413, 8469, 8470, 8471, 8482 and 8483 were analyzed at dilution.

*** dates taken from COC's included with package 8416.

III. GC/MS Tuning and Mass Calibration

The BFB and/or DFTPP performance results summaries were included for all samples, and were reported to be within specified criteria at the appropriate frequency.

Yes __X__ No _____

Comments: In the original submisssion, calculation of the mass ratios for masses 177 / 176 for all tunes in the package (7/19, 9/4 and 9/5) were incorrect. Instead of 100%, these values should be 8.0%, 7.9% and 6.9%, respectively. The laboratory has provided the corrected Forms 5A for these dates.

IV. A. Instrument Calibration (Volatiles)

1. The instrument response factor (RRF) data summaries were reviewed for the initial and continuing calibrations. All information was present and reported on the required summary forms. Response factors met the required criteria for volatile analyses, thus no data have been qualified.

Yes _____ No __X__

Comments: The RRF values outside of data validation guideline specifications are listed below. All volatile compounds have been reviewed with a control limit of 0.050 being used as a minimum response factor. (NOTE: This procedure has been used by the reviewer in order to prevent the qualification of compounds that had acceptable response factors.) The following out-of-control calibration compound(s) have resulted in associated sample data being flagged as estimated (J or UJ) or in those instances where a response factor of <0.050 was reported the data for the compound has been rejected (R) if reported as undetected in the sample. All samples are affected.

Other Compounds	Control Limit	Init. Cal. Date / RRF	Cont. Cal. Date / RRF
2-butanone	0.050	7-19 /0.049	9-5 /0.049

It is noted by the reviewer that 2-butanone has a minimum RRF of 0.010 according to SOW 3/90. While contractually compliant, a significant calibration problem is demonstrated and all 2-butanone results have been qualified per Functional Guidelines criteria.

2. The percent relative standard deviation (%RSD) for the initial calibrations and the percent difference (%D) for the continuing calibrations were reviewed. The %RSD and %D values reported met the data validation criteria (i.e., < 30 %RSD and < 25 %D) for volatile analyses, thus no data have been qualified.

Yes __X__ No _____

Comments: No comments.

B. Instrument Calibration (Pesticide/PCB)

1. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes __X__ No _____

Comments: No comments.

2. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes __X__ No _____

Comments: No comments.

3. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes _____ No __X__

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P. Samples 8411MS, 8411MSD and 8417 were not bracketed at the end of the analytical sequence on 10/06/91, DB-1701. No calibration summary data was provided for the required PEM standard.

4. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes _____ No __X__

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P. All pesticide/PCB data is qualified on the basis of holding times, and no additional qualifiers have been applied.

5. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes _____ No __X__

Comments: The retention times for tetrachloro-m-xylene (TCX) and decachlorobiphenyl did not meet the specified criteria as stated in the SOW. This deficiency for the continuing calibration standards is considered to be non-compliant with SOW-3/90. No additional qualifiers were applied to the sample data.

6. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses, and the combined breakdown was less than 30%.

Yes _____ No __X__

Comments: The following breakdown criteria were not met:

		% Breakdown			Affected
Calibration	Column	4,4'-DDT	Endrin	Combined	Samples
Initial, 09/27/91	DB-608	-/-	-/-	30.8	all
Continuing 09/30/91	DB-608	-/-	-/-	32.5/41.0	8469, 8470, 8471, 8482, 8483, 8401DL, 8402DL, 8403DL, 8404DL, 8405DL, 8406DL

Calibration	Column	% Breakdown 4,4'-DDT	Endrin	Combined	Affected Samples
Initial 10/02/91	DB-1701	-/-	30.6/32.6	30.6/35.2	all
Continuing	DB-1701	-/-	---/62.8	---/62.8	all

No additional qualifiers have been applied to the sample data on the basis of DDT or endrin breakdown.

7. The florisil cartridge check and when applicable, the GPC calibration were found to be within specified criteria.

   Yes __X__ No _____

   Comments: No comments.

8. The retention times for the surrogates were within criteria for every sample.

   Yes _____ No __X__

   Comments: An asterisk (*) on the following table indicates that the surrogate retention time was outside the established retention time windows. The reviewer considers this deficiency to be non-compliant with 3/90 SOW specifications. No additional qualifiers have been applied.

Sample No.	TCX 1	TCX 2	DCB 1	DCB 2
8401DL		*		*
8402DL		*		*
8403DL		*		
8404DL		*		
8405DL		*		
8406DL				
8407DL		*		
8408DL		*		
8409DL		*		
8410DL		*		
8411DL				
8411MS		*		
8411MSD		*		
8412DL		*		*
8413				*
8414DL		*		
8415DL		*		*
8469		*	*	*
8470		*	*	*
8471		*	*	*
8482		*	*	*
8483		*	*	*
PBLK1		*	*	*

V. Blanks

A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes _____ No __X__

Comments: Contaminant quantities reported in the laboratory preparation blanks are listed below. Associated samples which have been flagged "UJ" due to the blank contaminants are also shown.

Blank ID	Compound	Amount (µg/kg)	Affected Samples
VBLK1, VBLK2	methylene chloride	7, 8	all
VBLK1	unknown (RT = 21.2)	3	*
VBLK1	unknown (RT = 22.9)	6	*

* Indeterminable since retention times were reported to tenths rather than hundredths.

B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes _____ No _____ Not Identified _____

Comments: No trip blank was included with this package.

C. Other Blanks - No other types of blanks have been identified in the data package.

VI. Surrogate and System Monitoring Compound Recovery

The surrogate and system monitoring compound recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes _____ No __X__

Comments:

1. Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.

2. The reviewer has included the pesticide/PCB method blank on Table 2. The recovery for decachlorobiphenyl (330%) in the method blank (PBLK1) is considered by the reviewe, to be indicative of a serious problem.

VII. Blank Spike - Laboratory Control Sample(s)

A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes __X__ No _____

Comments:

1. The compounds used for the Pesticide/PCB blank spike were the matrix spike compounds. Laboratory control limits have been applied by the reviewer.

2. The blank spike for volatile analysis was spiked with the matrix spike compounds. Matrix spike control limits have been applied by the reviewer.

B. Laboratory control charts were provided in the package for the spike compounds.

Yes _____ No __X__

Comments: Laboratory control charts provided for the volatile LCS were for volatile surrogate compounds, not TCL's.

VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes _____ No __X__

Comments:

1. Sample 8410 was used for VOA MS/MSD. Sample 8411 was used for Pesticide/PCB MS/MSD.

2. The following spike analytes were reported to be outside limits; however no additional qualifiers were applied:

Analyte	% Recovery MS / MSD	RPD	Control Limits % Rec. / RPD
endrin	147 / 109	29	42-139 / 45
dieldrin	104 / 164	45	31-134 / 38
4,4'-DDT	180 / 164	9	23-134 / 50

IX. Additional Comments

1. It was noted by the reviewer that CRDL's have not been adjusted to SOW 3/90 levels for most VOA compounds.

2. The Form 4 blank summary incorrectly showed samples associated with VBLK1 as being with VBLK2 and vice versa.

3. The internal standard (IS3) for sample 8408 was lower than the required control limits. Since this analytical value is not part of the NEESA validation criteria, no action has been taken by the reviewer.

4. Several contract requirements were not met by the laboratory for the Pesticide/PCB analysis. These deficiencies are noted in the following sections: Section IV.B.4, Section IV.B.6, Section IV.B.7, and Section VI.

5. The laboratory reported the higher of the two values from the two pesticide/PCB analysis columns. This procedure is specifically not allowed as stated in the 3/90 SOW.

6. No "C" flags were used by the laboratory to indicate whether GC/MS confirmational analyses were performed for the pesticide/PCB values that were sufficiently high for GC/MS detection.

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.

R - Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.

J - The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.

B - The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.

JN - Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

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C.C.J.M.
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MEMORANDUM

TO: Jamie Bruton, URS/Seattle

FROM: Roger Simon, Jeralyn Guthrie, Richard Cheatham, CCJM/Denver

DATE: December 5, 1991

DOCUMENT NO: 0721NCRAI.MEM

SUBJECT: Volatile Organics Tuning Problems for CTO-051

Per our conversation of 12/5/91, please find herein a detailed description of tuning problems found with all volatile organics analyses performed at Eureka Laboratories for CTO-051. These data packages are considered "on hold" until these issues have been resolved. Data packages have been identified by TDCN numbers and SDG.

1. For all CTO-051 data packages with volatile organics analyses (SDG 8449/TDCN 3001421, SDG 8484/TDCN 301210, SDG 8401/TDCN 3001436 and SDG 8416/TDCN 3001439), the values reported for the percent relative abundance of masses 177/176 were incorrectly reported as 100% on the Form V Tuning Summaries. This appeared to be a computer error since calculation of this ratio by the reviewer resulted in acceptable tunes. The laboratory should provide corrected summary forms.

2. In SDG 8484/TDCN 3001210, the relative abundance for masses 176/174 was reported and found by the reviewer to be 119.4%. Since there is no expanded criteria for this critical ratio, all data will have to be qualified as unusable (R); raw data to verify the values reported on the Form V Tuning Summary were not included with the Level C data package, so it could not be determined whether the reported ratio was a transcription problem with the base mass percentages reported for m/z 174 and 176, software problem or something else. Please indicate if a calculation/transcription problem existed and provide a corrected summary form or the correct values for masses 176 and 174.

If you should have any questions, please do not hesitate to call us at (303) 987-2928.

cc: URS / Navy Clean PF

VG RAC

RESUBMISSION 12/19/91

URS **MEMORANDUM** C.C.J.M. | Date 12-18-91 | Page 1 of 1

TO: CCJM
215 Union Blvd. Suite 415
Lakewood, CO 80228

ATTENTION: ~~Rolf Reindt~~ Geralyn Guthrie

FROM: URS Consultants, Inc.
1100 Olive Way, Suite 200
Seattle, Washington 98101-1832

BY: Analytical Support Activities

PHONE: (206) 623-1800 FAX: (206) 233-9570

SUBJECT: Resubmitted FORM I for Volatile Analysis by Eureka Laboratories Inc for CTO-51

Please find the above referenced resubmitted Form I for volatile analysis. They are for four (4) separate SDG numbers and are as follows:

1.	Eureka	SDG: 8401	URS TDCN: 3001436
2.	Eureka	SDG: 8416	URS TDCN: 3001439
3.	Eureka	SDG: 8449	URS TDCN: 3001421
4.	Eureka	SDG: 8484	URS TDCN: 3001210

C.C.J.M. RECEIVED [illegible] 1991

If you have any questions, please feel free to call any time.

DISTRIBUTION: Lab File

Sincerely Yours,

W. J. Benton, PhD
URS CONSULTANTS

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

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Date 11/15/91

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Department/Floor No:
Street Address: [illegible]
City: SEATTLE
State:
ZIP Required:

2 To (Recipient's Name) Please Print: Richard Cheatham
Recipient's Phone Number (Very Important): (303)
Company: CCJM
Department/Floor No: Suite 215
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes): 215 Union Boulevard
City: Lakewood
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State:
ZIP Required:

3 PAYMENT 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct No 3 [ ] Bill 3rd Party FedEx Acct No 4 [ ] Bill Credit Card 5 [ ] Cash/Check

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning †)
- 11 [ ] YOUR PACKAGING
- 16 [ ] FEDEX LETTER *
- 12 [ ] FEDEX PAK *
- 13 [ ] FEDEX BOX
- 14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon †)
- 51 [ ] YOUR PACKAGING
- 56 [ ] FEDEX LETTER *
- 52 [ ] FEDEX PAK *
- 53 [ ] FEDEX BOX
- 54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day †)
- 30 [ ] ECONOMY

Government Overnight (Restricted for authorized users only)
- 46 [ ] GOVT LETTER
- 41 [X] GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
- 70 [ ] OVERNIGHT FREIGHT ** (Confirmed reservation required)
- 80 [ ] TWO-DAY FREIGHT **

† Delivery commitment may be later in some areas
*Declared Value Limit $100
**Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)
- 1 [ ] HOLD FOR PICK-UP (Fill in Box H)
- 2 [X] DELIVER WEEKDAY
- 3 DELIVER SATURDAY (Extra charge) [ ] (Not available to all locations)
- 4 [ ] DANGEROUS GOODS (Extra charge)
- 5 [ ]
- 6 [ ] DRY ICE Lbs
- 7 [ ] OTHER SPECIAL SERVICE
- 8 [ ]
- 9 [ ] SATURDAY PICK-UP (Extra charge)
- 10 [ ]
- 11 [ ]
- 12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE
1	20	NA
Total 1	Total 20	Total NA

DIM SHIPMENT (Chargeable Weight)
[ ] lbs
___ X ___ X ___ = ___

Received At
1 [X] Regular Stop 3 [ ] Drop Box
2 [ ] On Call Stop 4 [ ] BSC 5 [ ] Station

7 Release Signature
FedEx Emp. No
Date/Time

Emp. No Date
[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Del [ ] Chg. To Hold
Street Address
City State Zip
Received By: X
Date/Time Received FedEx Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 6/91
PART #137204 FXEM 9/91
FORMAT #099
099

I. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc.
Lab Certification Number: E765
SDG Number: 8401
Purchase Order Number: AN-91-P-0019
Contract Task Order Number: 0051
NEESA QA/QC Level C
Analysis: Initial
Sample No.: 20

URS TDM
3001436

A. Sample Description/Analytical Description

Client ID	Lab ID	Date Sampled	Date Received	Matrix	Analysis/Method
8401	9108213-11A	08/23/91	08/27/91	Soil	VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW
8402	9108214-12A	08/23/91	08/27/91	Soil	Same as above
8403	9108214-13A	08/23/91	08/27/91	Soil	Same as above
8404	9108214-14A	08/23/91	08/27/91	Soil	Same as above
8405	9108214-15A	08/23/91	08/27/91	Soil	Same as above
8406	9108214-16A	08/23/91	08/27/91	Soil	Same as above
8407	9108214-17A	08/23/91	08/27/91	Soil	Same as above
8408	9108214-18A	08/23/91	08/27/91	Soil	Same as above
8409	9108214-19A	08/23/91	08/27/91	Soil	Same as above
8410	9108214-20A	08/23/91	08/27/91	Soil	Same as above
8411	9108214-21A	08/23/91	08/27/91	Soil	Same as above
8412	9108214-22A	08/23/91	08/27/91	Soil	Same as above
8413	9108219-1A	08/23/91	08/28/91	Soil	Same as above
8414	9108219-2A	08/23/91	08/28/91	Soil	Same as above
8415	9108219-3A	08/23/91	08/28/91	Soil	Same as above
8469	9108213-21A	08/23/91	08/27/91	Soil	Same as above
8470	9108213-22A	08/23/91	08/27/91	Soil	Same as above
8471	9108213-23A	08/23/91	08/27/91	Soil	Same as above
8482	9108214-8A	08/23/91	08/27/91	Soil	Same as above
8483	9108214-9A	08/23/91	08/27/91	Soil	Same as above

B. Sample Receipt

Samples were received in two delivery batches on August 27 and 28, 1991. Samples were in good condition. Sample receipt condition, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bill. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Numbers 91-08-213, 91-08-214, and 91-08-219.

C. Quality Control Report

1. Volatile Analysis by 3/90 CLP SOW

Method Blank

Mythylene Chloride, a common laboratory introduced contaminant, was found in the method blank as well as in the sample. The concentration of Methylene Chloride found in the method blanks was 7 and 8 ppb (ug/Kg) as compared to 11-18 ppb (ug/Kg) detected in the samples. Therefore, if the blank is subtracted from the sample, the real concentration of Methylene Chloride in the samples would be below the detection limit.

Internal Standard

The area count of internal standard (Chlorobenzene-d5) is out of the control limit for Sample No. 8408. However, the area counts of other internal standards are within the control limits.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

2. Pesticide/PCB by 3/90 CLP SOW

Higher CRQL for Sample No. 8401, 8402, 8403, 8404, 8405, 8406, 8407, 8408, 8409, 8410, 8411, 8412, 8414, and 8415 is due to high analyte concentration.

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (1) Telecation Software used the Response Factor for the 0.1 ppm standards of the Aroclors analyzed in the initial calibration. (2) ELI manual worksheet used the response factors for 2 ppm standards of the Aroclors which were analyzed after the sample analyses and used for confirmation per 3/90 CLP SOW.

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.

ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEM02 (Performance Evalutation Mixture #2), PEM08, and PEM10 from the first column analysis exceeded the limit by 0.8%, 2.5%, and 11% respectively. The % combined breakdown for PEM01, PEM02, and PEM08 from the second column analysis exceeded the limit by 0.6%, 5.2%, and 32.8%.

The % breakdown of Endrin for PEM01, PEM02, PEM04, PEM06, and PEM08 from the 2nd column analysis exceeded the limit by 10.6%, 12.6%, 1.4%, 7.8%, and 42.8%. The % breakdown of 4-4'-DDT for PEM10 from the 1st column analysis exceeded the limit by 1.2%.

Calibration Verification

There is a total of fifteen continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence.

RPD value of gamma-BHC (Lindane) for PEM10 (Performance Evaluation Mixture #10) from the 1st column analysis, beta-BHC for PEM 04 and alpha-BHC for PEM02 from the 2nd column analysis exceeded the control limit by a margin of 1.1%, 1.1%, and 8.9%.

RPD value of Endrin and DDT for PEM08 from the 2nd column analysis exceeded the control limit by 24.7% and 1.1%.

RPD value of Endosulfan II, Endosulfan sulfate, Endrin Ketone and Endrin Aldehyde for INDAM 05 (Individual Standard Mixture A medium level #5) from the 2nd column analysis exceeded the QC limits by a margin of 1%, 3%, 4%, and 1%.

RPD value of Endrin and DCB for INDAM07 and INDAM09 from the 2nd column analysis exceeded the QC limits by 1% & 30%, and 18% & 5% respectively.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

DCB was slightly outside the Surrogate Retention Time (RT) window in seven analyses for the 1st column analysis. TCX and DCB were slightly ouside the RT window in thirty six and twenty eight analyses respectively for the 2nd column analysis.

Surrogate Recovery

The % recoveries of DCB for Sample Nos. 8411 MS/MSD, 8413, 8469, 8471, 8482, 8483, and PBLK1 from the 2nd column analysis were high due to over integration caused by raised baseline. If peak height is used for the calculation, the spike % recoveries would be within the control limit. The DCB recoveries were out of the advisory limit for Sample No. 8401DL, 8402DL 8403DL, 8404DL, 8405DL, 8406DL, 8407DL, 8408DL, 8409DL, 8410DL, 8411DL, 8412DL, 8414DL, and 8415DL due to high analyte concentrations and dilutions.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 8482, 8407DL, and 8402DL.

Matrix Spike and Matrix Spike Duplicate

The % spike recoveries of Endrin and DDT for Sample No. 8411 MS and the % spike recoveries of Dieldrin and DDT for Sample No. 8411 MSD from the 1st column analysis were not within control limits. However, the % spike recoveries of these analytes for the same sample from the 2nd column analysis were 57% & 70% for 8411 MS, and 92% & 73% for 8411 MSD, respectively, which are within the control limits. The high % recoveries was due to over integration caused by the raised baseline. The % recoveries for 8411 MS/MSD presented on form 3F are the higher of the two values. Therefore, the data is still valid.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Shao-Pin Yo, Ph.D.
Laboratory Director

TABLE 1 (3/90, OLM01.8)
VOA Qualifier Summary
Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed: 9/4/91

Instrument ID: VOA 2

Method Blank ID: ~~VBLK2~~ VBLK1
Date: ~~9/5/91~~ Time: ~~16:55~~
9/4/91 8:05

Sample Identifier:	Hold Time Out		Standards: (↑, ↓; ↓↓=<10%) SMCs			Internal (IS)		
	Ar	All	1	2	3	1	2	3
8401								
8402								
8403								
8404								
8404								
8405								
8406								
8407								
8408								↓
8409								

ICal Date: 7/19 CCal Time: 9/4 7:30

* RRF must be ≥ .010 ¤System Monitor Compound	MIN	Initial Cal. RRF	Initial Cal. %RSD	Continuing Cal. RRF	Continuing Cal. %D	Blanks		Qualifiers	Internal
COMPOUND:	RRF	< MIN	>20.5	< MIN	>25	Method	Trip	(+/-)	Standard
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					87		UJ	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049						R	
1,1,1-Trichloroethane	.100								2
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8 ¤	*								3
Bromofluorobenzene ¤	.200								3
1,2-Dichloroethane-d4 ¤	*								1

Blank Tentatively Identified Compounds

Blank ID	Reported as:	RT	(µg/kg or µg/L)	Qualifiers
VBLK1	unknown	21.2	3 ug/kg	UJ
VBLK1	unknown	22.9	6 ug/kg	UJ

TABLE 1 (3/90, OLM01.8) (cont.)
VOA Qualifier Summary
Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed: 9/4/91

Instrument ID: VOA 2

Method Blank ID: VBLK1
Date: 9/4/91 Time: 805

Sample Identifier:	Hold Time Out		Standards: (↑, ↓; ↓↓=<10%) SMCs			Internal (IS)		
	Ar	All	1	2	3	1	2	3
8410								
8410 MS								
8410 MSD								
8411								
8412								
8432								
8433								

ICal Date: 7/19 CCal Time: 9/4 7:30

* RRF must be ≥ .010 ∝System Monitor Compound	MIN	Initial Cal. RRF	Initial Cal. %RSD	Continuing Cal. RRF	Continuing Cal. %D	Blanks Method	Blanks Trip	Qualifiers (+/-)	Internal Standard
COMPOUND:	RRF	< MIN	>20.5	< MIN	>25				
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					87		UJ	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049						R	
1,1,1-Trichloroethane	.100								2
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8 ∝	*								3
Bromofluorobenzene ∝	.200								3
1,2-Dichloroethane-d4 ∝	*								1

Blank Tentatively Identified Compounds

Blank ID	Reported as:	RT	(µg/kg or µg/L)	Qualifiers

TABLE 1 (3/90, OLM01.8)
VOA Qualifier Summary
Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed: 9/4/91

Instrument ID: VOA 2

Method Blank ID: VBLK21
Date: ~~9/4/91~~ 9/5/91 Time: ~~8:05~~ 16:35

Sample Identifier:	Hold Time Out		Standards: (↑, ↓; ↓↓=<10%) SMCs			Internal (IS)		
	Ar	All	1	2	3	1	2	3
8413								
~~8414~~								
8415								
8469								
8470								
8471								

ICal Date: _____ CCal Time: _____ _____

* RRF must be ≥ .010 *System Monitor Compound COMPOUND:	MIN RRF	Initial Cal. RRF < MIN	Initial Cal. %RSD >20.5	Continuing Cal. RRF < MIN	Continuing Cal. %D >25	Blanks Method	Blanks Trip	Qualifiers (+/-)	Internal Standard
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					9		UJ	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049		0.049				R	▼
1,1,1-Trichloroethane	.100								2
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								▼
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								▼
Toluene-d8 α	*								3
Bromofluorobenzene α	.200								3
1,2-Dichloroethane-d4 α	*								1

Blank Tentatively Identified Compounds

Blank ID	Reported as:	RT	(µg/kg or µg/L)	Qualifiers
~~VBLK1~~	~~unknown~~	21.2	3 ug/kg	~~UJ~~
~~VBLK1~~	unknown	~~22.9~~	~~6 ug/kg~~	~~UJ~~

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/01/91

Instrument ID: HP 5890

Method Blank ID(s):
PIBLK05
~~AGA0804~~ PBLC08

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
8469						X					
8470						X					
8471			↓			X					
8482			↓			X					
8483						X					
8401 DL						X					
8402 DL			↓0%	↑		X					
8403 DL				↑		X					
8405 DL				↑		X					
8406 DL				↑		X					
8404 DL				↑		X					

*≥60% Resolved____ ♦≥60% Resolved____ §≥60% Resolved ____
in Initial Resolution Check

DB-608 or Equivalent_____

9/27/91

	Initial	Calibrations: Continuing: RPD > 25% *								
	%RSD>20	PEM	INDs	PEM	INDs	PEM	INDs	PEM	Blank Conc.	Qualifiers (+/-)
	↓	1	2	3	4	5	6	7		
Cont.Cal.Date, Month→	Day→	9/30/91	10/1/91	10/1/91						
COMPOUND↓	Time→	2103	0512	0721						
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)				26.1						J-C/—
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor *										
Endrin Ketone *										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)										
Decachlorobiphenyl (DCB)		Cr							RT	

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/01/91

Instrument ID: HP 5890

Method Blank ID(s): PIBLK09

Extract Date(s): 09/04/91

Sample Identifier:	Hold Time Out Ext	Hold Time Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
8407DL				↑			X				
8408DL			↑				X				
8409DL							X				
8410DL				↑			X				
8411DL				↑			X				
8412DL			↑	↑			X				
8413							X				
8414DL				↑			X				
8415DL			↓(D)	↑			X				
8411MS			↓	↑			X				

«≥60% Resolved____ ♦≥60% Resolved____ §≥60% Resolved ____
in Initial Resolution Check

DB-608 or Equivalent_____ ✓	9/27/91 Initial %RSD>20	Calibrations: Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
	↓									
Cont.Cal.Date, Month→	Day→	9/30/91	10/1/91	10/1/91						
COMPOUND↓	Time→	2104	0042	2105						
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)				26.1						J-C / —
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosufan II										
4,4'-DDD										
Endosufan sulfate										
4,4'-DDT										
Methoxychlor «										
Endrin Ketone «										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)										
Decachlorobiphenyl (DCB)		RT							RT	

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/01/91

Instrument ID: HP5890

Method Blank ID(s): PIBLK01

Extract Date(s): 09/24/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
8411 MS1)			✓				X				

*≥60% Resolved____ ♦≥60% Resolved____ §≥60% Resolved ____
in Initial Resolution Check

DB-608 ✓ or Equivalent_____

Calibrations: 9/27/91

Cont.Cal.Date, Month→ / COMPOUND↓	Initial %RSD>20 Day→	Time→	Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
	↓		9/30/91	10/1/91	10/1/91						
			2108	0902	2103						
alpha-BHC											
beta-BHC											
delta-BHC											
gamma-BHC (Lindane)					26.1						J-C/—
Heptachlor											
Aldrin											
Heptachlor epoxide											
Endosulfan I ♦											
Dieldrin §											
4,4'-DDE §											
Endrin											
Endosufan II											
4,4'-DDD											
Endosufan sulfate											
4,4'-DDT											
Methoxychlor *											
Endrin Ketone *											
Endrin Aldehyde											
alpha-Chlordane											
gamma-Chlordane ♦											
Toxaphene											
Aroclor-1016											
Aroclor-1221											
Aroclor-1232											
Aroclor-1242											
Aroclor-1248											
Aroclor-1254											
Aroclor-1260											
Surrogates - %RSD > 30%			Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)											
Decachlorobiphenyl (DCB)			KT							KT	

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/06/91

Instrument ID: VAR 6000

Method Blank ID(s): PI BLK07
PBLK1
PIBLK05

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
8469				↑			X				
8470							X				
8482			↓				X				
8485				↑			X				
8401 DL				↑			X				
8402 DL			↓	↑				X			
8403 DL				↑				X			
8404 DL				↑				X			
8405 DL				↑				X			
~~8405 DL~~ Acid								X			

*≥60% Resolved ✓ ♦≥60% Resolved ✓
in Initial Resolution Check

DB-1701 ✓ or Equivalent DB-17	10/02/91 Initial %RSD>20	Calibrations: Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→ 10	Day→	—	05	06	06					
COMPOUND↓	Time→	—	0825	0613	1714					
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin										
4,4'-DDE										
Endrin			26.0	59.7	53.0					J-C/—
Endosufan II										
4,4'-DDD										
Endosufan sulfate *										
4,4'-DDT				26.1						J-C/—
Methoxychlor *										
Endrin Ketone										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)		—	CT	CT	CT				CT	
Decachlorobiphenyl (DCB)		—	CT	CT	CT				CT	

45.0 30

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/06/91

Instrument ID: VAC 6000

Method Blank ID(s): PIBLKC8
PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
8406DL				↑			X	X			
~~8406DL~~ #4+				↓			X	X			
8407DL				↑			X	X			
8408DL			↑	↑			X	X			
8409DL			↓	↑			X	X			
8410DL				↑			X	X			
8411DL				↑			X	X			
8412DL				1(?)			X	X			
8413				9			X	X			
8414DL				1(?)			X	X			

#3+4+

? = high rec; out of field range (+1000%)

≠≥60% Resolved ✓ ♦≥60% Resolved ✓
in Initial Resolution Check

DB-1701 or Equivalent DB-17	10/02/91 Initial %RSD>20	Calibrations: Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→ 10	Day→	—	05	06	06					
COMPOUND↓	Time→	—	1825	0613	1714					
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin										
4,4'-DDE										
Endrin			56.0	54.7	53.0					J-C / —
Endosufan II										
4,4'-DDD										
Endosufan sulfate ¤										
4,4'-DDT				26.1						J-C / —
Methoxychlor ¤										
Endrin Ketone										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)		—	LT	LT	LT				LT	
Decachlorobiphenyl (DCB)		—	LT (55.0)	LT (30)	LT				LT	

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/06/91

Instrument ID: VAR 6000

Method Blank ID(s): PIBLK06
PBLK1
PIBLK09

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
9415 DL			↓	↑			X	X			
9411 MS			↓		NONE			X			
9411 MSD			↓	↑	NONE			X			
9417 (9421)			X OK		NONE			X			

AKA

≥60% Resolved ✓ ◆≥60% Resolved ✓ 10/04/91
in Initial Resolution Check

DB-1701 ✓ or Equivalent 05-17	Initial %RSD>20	Calibrations: Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
	↓									
Cont.Cal.Date, Month→ 10 Day→		—	05	06	06					
COMPOUND↓ Time→		—	1929	0613	1719					
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ◆										
Dieldrin										
4,4'-DDE										
Endrin			26.0	54.7	53.0					J-C I-
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate *										
4,4'-DDT				26.1						J-C I-
Methoxychlor *										
Endrin Ketone										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ◆										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)			C-	RT	RT				RT	
Decachlorobiphenyl (DCB)			RT	RT	RT				RT	

55.0 30

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 1 of 3

VOA FRACTION

All OK

A. Sample Numbers																													
B. Surrogate(s) outside QC limits (show %R)	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3
C. Compound less than 10%? (Y/N)																													
D. Initial Analysis Qualifiers																													
E. Reanalysis required? (Y/N)																													
o If blank, were associated samples reanalyzed? (Y/N)																													
F. Sample Number for reanalysis.																													
G. Reanalysis surrogates outside limits (show % R)																													
H. Reanalysis qualifiers.																													

QC Limits (%R)	SOIL	WATER
VOA S1 = Toluene-d8	84-138	88-110
VOA S2 = Bromofluorobenzene	59-113	86-115
VOA S3 = 1,2-Dichloroethane-d4	70-121	76-114

A:\SURROG-1.WK3

NOTE: The circled sample number is the analysis/reanalysis recommended for use.

ACID FRACTION

ple Numbers																								
rogate(s) outside imits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
ound less than 10%? (Y/N)																								
alysis required? (Y/N)																								
blank, were associated ples reanalyzed? (Y/N)																								
nal Analysis Qualifiers																								
ple Number for reanalysis.																								
alysis surrogates outside its (show % R)																								
extraction required? (Y/N)																								
blank, were associated ples re-extracted? (Y/N)																								
ple number for re-extract.																								
extraction outside limits ow % R)																								
nalysis qualifiers.																								

QC Limits (%R)	SOIL	WATER
4 = Phenol-d6	24-113	10-110
5 = 2-Fluorophenol	25-121	21-110
6 = 2,4,6-Tribromophenol	19-122	10-123
7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

ple Numbers	8401 DL		8402 DL		8403 DL		8404 DL		8405 DL		8406 DL	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
limits exceeded (show %R)	-/-	-/663	0/145.0	303/217	-/-	200.6/151.9	/	422.4/180.1	59.0/	241.3/584%	/	255/729
lifier, if applied.		J-C/-	(J/R)	J-C/-		J-C/-		J-C/-		J-C/-		J-C/-

its (%R)	SOIL	WATER
ide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
ide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

LL\SURROG-2.WK3

? = Very high recovery; out of field range (+1000%)

ACID FRACTION

Sample Numbers																						
Surrogate(s) outside QC limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Compound less than 10%? (Y/N)																								
Reanalysis required? (Y/N)																								
If blank, were associated samples reanalyzed? (Y/N)																								
Initial Analysis Qualifiers																								
Sample Number for reanalysis.																								
Reanalysis surrogates outside limits (show % R)																								
Re-extraction required? (Y/N)																								
If blank, were associated samples re-extracted? (Y/N)																								
Sample number for re-extract.																								
Re-extraction outside limits (show % R)																								
Reanalysis qualifiers.																								

QC Limits (%R)	SOIL	WATER
d S4 = Phenol-d6	24-113	10-110
d S5 = 2-Fluorophenol	25-121	21-110
d S6 = 2,4,6-Tribromophenol	19-122	10-123
d S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8407 DL		8408 DL		8409 DL		8410 DL		8411 DL		8411 MS	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	- | -	196 | 568	227 | 156	- | 421	38.9 | 38.0	- | 729	- | -	428 | 240	- | -	166 | 323	47 | 58	32 | -
Qualifier, if applied.		J-C/-	J-C/-	J-C/-	J-C/-	J-C/-		J-C/-		J-C/-	J-C/-	J-C/-

Limits (%R)	SOIL	WATER
sticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
sticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

\SHELL\SURROG-2.WK3

ACID FRACTION

Sample Numbers																				
Surrogate(s) outside QC limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Compound less than 10%? (Y/N)																				
Reanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analysis qualifiers																				
Sample Number for reanalysis.																				
Reanalysis surrogates outside limits (show % R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract.																				
Re-extraction outside limits (show % R)																				
Reanalysis qualifiers.																				

QC Limits (%R)	SOIL	WATER
id S4 = Phenol-d6	24-113	10-110
id S5 = 2-Fluorophenol	25-121	21-110
id S6 = 2,4,6-Tribromophenol	19-122	10-123
id S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8411 MSD				8412 DL				8413				8414 DL				8415 DL				8469			
	S1		S2		S1		S2		S1		S2		S1		S2		S1		S2		S1		S2	
QC limits exceeded (show %R)	23.0	55	39	168	152	-	235	?	-	-	31	199	-	-	224	?	0	23	240	472	-	-	56	237
Qualifier, if applied.	J-C	-	J-C	-	J-C	-	J-C	-			J-C	-			J-C	-	(R)		J-C	-			J-C	-

Limits (%R)	SOIL	WATER
sticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
sticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

\SHELL\SURROG-2.WK3

ACID FRACTION

Sample Numbers																								
Surrogate(s) outside QC limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Compound less than 10%? (Y/N)																								
Reanalysis required? (Y/N)																								
If blank, were associated samples reanalyzed? (Y/N)																								
Initial Analysis qualifiers																								
Sample Number for reanalysis.																								
Reanalysis surrogates outside limits (show % R)																								
Re-extraction required? (Y/N)																								
If blank, were associated samples re-extracted? (Y/N)																								
Sample number for re-extract.																								
Re-extraction outside limits (show % R)																								
Reanalysis qualifiers.																								

QC Limits (%R)	SOIL	WATER
S4 = Phenol-d6	24-113	10-110
S5 = 2-Fluorophenol	25-121	21-110
S6 = 2,4,6-Tribromophenol	19-122	10-123
S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8470		8471		8482		8483		PBLK1			
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	- / -	- / -	57 / -	- / -	36 / 32	- / -	- / -	- / 182	- / -	- / 330		
Qualifier, if applied.			J-C/-		J-C/-			J-C/-		J-C/-		

Limits (%R)	SOIL	WATER
Pesticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
Pesticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

CC-IM

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DETROIT
GRAND RAPIDS

DOCUMENT NO.: 069NCODS.RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

Case No. 0051 URS TDCN 3001439 Project No. CTO-0051

Site Name St. Lawrence Island, AK Project Name N.E. Cape

Contract Laboratory Eureka Laboratories, Inc.

Sample Delivery Group (SDG) 8416 Sampling Date (Month/Year) 8/91

Sample Matrix 19 low level soils

Type of Analyses Volatile Organics, Pesticide/PCB (see page 2)

Data Reviewer Roger Simon/Alan Alai (As Sur) Date 12/28/91

QA Review by Jeralyn Guthrie (JG) Date 12/28/91

CCJM Approval by Richard Cheatham (As Sur) Date 12/28/91

Telephone logs/correspondence attached? Yes X No ____ Not Appl. ____

Laboratory case narrative attached? Yes X No ____ Not Avail. ____

Required deliverables provided? Yes ____ No X Not Appl. ____

Airbill enclosed? Yes X No ____ Not Avail. ____

CLP SOW used by laboratory for analysis 3/90

Remarks: Report is based on resubmissions (rec'd 12/19/91) and is considerd to be final.

Note:

— The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, the EPA's Functional Guidelines for Organics Analyses and method specific references have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.

— Please see data flagging definitions on the last page of this report.

Sample Number	Sample Matrix	VOA	Pest/PCB
8416	soil	X	X
8417	soil	X	X
8418	soil	X	X
8427	soil	X	X
8428	soil	X	X
8429	soil	X	X
8430	soil	X	X
8431	soil	X	X
8432	soil	X	X
8433	soil	X	X
8434	soil	X	X
8435	soil	X	X
8436	soil	X	X
8443	soil	--	X
8444	soil	--	X
8445	soil	--	X
8446	soil	--	X
8447	soil	X	X
8448	soil	X	X

(continued next page)

X = Analysis has been provided for validation.
0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

(continued from page 2)

Sample Number	Sample Matrix	VOA	Pest/PCB
8433MS	soil	X	--
8433MSD	soil	X	--
8429MS	soil	--	X
8429MSD	soil	--	X

X = Analysis has been provided for validation.
0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. Deliverables

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes _____ No __X__

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY
__X__ Included in package
__O__ Not included and/or Not available
__NA__ Not applicable or Not required
__RS__ Provided as resubmission

__X__ Method blank spikes with each batch
__X/O__ Control chart developed by lab
__X/O__ Sample results - Form 1 or spreadsheet
__X/O__ CLP data flags used by laboratory
__X__ Sample chromatograms and mass spectra
__X__ Holding times (sampling, prep and analysis dates provided)
__X__ System monitoring Compounds (SMC) and Surrogate recoveries - Form 2
__X__ Matrix spike/matrix spike duplicate (MS/MSD) - Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
__X__ Method blank summary - Form 4
__X__ Report form for method blank results (Form 1 or spreadsheet)
__X__ GC/MS tuning - Form 5
__X__ Initial calibration data and Resolution Summary - Form 6
__X__ Continuing calibration data and Verification Summary - Form 7
__X__ Internal standard area summary and Analytical Sequence - Form 8
__X__ Pesticide Florisil Cartridge Check and GPC Calibration - Form 9

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines or SW846 holding time requirements. See the following table for a summarization of sample holding times.

Yes _____ No __X__

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or UJ).

Holding Time Summary

Sample Number	Sampling Date	VTSR	VOA Analysis	Pesticide Extract	Pesticide Analysis
8416	8/23/91	8/28	9/7 (*1)	---	---
8417	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8418	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8427	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8428	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8429	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8429 MS			X	---	---
8429 MSD			X	---	---
8430	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8431	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8432	8/23/91	8/28	9/7 (*1)	9/4 (*5)	10/2
8433	8/23/91	8/28	9/7 (*1)	9/4 (*5)	10/2
8433 MS			---	X	X
8433 MSD			---	X	X
8434	8/23/91	8/28	9/7 (*1)	9/4 (*5)	10/2
8435	8/23/91	8/26	9/7 (*1)	9/4 (*5)	10/2
8436	8/23/91	8/26	9/7 (*1)	9/4 (*5)	10/2
8443	8/23/91	8/28	---	9/4 (*5)	10/2
8444	8/23/91	8/28	---	9/4 (*5)	10/2
8445	8/23/91	8/28	---	9/4 (*5)	10/2
8446	8/23/91	8/28	---	9/4 (*5)	10/2
8447	8/23/91	8/28	9/7 (*1)	9/4 (*5)	10/2
8448	8/23/91	8/28	---	---	---
8416 DL	8/23/91	8/28	---	9/4 (*5)	9/30
8448 DL	8/23/91	8/28	---	9/4 (*5)	10/2

X - indicates MS/MSD analysis was performed

III. GC/MS Tuning and Mass Calibration

The BFB and/or DFTPP performance results summaries were included for all samples, and were reported to be within specified criteria at the appropriate frequency.

Yes __X__ No _____

Comments: In the original submission the ratios for masses 177/176 were calculated incorrectly for both the initial tune on 7/19/91 and the continuing tune on 9/7/91. Instead of 100% as reported by the laboratory they should be 8.0% and 6.8% respectively. The laboratory has provided corrected Forms 5A as resubmissions.

IV. A. Instrument Calibration (Volatiles)

1. The instrument response factor (RRF) data summaries were reviewed for the initial and continuing calibrations. All information was present and reported on the required summary forms. Response factors met the required criteria for volatile analyses, thus no data have been qualified.

Yes _____ No __X__

Comments: The RRF values outside of data validation guideline specifications are listed below. All volatile compounds have been reviewed with a control limit of 0.050 being used as a minimum response factor. (NOTE: This procedure has been used by the reviewer in order to prevent the qualification of compounds that had acceptable response factors.) The following out-of-control calibration compound(s) have resulted in associated sample data being flagged as estimated (J or UJ) or in those instances where a response factor of <0.050 was reported the data for the compound has been rejected (R) if reported as undetected in the sample. All samples have been affected.

Other compounds	Control Limit	Init. Cal. Date / RRF	Cont. Cal. Date / RRF
2-butanone	0.050	7-19/0.049	9-7/0.046

It is noted by the reviewer that 2-butanone has a minimum RRF of 0.010 according to the SOW 3/90. While contractually compliant, a significant calibration problem is demonstrated and all 2-butanone results have been qualified per Functional Guidelines criteria.

2. The percent relative standard deviation (%RSD) for the initial calibrations and the percent difference (%D) for the continuing calibrations were reviewed. The %RSD and %D values reported met the data validation criteria (i.e., < 30 %RSD and < 25 %D) for volatile analyses, thus no data have been qualified.

Yes __X__ No _____

Comments: No comments.

B. Instrument Calibration (Pesticide/PCB)

1. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes _____ No __X__

Comments: The compliant and non-compliant %RSD values found to be above 20% are summarized on the attached Table 1-P. A data validation specification of 20% RSD for any compound identified, has been applied for the column used in quantifying the sample result(s).

2. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes __X__ No _____

Comments: No comments.

3. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes _____ No __X__

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

4. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes _____ No __X__

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

5. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes _____ No __X__

Comments: The retention times for a majority of compounds analyzed on the DB-17 column did not meet the specified criteria as stated in the SOW. In addition, all surrogate retention times for calibration verification standards must be within retention time windows established in the initial calibration. In many instances, this criteria was not met. The reviewer considers this deficiency to be non-compliant with SOW 3/90. All data is qualified due to holding times and no additional qualifiers have been added to the sample data on the basis of retention time problems.

6. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses.

Yes _____ No __X__

Comments: The following breakdown criteria was not met:

		% Breakdown			
Calibration	Column	DDT	Endrin	Combined	Affected Samples
Initial, 09/27/91	DB-608	---	--	30.8	All
Initial, 10/3/91	DB-17	---	30.6	30.6	All
Verification, 09/30/91	DB-608	---	--	32.5	8428DL, 8429, 8430, 8431, 8416DL

Calibration	Column	% Breakdown DDT	Endrin	Combined	Affected Samples
Verification, 10/01/91	DB-608	---	23.4	40.9	8432, 8433
Verification 10/05/91	DB-17	---	77.8	--	All

No additional qualifiers have been assigned to the data.

8. The florisil cartridge check and when applicable, the GPC calibration were found to be within specified criteria.

Yes __X__ No _____

Comments: No comments.

9. The retention times for the surrogates were within criteria for every sample.

Yes _____ No __X__

Comments: An asterisk (*) on the following table indicates that the surrogate retention time was outside the established retention time windows. The reviewer has considered these sample analyses as non-compliant; however, no further qualifiers have been applied.

Form C-N

Sample No.	TCX 1	TCX 2	DCB 1	DCB 2
8416DL		*	*	*
8417		*		*
8418		*		*
8427		*		*
8428DL		*		*
8429		*	*	*
8430		*	*	*
8431		*	*	*
8432		*		*
8433		*		*
8433MS		*		*
8433MSD		*		*
8434		*		*
8435		*		*
8436		*		*
8443		*		*
8444DL	*	*	*	*
8445		*		*
8446		*		*
8447		*		*
8448DL		*		*
PBLK1		*		*

V. Blanks

A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes _____ No __X__

Comments: Contaminant quantities reported in the laboratory preparation blanks are listed below. Associated samples which have been flagged "UJ" due to the blank contaminants are also shown.

Blank ID	Compound	Amount	Affected Samples
VBLK1	methylene chloride	6 J µg/kg	all
VBLK1	unknown - RT=22.8 min	4 µg/kg	none

B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes _____ No _____ Not Identified _____

Comments: No trip blanks were included in this data package.

C. Other Blanks - No other types of blanks have been identified in the data package.

VI. Surrogate Recovery

The surrogate recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes _____ No __X__

Comments: Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.

VII. Blank Spike - Laboratory Control Sample(s)

A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes __X__ No _____

Comments: The blank spikes for for both volatile and pesticide/PCB analyses were spiked with the matrix spike compounds. Matrix spike control limits were applied by the reviewer for the volatile analysis.

B. Laboratory control charts were provided in the package for blank spike compounds.

Yes _____ No __X__

Comments: Control charts provided by the laboratory for the VOA analysis were for surrogates not LCS/blank spike results.

VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes __X__ No _____

Comments: Sample 8429 was used for MS/MSD for volatile organics analysis. Sample 8433 was used for Pesticide/PCB MS/MSD.

IX. Additional Comments

1. It was noted by the reviewer that CRQL's have not been adjusted to SOW 3/90 levels for most VOA compounds.

2. No volatile organics analysis results were found for Sample 8448. Although it is indicated as requiring this analysis on the Chain of Custody and the Case Narrative.

3. Several contract requirements were not met by the laboratory for the Pesticide/PCB analysis. These deficiencies are noted in the following sections: Section IV.B.4, Section IV.B.6, Section IV.B.7 and Section IV.B.9.

4. The laboratory reported the higher of the two values from the two columns for the Pesticide/PCB analyses. This procedure is specifically not allowed as stated in the 3/90 SOW.

5. GC/MS confirmation was not indicated by the laboratory for the following samples 8416DL, 8417, 8418, 8427, 8428DL, 8443 and 8445. The laboratory did not flag positive hits in these samples with a "C".

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.

R - Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.

J - The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.

B - The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.

JN - Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

CCJM
ENVIRONMENTAL ENGINEERS & SCIENTISTS

SILVER SPRING
CHICAGO
DENVER
DETROIT
GRAND RAPIDS

MEMORANDUM

TO: Jamie Bruton, URS/Seattle

FROM: Roger Simon, Jeralyn Guthrie, Richard Cheatham, CCJM/Denver

DATE: December 5, 1991

DOCUMENT NO: 072NCRAI.MEM

SUBJECT: Volatile Organics Tuning Problems for CTO-051

Per our conversation of 12/5/91, please find herein a detailed description of tuning problems found with all volatile organics analyses performed at Eureka Laboratories for CTO-051. These data packages are considered "on hold" until these issues have been resolved. Data packages have been identified by TDCN numbers and SDG.

1. For all CTO-051 data packages with volatile organics analyses (SDG 8449/TDCN 3001421, SDG 8484/TDCN 301210, SDG 8401/TDCN 3001436 and SDG 8416/TDCN 3001439), the values reported for the percent relative abundance of masses 177/176 were incorrectly reported as 100% on the Form V Tuning Summaries. This appeared to be a computer error since calculation of this ratio by the reviewer resulted in acceptable tunes. The laboratory should provide corrected summary forms.

2. In SDG 8484/TDCN 3001210, the relative abundance for masses 176/174 was reported and found by the reviewer to be 119.4%. Since there is no expanded criteria for this critical ratio, all data will have to be qualified as unusable (R); raw data to verify the values reported on the Form V Tuning Summary were not included with the Level C data package, so it could not be determined whether the reported ratio was a transcription problem with the base mass percentages reported for m/z 174 and 176, software problem or something else. Please indicate if a calculation/transcription problem existed and provide a corrected summary form or the correct values for masses 176 and 174.

If you should have any questions, please do not hesitate to call us at (303) 987-2928.

cc: URS / Navy Clean PF

VG RAC

RESUBMISSION 12/19/91 AKA

URS **MEMORANDUM** C.C.J.M. | Date 12-18-91 | Page 1 of 1

TO: CCJM

215 Union Blvd. Suite 415

Lakewood, CO 80228

ATTENTION: ~~Rolf Reindt~~ Geralyn Guthrie

FROM: URS Consultants, Inc.

1100 Olive Way, Suite 200

Seattle, Washington 98101-1832

BY: Analytical Support Activities

PHONE: (206) 623-1800 FAX: (206) 233-9570

SUBJECT: Resubmitted FORM I for Volatile Analysis by Eureka Laboratories Inc for CTO-51

Please find the above referenced resubmitted Form I for volatile analysis. They are for four (4) separate SDG numbers and are as follows:

1.	Eureka	SDG: 8401	URS TDCN: 3001436
2.	Eureka	SDG: 8416	URS TDCN: 3001439
3.	Eureka	SDG: 8449	URS TDCN: 3001421
4.	Eureka	SDG: 8484	URS TDCN: 3001210

C.C.J.M. RECEIVED DEC 19 1991

If you have any questions, please feel free to call any time.

DISTRIBUTION: Lab File

Sincerely Yours,

W. J. Burton, PhD

URS CONSULTANTS

I. SDG NARRATIVE

URS TDM
3001439

Laboratory Name: Eureka Laboratories, Inc.
Lab Certification Number: E765
SDG Number: 8416
Purchase Order Number: AN-91-P-0019
Contract Task Order Number: 0051
NEESA QA/QC Level C
Analysis: Initial
Sample No.: 19

A. Sample Description/Analytical Description

Client ID	Lab ID	Date Sampled	Date Received	Matrix	Analysis/Method
8416	9108219-4A	08/23/91	08/28/91	Soil	VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW
8417	9108219-5A	08/23/91	08/28/91	Soil	Same as above
8418	9108219-6A	08/23/91	08/28/91	Soil	Same as above
8427	9108219-15A	08/23/91	08/28/91	Soil	Same as above
8428	9108219-16A	08/23/91	08/28/91	Soil	Same as above
8429	9108219-18A	08/23/91	08/28/91	Soil	Same as above
8430	9108219-19A	08/23/91	08/28/91	Soil	Same as above
8431	9108219-20A	08/23/91	08/28/91	Soil	Same as above
8432	9108219-22A	08/23/91	08/28/91	Soil	Same as above
8433	9108219-23A	08/23/91	08/28/91	Soil	Same as above
8434	9108219-24A	08/23/91	08/28/91	Soil	Same as above
8435	9108219-25A	08/23/91	08/28/91	Soil	Same as above
8436	9108219-26A	08/23/91	08/28/91	Soil	Same as above
8443	9108219-33A	08/23/91	08/28/91	Soil	P/PCBs/3-90 CLP SOW
8444	9108219-34A	08/23/91	08/28/91	Soil	P/PCBs/3-90 CLP SOW
8445	9108219-35A	08/23/91	08/28/91	Soil	P/PCBs/3-90 CLP SOW
8446	9108219-36A	08/23/91	08/28/91	Soil	P/PCBs/3-90 CLP SOW
8447	9108219-37A	08/23/91	08/28/91	Soil	VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW
8448	9108219-38A	08/23/91	08/28/91	Soil	VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW

B. Sample Receipt

Samples were received in one delivery batch on August 28, 1991. Samples were in good condition. Sample receipt condition , sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bill. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Number 91-08-219.

C. Quality Control Report

Volatile Analysis by 3/90 CLP SOW

Method Blank

Mythylene Chloride, a common laboratory introduced contaminant, was found in the method blank as well as in the sample. The concentration of Methylene Chloride found in the method blank was 6 ppb (ug/Kg) as compared to 7-8 ppb (ug/Kg) detected in the samples. Therefore, if the blank is subtracted from the sample, the real concentration of Methylene Chloride in the samples would be below the detection limit.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

2. Pesticide/PCB by 3/90 CLP SOW

Higher CRQL for Sample No. 8416, 8428, 8444, and 8448 is due to high analyte concentration.

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (1) Telecation Software used the Response Factor for the 0.1 ppm standards of the Aroclors analyzed in the initial calibration. (2) ELI manual worksheet used the response factors for 2 ppm standards of the Aroclors which were analyzed after the sample analyses and used for confirmation per 3/90 CLP SOW.

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.

ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEM02 (Performance Evalutation Mixture #2), PEM08, PEM10, and PEM12 from the first column analysis exceeded the limit by 0.8%, 2.5%, 11%, and 10.9% respectively. The % combined breakdown for PEM01 and PEM02 from the second column analysis exceeded the limit by 0.6% and 5.2%.

The % breakdown of Endrin for PEM01, PEM02, PEM04, PEM06, and PEM12 from the 2nd column analysis exceeded the limit by 10.6%, 12.6%, 1.4%, 7.8%, and 3.4%. The % breakdown of 4-4'-DDT for PEM10 from the 1st column analysis exceeded the limit by 1.2%.

Calibration Verification

There is a total of seventeen continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence.

RPD value of gamma-BHC (Lindane) for PEM10 (Performance Evaluation Mixture #10) from the 1st column analysis, beta-BHC for PEM 04 and alpha-BHC for PEM02 from the 2nd column analysis exceeded the control limit by a margin of 1.1%, 1.1%, and 8.9%.

RPD value of Endosulfan II, Endosulfan sulfate, Endrin Ketone and Endrin Aldehyde for INDAM 05 (Individual Standard Mixture A medium level #5) from the 2nd column analysis exceeded the QC limits by a margin of 1%, 3%, 4%, and 1%.

RPD value of Endrin and DCB for INDAM07 from the 2nd column analysis exceeded the QC limits by 1% and 15% respectively.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

DCB was slightly outside the Surrogate Retention Time (RT) window in eight analyses for the 1st column analysis. TCX and DCB were slightly ouside the RT window in twenty nine and thirty three analyses respectively for the 2nd column analysis.

Surrogate Recovery

The % recoveries of DCB for Sample Nos. 8429, 8431, 8432, 8433, 8433 MSD, 8435, 8436, 8443, 8446, and 8447 from the 2nd column analysis were high due to over integration caused by raised baseline. If peak height is used for the calculation, the spike % recoveries would be within the control limit. The DCB and TCX recoveries were out of the advisory limit for Sample No. 8416DL, 8428DL, 8444DL, and 8448DL due to high analyte concentrations and dilutions.

The % recoveries of TCX for Sample No. 8418, 8427, 8432, 8433, 8434, 8435, 8436, and 8445 were slightly outside the advisory QC limit. The % recovery of TCX for Sample No. 8447 was low due to water bath temperature too high during the concentration step of sample preparation.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 8443 and 8416DL.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Shao-Pin Yo, Ph.D.
Laboratory Director

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Street Address: [illegible]

City: SEATTLE

State:

ZIP Required:

To (Recipient's Name) Please Print: Richard Cheatham

Recipient's Phone Number (Very Important): (303)

Company: CCJM

Department/Floor No: Suite 215

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 215 Union Boulevard

City: Lakewood

State: CO

ZIP Required: 80228

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CTR-51 30510.12

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City: State: ZIP Required:

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4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)	Standard Overnight (Delivery by next business afternoon†)
11 [ ] YOUR PACKAGING	51 [ ] YOUR PACKAGING
16 [ ] FEDEX LETTER *	56 [ ] FEDEX LETTER *
12 [ ] FEDEX PAK *	52 [ ] FEDEX PAK *
13 [ ] FEDEX BOX	53 [ ] FEDEX BOX
14 [ ] FEDEX TUBE	54 [ ] FEDEX TUBE
Economy Two-Day (Delivery by second business day†)	**Government Overnight** (Restricted to authorized users only)
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	41 [X] GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
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† Delivery commitment may be later in some areas
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4 [ ] DANGEROUS GOODS (Extra charge)
5 [ ]
6 [ ] DRY ICE Lbs
7 [ ] OTHER SPECIAL SERVICE
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra charge)
10 [ ]
11 [ ]
12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE
1	20	NA
Total 1	Total 20	Total NA

DIM SHIPMENT (Chargeable Weight) [ ] lbs
[ ] x [ ] x [ ] = [ ]
Received At
1 [X] Regular Stop 3 [ ] Drop Box
2 [ ] On-Call Stop 4 [ ] BSC 5 [ ] Station

7 Release Signature
FedEx Emp. No Date/Time

Emp. No Date
[ ] Cash Received
[ ] Return Shipment
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Street Address
City State Zip
Received By
X
Date/Time Received FedEx Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 6/91
PART #137204 FXEM 9/91
FORMAT #099
099
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TABLE 1 (3/90, OLM01.8)
VOA Qualifier Summary
Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed: 9/7/91

Instrument ID: VOA 2

Method Blank ID: V BLK 1
Date:_____ Time:_____

Sample Identifier:	Hold Time Out		Standards: (↑, ↓; ↓↓=<10%) ✓ SMCs			Internal (IS)		
	Ar	All	1	2	3	1	2	3
8416								
8417								
8418								
8427								
8428								
8429								
8429 ms								
8429 msd								
8430								
8431								

ICal 9:13 and 14:24 CCal
Date: 7/19/91 Time: 9/7/91 7:04

* RRF must be ≥ .010 *System Monitor Compound COMPOUND:	MIN RRF	Initial Cal. RRF < MIN	Initial Cal. %RSD >20.5	Continuing Cal. RRF < MIN	Continuing Cal. %D >25	Blanks Method	Blanks Trip	Qualifiers (+/-)	Internal Standard
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					6 J		UJ	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049		0.046				R	
1,1,1-Trichloroethane	.100								2
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8 ¤	*								3
Bromofluorobenzene ¤	.200								3
1,2-Dichloroethane-d4 ¤	*								1

Blank Tentatively Identified Compounds

Blank ID	Reported as:	RT	(µg/kg or µg/L)	Qualifiers
V BLK1	unknown	22.8	4 ug/kg	UJB

TABLE 1 (3/90, OLM01.8)
VOA Qualifier Summary
Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed: 9/7/91

Instrument ID: VOA 2

Method Blank ID: VBLK1
Date:_____ Time:_____

Sample Identifier:	Hold Time Out		Standards: (↑, ↓; ↓↓=<10%) ✓ SMCs			Internal (IS) ✓		
	Ar	All	1	2	3	1	2	3
8432								
8433								
8434								
8435								
8436								
8447								

ICal Date: 7/19/91 Time: 9:13 and 14:24 CCal Date: 9/7/91 Time: 7:04

* RRF must be ≥ .010 ¤System Monitor Compound COMPOUND:	MIN RRF	Initial Cal. RRF < MIN	Initial Cal. %RSD >20.5	Continuing Cal. RRF < MIN	Continuing Cal. %D >25	Blanks Method	Blanks Trip	Qualifiers (+/-)	Internal Standard
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					6 J		UJ	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049		0.046				R	
1,1,1-Trichloroethane	.100								2
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8 ¤	*								3
Bromofluorobenzene ¤	.200								3
1,2-Dichloroethane-d4 ¤	*								1

Blank Tentatively Identified Compounds

Blank ID	Reported as:	RT	(µg/kg or µg/L)	Qualifiers
VBLK1	unknown	22.8	4 ug/kg	UJ

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/30/91-10/03/91

Instrument ID: HP 5890

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
8417						X					
8418						X					
8427						X					
9478DL							X				
8429							X				
8430							X				
8431							X				
8416DL								X			
8432											X
8433										X	X

M24

*≥60% Resolved X ♦≥60% Resolved X §≥60% Resolved /
in Initial Resolution Check

DB-608 ✓ or Equivalent	9/27/91 Initial %RSD>20	Calibrations: Continuing: RPD > 25% *								
	↓	PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→ 09	Day→	29	30	30	01	01	02	02		
COMPOUND↓	Time→	2124	0617	2103	0617	2105	0737	2035		
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦	20.5									J-C / -
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor *										
Endrin Ketone *										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)										
Decachlorobiphenyl (DCB)				CT					CT	

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/24/91
09/30/91
10/01/91 - 10/03/91

Instrument ID: HP 5890

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec.(%) TCX	Surr. Rec.(%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
8434											X
8435											X
8436											X
8443											X
8445											X
8446											X
8447											X
8448 DL											X
8444 DL			0	0	NONE						X
8433 MS					NONE						
8433 MSD					NONE						

*≥60% Resolved X ♦≥60% Resolved X §≥60% Resolved X
in Initial Resolution Check

DB-608 or Equivalent ✓	Initial %RSD>20	Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→	09-10 Day→	24	30	~~09~~ 30	01	02	03	03		
COMPOUND↓	Time→	2124	0817	2103	0817	2105	0757	2027		
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦	20.5									J- C / -
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor *										
Endrin Ketone *										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)										
Decachlorobiphenyl (DCB)				RT					RT	

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/04/91 - 10/06/91

Instrument ID: VARIAN 6000

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
8416 DL						X					
8417						X					
8418						X					
8427						X					
8428 DL						X					
8429						X					
~~8430~~ 8430						X					
8431						X					
8432						X					
8433						X					

*≥60% Resolved ✓ ♦≥60% Resolved ✓ in Initial Resolution Check

DB-1701 ✓ or Equivalent 06-17	Initial %RSD>20	Calibrations: Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→ 10	Day→	04	05							
COMPOUND↓	Time→	0527	1529							
alpha-BHC										
beta-BHC	20.2	26.6								J-C / -
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin										
4,4'-DDE										
Endrin	21.4	38.1	26.0							J-C / -
Endosufan II										
4,4'-DDD										
Endosufan sulfate *	26.0									J-C / -
4,4'-DDT										
Methoxychlor *										
Endrin Ketone	37.4									J-C / -
Endrin Aldehyde	26.0									J-C / -
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)	✓	RT								
Decachlorobiphenyl (DCB)		RT	40, RT							

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/04/91 - 10/06/91

Instrument ID: VARIAN 6000

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	Hold Time Out Ext	Hold Time Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
9434						X					
9435						X					
9436						X					
9443						X					
9444OL			O	O	NONE						
9445					NONE						
9446					NONE						
9447					NONE						
9448OL					NONE						
9433 MS					NONE						
9433 MSD					NONE						

≥60% Resolved X ≥60% Resolved X in Initial Resolution Check

DB-1701 or Equivalent 96-17	10/03/91 Initial %RSD>20	Calibrations: Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→ 10	Day→	05	05							
COMPOUND↓	Time→	0527	1829							
alpha-BHC										
beta-BHC	20.2	24.6								J-C/-
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin										
4,4'-DDE										
Endrin	21.4	38.1	26.0							J-C-
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate *	26.0		NO STD							J-C/-
4,4'-DDT										
Methoxychlor *										
Endrin Ketone	37.4									J-C/-
Endrin Aldehyde	26.0									J-C/-
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)	-	RT								
Decachlorobiphenyl (DCB)	-	RT	40 RT							

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 1 of 3

VOA FRACTION

All OK

A. Sample Numbers																		
B. Surrogate(s) outside QC limits (show %R)	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3
C. Compound less than 10%? (Y/N)																		
D. Initial Analysis Qualifiers																		
E. Reanalysis required? (Y/N)																		
o If blank, were associated samples reanalyzed? (Y/N)																		
F. Sample Number for reanalysis.																		
G. Reanalysis surrogates outside limits (show % R)																		
H. Reanalysis qualifiers.																		

QC Limits (%R)	SOIL	WATER
VOA S1 = Toluene-d8	84-138	88-110
VOA S2 = Bromofluorobenzene	59-113	86-115
VOA S3 = 1,2-Dichloroethane-d4	70-121	76-114

A:\SURROG-1.WK3

NOTE: The circled sample number is the analysis/reanalysis recommended for use.

ACID FRACTION

le Numbers																				
ogate(s) outside imits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
ound less than 10%? (Y/N)																				
alysis required? (Y/N)																				
blank, were associated ples reanalyzed? (Y/N)																				
fat Analysis Qualifiers																				
le Number for reanalysis.																				
alysis surrogates outside ts (show % R)																				
xtraction required? (Y/N)																				
blank, were associated ples re-extracted? (Y/N)																				
le number for re-extract.																				
xtraction outside limits w % R)																				
alysis qualifiers.																				

QC Limits (%R)	SOIL	WATER
= Phenol-d6	24-113	10-110
= 2-Fluorophenol	25-121	21-110
= 2,4,6-Tribromophenol	19-122	10-123
= 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

ole Numbers	8416 DL		8417		8418		8427		8428 DL		8429	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
imits exceeded (show %R)	0 /53.9	244 /-			48.6/45.0	37.1/	/58.8		40.9/54.4	92/(?)		/196
ifier, if applied.	J-S/R-S	J-S/-			J-C/-	J-C/-	J-C/-		J-S/-	J-S/-		J-S/-

its (%R)	SOIL	WATER
ide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
ide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

.L\SURROG-2.WK3

ACID FRACTION

ple Numbers																								
rogate(s) outside imits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
ound less than 10%? (Y/N)																								
nalysis required? (Y/N)																								
blank, were associated mples reanalyzed? (Y/N)																								
rial Analysis Qualifiers																								
ple Number for reanalysis.																								
nalysis surrogates outside its (show % R)																								
extraction required? (Y/N)																								
blank, were associated mples re-extracted? (Y/N)																								
ple number for re-extract.																								
extraction outside limits ow % R)																								
nalysis qualifiers.																								

QC Limits (%R)	SOIL	WATER
4 = Phenol-d6	24-113	10-110
5 = 2-Fluorophenol	25-121	21-110
6 = 2,4,6-Tribromophenol	19-122	10-123
7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

ple Numbers	8430		8431		8432		8433		8433MS		8433MSD	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
limits exceeded (show %R)				42/218	53/58	44/162	32/36	41/165	/57	42/		41/171
ualifier, if applied.				J-S/-	J-S/-	J-S/-	J-S/-	J-S/-	J-S/-	J-S/-		J-S/-

its (%R)	SOIL	WATER
ide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
ide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

LL\SURROG-2.WK3

ACID FRACTION

mple Numbers																				
rrogate(s) outside limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
mpound less than 10%? (Y/N)																				
analysis required? (Y/N)																				
f blank, were associated amples reanalyzed? (Y/N)																				
~~Trial Analysis Qualifiers~~																				
mple Number for reanalysis.																				
analysis surrogates outside mits (show % R)																				
-extraction required? (Y/N)																				
f blank, were associated amples re-extracted? (Y/N)																				
mple number for re-extract.																				
-extraction outside limits how % R)																				
analysis qualifiers.																				

QC Limits (%R)	SOIL	WATER
S4 = Phenol-d6	24-113	10-110
S5 = 2-Fluorophenol	25-121	21-110
S6 = 2,4,6-Tribromophenol	19-122	10-123
S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

mple Numbers	8434		8435		8436		8443		8444DL		8445	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
: limits exceeded (show %R)	57/55	31/	47/47	37/190	57.6/	48.5/162		78/186	0/0	0/0	38.1/48.5	28.4/
ualifier, if applied.	J-S/-	J-S/-	J-S/-	J-S/-	J-S/-	J-S/-		J-S/-	J-S/R-S	J-S/R-S	J-S/-	J-S/-

imits (%R)	SOIL	WATER
icide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
icide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

HELL\SURROG-2.WK3

ACID FRACTION

Sample Numbers																						
Surrogate(s) outside QC limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Compound less than 10%? (Y/N)																								
Reanalysis required? (Y/N)																								
If blank, were associated samples reanalyzed? (Y/N)																								
Initial Analysis Qualifiers																								
Sample Number for reanalysis.																								
Reanalysis surrogates outside limits (show % R)																								
Re-extraction required? (Y/N)																								
If blank, were associated samples re-extracted? (Y/N)																								
Sample number for re-extract.																								
Re-extraction outside limits (show % R)																								
Reanalysis qualifiers.																								

QC Limits (%R)	SOIL	WATER
id S4 = Phenol-d6	24-113	10-110
id S5 = 2-Fluorophenol	25-121	21-110
id S6 = 2,4,6-Tribromophenol	19-122	10-123
id S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8446		8447		8448 DL		PBLK1					
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)		/186	3.3/4.8	44.4/229	/0	761.9/0						
Qualifier, if applied.		J-S/-	J-S/-	J-S/-	J-S/R-S	J-S/R-S						

Limits (%R)	SOIL	WATER
sticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
sticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

\SHELL\SURROG-2.WK3

CCJM

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S/ST/DV

SILVER SPRING
CHICAGO
DENVER
DETROIT
GRAND RAPIDS

DOCUMENT NO.: 074NCODS.RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

Case No. 0051 URS TDCN 3001424 Project No. CTO-051

Site Name Saint Lawrence Island, Alaska Project Name N.E. Cape

Contract Laboratory Eureka Laboratories, Inc.

Sample Delivery Group (SDG) 8419 Sampling Date (Month/Year) 8/91

Sample Matrix 10 wipes

Type of Analyses/Special Request Pesticide/PCB (see page 2)

Data Reviewer Alan Alai Date 12/28/91

QA Review by Jeralyn Guthrie Date 12/28/91

CCJM Approval by Richard Cheatham Date 12/28/91

Telephone logs/correspondence attached? Yes ____ No X Not Appl. ____

Laboratory case narrative attached? Yes X No ____ Not Avail. ____

Required deliverables provided? Yes ____ No ____ Not Appl. ____

Airbill enclosed? Yes X No ____ Not Avail. ____

CLP SOW used by laboratory for analysis 3/90, REV OLMO1.8

Note:

— The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, The EPA's Functional Guidelines for Organics Validation and project specific references have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.

— Please see data flagging definitions on the last page of this report.

Sample Number	Sample Matrix	Pest/PCB
8419	wipes	X
8420	wipes	X
8421	wipes	X
8422	wipes	X
8437	wipes	X
8438	wipes	X
8472	wipes	X
8473	wipes	X
8474	wipes	X
8475	wipes	X

X = Analysis has been provided for validation.
0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. Deliverables

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes _____ No __X__

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY
__X__ Included in package
__O__ Not included and/or Not available
__NA__ Not applicable or Not required
__RS__ Provided as resubmission

__X__ Method blank spikes with each batch
__X__ Control chart developed by lab
__X__ Sample results - Form 1 or spreadsheet
__O__ CLP data flags used by laboratory
__X__ Sample chromatograms and mass spectra
__X__ Holding times (sampling, prep and analysis dates provided)
__X__ Surrogate recoveries - Form 2
__X__ Matrix spike/matrix spike duplicate (MS/MSD) - Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
__X__ Method blank summary - Form 4
__X__ Report form for method blank results (Form 1 or spreadsheet)
__NA__ GC/MS tuning - Form 5
__X__ Initial calibration data and Resolution Summary - Form 6
__X__ Continuing calibration data and Verification Summary - Form 7
__X__ Internal standard area summary and analytical sequence - Form 8
__X__ Pesticide Florisil Cartridge Check and GPC Calibration

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines. See the following table for a summarization of sample holding times.

Yes _____ No __X__

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or UJ).

Holding Time Summary

Sample Number	Sampling Date	VTSR	Pesticide Extract	Pesticide Analysis
8419 DL	8/23/91	8/28	09/04 *(5)	10/02
8420	8/23/91	8/28	09/04 *(5)	09/30
8421	8/23/91	8/28	09/04 *(5)	09/30
8422 DL	8/23/91	8/28	09/04 *(5)	09/30
8437	8/23/91	8/28	09/04 *(5)	09/30
8438	8/23/91	8/28	09/04 *(5)	09/30
8472	8/23/91	8/27	09/04 *(5)	09/29
8473	8/23/91	8/27	09/04 *(5)	09/29
8474	8/23/91	8/27	09/04 *(5)	09/29
8475	8/23/91	8/27	09/04 *(5)	09/29

III. Instrument Calibration (Pesticide/PCB)

A. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes __X__ No _____

Comments: The compliant %RSD values found to be above 20% are summarized on the attached Table 1-P. A data validation specification of 20% RSD for any compound identified, has been applied for the column used in quantifying the sample result(s).

B. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes __X__ No _____

Comments: No comments.

C. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes _____ No __X__

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P

D. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes _____ No __X__

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P. Sample 8419DL was not bracketed with Individual Mixes A and B on the DB-17 column, 10/04/91.

E. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes _____ No __X__

Comments:

1. The retention times for a majority of compounds analyzed on the DB-17 column did not meet the specified criteria as stated in the SOW. No additional qualifiers were applied to the sample data since all samples are qualified on the basis of holding times.

2. In many instances, the surrogate retention times were not within the established retention time windows for the calibration verification standards. The reviewer considers this deficiency to be non-compliant with SOW 3/90.

F. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses.

Yes _____ No __X__

Comments: The following % Breakdown criteria were not met:

Calibration	Column	% Breakdown DDT	% Breakdown Endrin	% Breakdown Combined	Affected Samples
Initial, 10/02/91	DB-17	--	30.1	--	all
Verification, 09/30/91	DB-608	--	--	32.5	8474, 8475, 8420, 8421, 8437, 8438, 8422DL, 8419DL
Verification, 10/01/91	DB-608	21.0	--	41.0	8419DL

No additional qualifiers have been added to the sample data on the basis of DDT or Endrin breakdown.

G. The florisil cartridge check and when applicable, the GPC calibration were found to be within specified criteria.

Yes __X__ No _____

Comments: All samples were Florisil and GPC cleaned.

H. The retention times for the surrogates were within criteria for every sample.

Yes _____ No __X__

Comments: An asterisk of the following table indicates surrogate retention times outside (*) the established retention time windows:

Sample No.	TCX 1	TCX 2	DCB 1	DCB 2
8419DL		*		*
8420		*		*
8421		*		*
8422DL		*	*	*
8437		*		*
8438		*		*
8472		*		*
8473		*		*
8474		*		*
8475		*		*
MS		*		*
MSD		*		*
PBLK1		*		*

IV. Blanks

A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes __X__ No _____

Comments: No comments.

B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes _____ No _____ Not Identified __X__

Comments: No trip blanks were provided in this data package.

C. Other Blanks - No other types of blanks have been identified in the data package.

V. Surrogate Recovery

The surrogate recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes _____ No __X__

Comments: Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.

VI. Blank Spike - Laboratory Control Sample(s)

A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes __X__ No _____

Comments: The compounds used for the Pesticide/PCB blank spike were the matrix spike compounds, (gamma-BHC, Heptachlor, Aldrin, Dieldrin, Endrin and 4,4'-DDT)..

B. Laboratory control charts were provided in the package for the spike compounds and the limits specified by the control charts were used for review.

Yes __X__ No _____

Comments: The following spike analytes were reported to be outside control limits:

Spike Compound	% Recovery	Control Limits % Recovery
Aldrin	125	45 - 116
Dieldrin	132	50 - 130

No additional qualifiers have been applied to any samples on the basis of blank spike recoveries.

VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes _____ No __X__

Comments: No matrix spike and matrix spike duplicate results were found to be included in this data package.

VIII. Additional Comments

1. Several contract requirements were not met by the laboratory for the pesticide/PCB analyses. These deficiencies were noted in the following sections: Section III. Items D, E, F and H.

2. No "C" flags were shown by the lab in the data to indicate GC/MS confirmation. This indicates the probability that the GC/MS confirmation was not performed on any samples which have sufficiently high positive results.

3. The laboratory has reported the higher value from the two columns rather than the lower of the two values as specified by the 3/90 SOW.

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.

R - Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.

J - The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.

B - The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.

JN - Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

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Company: [illegible] Department/Floor No:

Street Address: [illegible]

City: Seattle State: ZIP Required:

2 To (Recipient's Name) Please Print: Richard Cheatham Recipient's Phone Number (Very Important): (303)

Company: CCJM Department/Floor No: Suite 215

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes): 215 Union Boulevard

City: Lakewood State: CO ZIP Required: 80228

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): CTQ-51 30510.12

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
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3 PAYMENT 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct No 3 [ ] Bill 3rd Party FedEx Acct No 4 [ ] Bill Credit Card
5 [ ] Cash/Check

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Priority Overnight (Delivery By next business morning†)		Standard Overnight (Delivery by next business afternoon†)	
11	YOUR PACKAGING	51	YOUR PACKAGING
16	FEDEX LETTER *	56	FEDEX LETTER *
12	FEDEX PAK *	52	FEDEX PAK *
13	FEDEX BOX	53	FEDEX BOX
14	FEDEX TUBE	54	FEDEX TUBE
Economy Two-Day (Delivery By second business day†)		**Government Overnight** (Restricted to authorized users only)	
30	ECONOMY	46	GOVT LETTER
		41 [X]	GOVT PACKAGE

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† Delivery commitment may be later in some areas
*Declared Value Limit $100
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2 [ ] DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) [ ] (Not available to all locations)
4 [ ] DANGEROUS GOODS (Extra charge)
5 [ ]
6 [ ] DRY ICE Lbs
7 [ ] OTHER SPECIAL SERVICE
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra charge)
10 [ ]
11 [ ]
12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE
1	20	NA
Total 1	Total 20	Total NA

DIM SHIPMENT (Chargeable Weight)
[ ] lbs
___ x ___ x ___ = ___

Received At
1 [X] Regular Stop 3 [ ] Drop Box
2 [ ] On Call Stop 4 [ ] BSC 5 [ ] Station

7 Release Signature:
FedEx Emp No Date/Time

Emp No Date
[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg To Del [ ] Chg To Hold
Street Address
City State Zip
Received By: X
Date/Time Received FedEx Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

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CASE NARRATIVE

CTO-0051

CTO-0051 consists of approximately 102 soil samples, 40 water samples, 14 concrete chips, and 10 wipe samples from Saint Lawrence Island, Alaska. Samples are to be analyzed by 3/90 CLP SOW for VOA and Pesticide/PCBs.

As of 9/25/91 a total of 6 SDG was received by Eureka Laboratories Inc. They are 8449, 8419, 8423, 8484, 8416, and 8401.

Details for sample description/analytical description, sample conditions, and quality control for rreceived samples are presented in the SDG Narratives.

I. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc.
Lab Certification Number: E765
SDG Number: 8419
Purchase Order Number: AN-91-P-0019
Contract Task Order Number: 0051
NEESA QA/QC Level C
Analysis: Initial
Sample No.: 10

A. Sample Description/Analytical Description

Client ID	Lab ID	Date Sampled	Date Received	Matrix	Analysis/Method
8419	9108219-7A	08/23/91	08/28/91	Wipe	P/PCBs/3-90 CLP SOW
8420	9108219-8A	08/23/91	08/28/91	Wipe	Same as above
8421	9108219-9A	08/23/91	08/28/91	Wipe	Same as above
8422	9108219-10A	08/23/91	08/28/91	Wipe	Same as above
8437	9108219-27A	08/23/91	08/28/91	Wipe	Same as above
8438	9108219-28A	08/23/91	08/28/91	Wipe	Same as above
8472	9108213-24A	08/23/91	08/27/91	Wipe	Same as above
8473	9108213-25A	08/23/91	08/27/91	Wipe	Same as above
8474	9108213-26A	08/23/91	08/27/91	Wipe	Same as above
8475	9108213-27A	08/23/91	08/27/91	Wipe	Same as above

B. Sample Receipt

Samples were received in two delivery batches on August 27 & 28, 1991. Samples were in good condition. Sample receipt conditions, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bills. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Numbers 91-08-213 and 91-08-219.

C. Quality Control Report

1. Pesticide/PCB by 3/90 CLP SOW

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (1) Telecation Software used the Response Factors of the Aroclors standards (0.1 ppm) analyzed in the initial calibration for the quantification. (2) ELI manual worksheet used the response factors of a higher concentration of Aroclor standards (2 ppm) which were analyzed after the sample run and used for confirmation per 3/90 CLP SOW.

Sample No. 8422 was analyzed at a dilution factor of 20 and a dilution factor of 1 by 1st column and 2nd column respectively. The concentration values reported on Form I was from the 1st column analysis.

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.

ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEM02 (Performance Evalutation Mixture #2), PEM08, and PEM10 from the first column analysis exceeded the limit by 8%, 2.5%, and 11% respectively.

The % combined breakdown for PEM01 from the second column analysis exceeded the limit by 0.6%.

Calibration Verification

There is a total of fifteen continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence as required by CLP protocol.

RPD value of gamma-BHC (Lindane) and beta-BHC for PEM 10 (Performance Evaluation Mixture #10) and PEM 04 exceeded the control limit by a margin of 1.1% and 8.9%.

RPD value of Endosulfan II, Endosulfan sulfate, Endrin Ketone and Endrin Aldehyde for INDAM 03 (Individual Standard Mixture A medium level #3) and INDAM 05 exceeded the QC limits.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

DCB was slightly outside the Surrogate Retention Time (RT) window in three analyses for the first column analysis. DCB and TCX were slightly ouside the RT window in twenty one and twenty two analyses respectively for the 2nd column analysis.

Surrogate Recovery

The % recovery of TCX for Sample No. 8438, 8473, 8474, and PBLK1 were out of the advisory QC limit. The % recoveries of DCB for Sample No. 8421 is high due to matrix interference. The DCB recoveries were out of the advisory limit for Sample No. 8419 DL, and 8422 DL, due to dilutions.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I without P flag.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 8420, 8421, 8437, 8438, and 8475.

Spike and Spike Duplicate:

The % Recovery and % RPD of Heptachlor for Reagent Spike and Reagent Spike Duplicate exceeded the QC limit by a margin of 5% and 1% respectively.

No matrix spike or matrix spike duplicate were analyzed due to insufficient sample provided.

CRQL and Reporting Units

CRQL for wipe samples is 0.051 - 5.1 ug/wipe or 51 - 5100 ng/wipe. The unit in the hard copy reports for SDG 8419 is ng/wipe, however, the unit in the disc deliverables remains as ug/Kg because it cannot be corrected due to the limitation of the Telecation software.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Samarakumar for
Shao-Pin Yo, Ph.D.
Laboratory Director

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/28/90 - 10/02/91

Instrument ID: HP 5890

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/90

Sample Identifier:	Hold Time Out Ext	Hold Time Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
MS (REAGENT)						X					
MSD (REAGENT)							X				
9472							X				
9473							X				
8474								X			
8475								X			
8420								X			
8421								X			
8437								X			
8438								X			

*≥60% Resolved ✓ ♦≥60% Resolved ✓ §≥60% Resolved ✓
in Initial Resolution Check

DB-608 or Equivalent

Calibrations: 09/27/91

COMPOUND	Initial %RSD>20	Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→	Day→	28	29	29	30	30	01	01		
	Time→	2053	0819	2047	0417	2021	0917	2020		
alpha-BHC		✓	✓	✓	✓	✓	✓	✓		
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)								26.1		UJ/-
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦	20.5									UJ/-
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor *										
Endrin Ketone *										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)										
Decachlorobiphenyl (DCB)			25.0		RT					

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/28/91 - 10/02/91

Instrument ID: HP 5890

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
8422DL										X	
84ADL					NONE						

*≥60% Resolved ✓ ♦≥60% Resolved ✓ §≥60% Resolved ✓
in Initial Resolution Check

DB-608 ✓ or Equivalent _____

Calibrations: 09/27/91

COMPOUND ↓	Initial %RSD>20	Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→ 9	Day→	28	29	29	30	30	01	01		
	Time→	2033	0219	2047	0917	2021	0917	2020		
alpha-BHC		✓								
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)								26.1		UJ-/-
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦	20.5									UJ/-
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor *										
Endrin Ketone *										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)										
Decachlorobiphenyl (DCB)		25.0								

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/04/91

Instrument ID: VARIAN 6000

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	Hold Time Out Ext	Hold Time Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
8472						X					
8473						X					
8474						X					
8475						X					
8419 DL						X					
8420						X					
8421						X					
8422						X					
8437						X					
8438						X					

*≥60% Resolved ✓ ♦≥60% Resolved ✓
in Initial Resolution Check

DB-1701 or Equivalent 06-17

Calibrations: 10/02/91 ~~09/27/91~~ AKA

Compound	Initial %RSD>20	Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→	10	04	04							
COMPOUND↓	Time→	0445	1708							
alpha-BHC										
beta-BHC	20.3	33.9								UJ/—
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin										
4,4'-DDE										
Endrin	21.4									UJ/—
Endosulfan II			26.0							
4,4'-DDD										
Endosulfan sulfate *	26.0		28.0							UJ/—
4,4'-DDT										
Methoxychlor *										
Endrin Ketone	34.27 **		29.0							UJ/—
Endrin Aldehyde	26.0		26.0							UJ/—
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)	✓									
Decachlorobiphenyl (DCB)	✓									

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

ABLE 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 3 of 3

ACID FRACTION

A. Sample Numbers																							
B. Surrogate(s) outside QC limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
C. Compound less than 10%? (Y/N)																							
D. Reanalysis required? (Y/N)					N/A																		
E. If blank, were associated samples reanalyzed? (Y/N)					N/A																		
F. Initial Analysis Qualifiers																							
G. Sample Number for reanalysis.																							
H. Reanalysis surrogates outside limits (show % R)																							
I. Re-extraction required? (Y/N)																							
J. If blank, were associated samples re-extracted? (Y/N)																							
K. Sample number for re-extract.																							
L. Re-extraction outside limits (show % R)																							
M. Reanalysis qualifiers.																							

QC Limits (%R)	SOIL	WATER
Acid S4 = Phenol-d6	24-113	10-110
Acid S5 = 2-Fluorophenol	25-121	21-110
Acid S6 = 2,4,6-Tribromophenol	19-122	10-123
Acid S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

A. Sample Numbers	8472		8473		8474		8475		MS (Reagent)		MSD (Reagent)	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
B. QC limits exceeded (show %R)	-/-	-/-	37.5/35.0	-/40	37.5/32.5	-/-	-/-	-/-	-/-	45/-	-/-	-/-
C. Qualifier, if applied.			J/UJ	J/UJ	J/UJ							

QC Limits (%R)	SOIL	WATER
Pesticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
Pesticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

A:\SHELL\SURROG-2.WK3

PBLK1

S1	S2
-/-	40/-

ACID FRACTION

Sample Numbers																								
Surrogate(s) outside QC limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Compound less than 10%? (Y/N)																								
Reanalysis required? (Y/N)					N																			
If blank, were associated samples reanalyzed? (Y/N)					Y																			
Initial Analysis Qualifiers																								
Sample Number for reanalysis.																								
Reanalysis surrogates outside limits (show % R)																								
Re-extraction required? (Y/N)																								
If blank, were associated samples re-extracted? (Y/N)																								
Sample number for re-extract.																								
Re-extraction outside limits (show % R)																								
Reanalysis qualifiers.																								

QC Limits (%R)	SOIL	WATER
Sid S4 = Phenol-d6	24-113	10-110
Sid S5 = 2-Fluorophenol	25-121	21-110
Sid S6 = 2,4,6-Tribromophenol	19-122	10-123
Sid S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8419 DL				8420				8421				8422 DL				8437				8438			
	S1		S2		S1		S2		S1		S2		S1		S2		S1		S2		S1		S2	
QC limits exceeded (show %R)	—	50.0	475	0	—	—	—	—	—	—	—	192.5	—	—	650	—	—	—	45	—	27.5	24.5	—	—
Qualifier, if applied.	J/UJ		R/J								J/UJ				J/UJ				J/UJ		J/UJ			

Limits (%R)	SOIL	WATER
Pesticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
Pesticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

\SHELL\SURROG-2.WK3

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/09/91

Instrument ID: VARIAN 6000

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
msc						X					
msd						X					

*≥60% Resolved ✓ ♦≥60% Resolved ✓
in Initial Resolution Check

DB-1701 or Equivalent DB-17	10/02/91 Initial %RSD>20	Calibrations: Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
	↓									
Cont.Cal.Date, Month→ 10	Day→	04	04							
COMPOUND↓	Time→	0445	1708							
alpha-BHC										
beta-BHC	20.2	33.9								UT/—
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin										
4,4'-DDE										
Endrin	21.4									UT/—
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate *	26.0									UT/—
4,4'-DDT										
Methoxychlor *										
Endrin Ketone	37.7									UT/—
Endrin Aldehyde	26.0									UT/—
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)	✓	RT	RT						RT	
Decachlorobiphenyl (DCB)	✓	RT	RT						RT	

* Validation Criteria:

	Quantitation Colum		Confirmation Colum
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

CCJM

ENVIRONMENTAL ENGINEERS & SCIENTISTS

SILVER SPRING
CHICAGO
DENVER
DETROIT
GRAND RAPIDS

DOCUMENT NO.: 073NCODS.RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

Case No. 0051 URS TDCN 3001434 Project No. CTO-0051

Site Name St. Lawrence Island, AK Project Name N.E. Cape

Contract Laboratory Eureka Laboratories

Sample Delivery Group (SDG) 8423 Sampling Date (Month/Year) 8/91

Sample Matrix Concrete Chips

Type of Analyses Pesticide/PCB (see page 2)

Data Reviewer Alan Alai for Date 12/28/91

QA Review by Jeralyn Guthrie Date 12/28/91

CCJM Approval by Richard Cheatham for Date 12/28/91

Telephone logs/correspondence attached? Yes ____ No X Not Appl. ____

Laboratory case narrative attached? Yes X No ____ Not Avail. ____

Required deliverables provided? Yes ____ No X Not Appl. ____

Airbill enclosed? Yes X No ____ Not Avail. ____

CLP SOW used by laboratory for analysis 3/90

Note:

-- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.

-- Please see data flagging definitions on the last page of this report.

Sample Number	Sample Matrix	Pest/PCB
84232425 (8423, 8424, 8425 - COMPOSITE)	concrete chips	X
8477	concrete chips	X
8480	concrete chips	X
8426	concrete chips	X
8440	concrete chips	X
8442	concrete chips	X
8478	concrete chips	X
8481	concrete chips	X
8439	concrete chips	X
8441	concrete chips	X
8476	concrete chips	X
8479	concrete chips	X

X = Analysis has been provided for validation.
0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. Deliverables

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes _____ No __X__

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY
X Included in package
O Not included and/or Not available
NA Not applicable or Not required
RS Provided as resubmission

X Method blank spikes with each batch
X Control chart developed by lab
X Sample results - Form 1 or spreadsheet
O CLP data flags used by laboratory
NA Sample chromatograms and mass spectra
X Holding times (sampling, prep and analysis dates provided)
X System Monitoring Compounds (SMC) and Surrogate recoveries - Form 2
O Matrix spike/matrix spike duplicate (MS/MSD) - Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
X Method blank summary - Form 4
X Report form for method blank results (Form 1 or spreadsheet)
NA GC/MS tuning - Form 5
X Initial calibration data and Resolution Summary - Form 6
X Continuing calibration data and Verification Summary - Form 7
X Internal standard area summary and analytical sequence - Form 8
X Pesticide Florisil Cartridge Check and GPC calibration

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines. See the following table for a summarization of sample holding times.

Yes _____ No __X__

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or UJ).

Holding Time Summary

Sample Number	Sampling Date	VTSR	Pesticide Extract	Pesticide Analysis
84232425DL	8/23/91	8/28	09/04*(5)	10/02
8426 DL	8/23/91	8/28	09/04*(5)	10/02
8439	8/23/91	8/28	09/04*(5)	09/29
8440	8/23/91	8/28	09/04*(5)	09/29
8441	8/23/91	8/28	09/04*(5)	09/29
8442 DL	8/23/91	8/28	09/04*(5)	10/02
8476 DL	8/23/91	8/27	09/04*(5)	09/30
8477 DL	8/23/91	8/27	09/04*(5)	09/30
8478 DL	8/23/91	8/27	09/04*(5)	09/30
8479 DL	8/23/91	8/27	09/04*(5)	09/30
8480 DL	8/23/91	8/27	09/04*(5)	09/30
8479 DL	8/23/91	8/27	09/04*(5)	09/30

II. Instrument Calibration (Pesticide/PCB)

1. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes _____ No __X__

Comments: The compliant and non-compliant %RSD values found to be above 20% are summarized on the attached Table 1-P. A data validation specification of 20% RSD for any compound identified, has been applied for the column used in quantifying the sample result(s).

2. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes __X__ No _____

Comments: No comments.

3. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes _____ No __X__

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

4. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes _____ No __X__

Comments: Those compounds which did not meet the specified criteria dn qualifiers are summarized on Table 1-P.

5. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes _____ No __X__

Comments: The retention times for all target analytes and surrogates on the D6-17 column did not meet the specified criteria as stated in the SOW. This deficiency is considered to be non-compliant as specified in the 3/90 SOW. No additional qualifiers were assigned to the sample data.

6. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses.

Yes _____ No __X__

Comments: The following % breakdown criteria were not met:

Calibration, Date, Time	Column	% Breakdown DDT	% Breakdown Endrin	% Breakdown Combined	Affected Samples
Init., 09/27/91, 2219	DB-608	16.2	14.6	30.8	All
Verif., 10/01/91, 2020	DB-608	21.2	19.8	41.0	84232425DL
Init., 10/02/91, 1901	DB-17	0	30.6	30.6	All
Init., 10/02/91, 0522	DB-17	2.6	32.6	35.2	All
Verif., 10/04/91, 0445	DB-17	-	21.4	-	MS, MSD
Verif., 10/05/91, 0446	DB-17	-	27.8	-	All

No additional qualifiers have been assigned on the basis of DDT or Endrin % breakdown.

7. The florisil cartridge check and when applicable, the GPC calibration were found to be within specified criteria.

Yes __X__ No _____

Comments: No comments.

8. The retention times for the surrogates were within criteria for every sample.

Yes _____ No __X__

Comments: An asterisk(*) on the following table indicates the retention time was outside of the established retention time window.

Sample No.	TCX 1	TCX 2	DCB 1	DCB 2
84232425DL	D	D	D	D
8426DL	D	D	D	D
8439		*		*
8440		*		*
8441		*		*
8442DL	D	D	D	D
8476DL		*		*
8477DL		*		*
8478DL		*		*
8479DL		*		*
8480DL		*		*
8481DL		*		*
MS		*		*
MSD		*		*
PBLK1		*		*

D = surrogate diluted out

III. Blanks

A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes __X__ No _____

Comments: No contaminants were reported for this data package.

B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes _____ No _____ Not Identified _____

Comments: No trip blanks were reported in this data package.

C. Other Blanks - No other types of blanks have been identified in the data package.

IV. Surrogate Recovery

The surrogate recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes _____ No __X__

Comments: Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.

V. Blank Spike - Laboratory Control Sample(s)

A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes _____ No __X__

Comments:

1. The compounds used for the Pesticide/PCB blank spike were the matrix spike compounds.

2. The following spike analytes were reported to be outside control limits based on the laboratory control charts:

Spike Compound	% Recovery	Control Limits % Recovery
Aldrin	126	45 - 114

No additional qualifiers were applied based on blank spike recoveries.

B. Laboratory control charts provided in the package.

Yes __X__ No _____

Comments: No comments.

VI. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes _____ No __X__

Comments: No MS/MSD analyses were reported for this data package.

VII. Additional Comments

1. The laboratory did not meet several contract requirements. They are indicated in the above sections as follows:

Sec. III. A.6
Sec. III. A.7
Sec. III. A.9
Sec. VIII

2. The reviewer was unable to assess whether the laboratory performed GC/MS confirmation for positive hits that were sufficiently high. No "C" flag was applied to the data by the laboratory.

3. The laboratory reported the higher of the two results from the two columns. This procedure is specifically not allowed as stated in 3/90 SOW.

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.

R - Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.

J - The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.

B - The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.

JN - Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

I. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc.
Lab Certification Number: E765
SDG Number: 8423
Purchase Order Number: AN-91-P-0019
Contract Task Order Number: 0051
NEESA QA/QC Level C
Analysis: Initial
Sample No.: 14

A. Sample Description/Analytical Description

Client ID	Lab ID	Date Sampled	Date Received	Matrix	Analysis/Method
8423, 8424, 8425-Composite	9108219-11A, 12A,13A	08/23/91	08/28/91	Chips	P/PCBs/3-90 CLP SOW
8426	9108219-14A	08/23/91	08/28/91	Chips	Same as above
8439	9108219-29A	08/23/91	08/28/91	Chips	Same as above
8440	9108219-30A	08/23/91	08/28/91	Chips	Same as above
8441	9108219-31A	08/23/91	08/28/91	Chips	Same as above
8442	9108219-32A	08/23/91	08/28/91	Chips	Same as above
8476	9108214-1A	08/23/91	08/27/91	Chips	Same as above
8477	9108214-2A	08/23/91	08/27/91	Chips	Same as above
8478	9108214-3A	08/23/91	08/27/91	Chips	Same as above
8479	9108214-4A	08/23/91	08/27/91	Chips	Same as above
8480	9108214-5A	08/23/91	08/27/91	Chips	Same as above
8481	9108214-6A	08/23/91	08/27/91	Chips	Same as above

B. Sample Receipt

Samples were received in two delivery batches on August 27 & 28, 1991. Samples were in good condition. Sample receipt conditions, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bills. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Number 91-08-214. For Order Numbers 91-08-219, the following problem was observed:

1. ELI Order Number 91-08-219:

   Sample volume for Sample Numbers 8423, 8424, and 8425 is not sufficient for P/PCBs-CLP analysis and percent moisture determination.

   A memo was faxed by URS with an authorized signature to instruct ELI to composite these three samples and analyze as one.

C. Quality Control Report

1. Pesticide/PCB by 3/90 CLP SOW

Sample Matrix and CRQL

Sample matrix for this SDG was concrete chip, containing high concentration of petroleum hydrocarbon products. Samples were extracted according to Pesticide/PCB 3/90 CLP SOW and subsequently followed by GPC and florisil cartridge clean up.

The petroleum product, however, remains in the sample extract despite the clean up procedures, and constitutes severe matrix interference. Samples were initially analyzed without dilution and found to be beyond quantitation range except for Sample Nos. 8439, 8440, and 8441. All other samples were then reanalyzed at a dilution factor of 20 or 500. High CRQL for Sample No. 8426, 8476, 8477, 8478, 8479, and 8480 is due to matrix interference. Higher CRQL for Sample No. 8423 and 8442 is due to high analyte concentration.

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (1) Telecation Software used the Response Factor for the 0.1 ppm standards of the Aroclors analyzed in the initial calibration. (2) ELI manual worksheet used the response factors for 2 ppm standards of the Aroclors which were analyzed after the sample analyses and used for confirmation per 3/90 CLP SOW.

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.

ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEM02 (Performance Evalutation Mixture #2), PEM08, and PEM10 from the first column analysis exceeded the limit by 8%, 2.5%, and 11% respectively.

The % combined breakdown for PEM01 and PEM02 from the second column analysis exceeded the limit by 0.6% and 5.2%. The % breakdown of Endrin for PEM01, PEM02, PEM04, and PEM06 from the 2nd column analysis exceeded the limit by 10.6%, 12.6%, 1.4%, and 7.8%. The % breakdown of 4-4'-DDT for PEM10 from the 1st column analysis exceeded the limit by 1.2%.

Calibration Verification

There is a total of fifteen continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence.

RPD value of gamma-BHC (Lindane) and beta-BHC for PEM 10 (Performance Evaluation Mixture #10) and PEM 04 exceeded the control limit by a margin of 1.1% and 8.9%.

RPD value of Endosulfan II, Endosulfan sulfate, Endrin Ketone and Endrin Aldehyde for INDAM 03 (Individual Standard Mixture A medium level #3) and INDAM 05 exceeded the QC limits.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

TCX and DCB was slightly outside the Surrogate Retention Time (RT) window in three and five analyses respectively for the 1st column analysis. TCX and DCB were slightly ouside the RT window in eighteen and eighteen analyses respectively for the 2nd column analysis.

Surrogate Recovery

The % recoveries of DCB for Sample Nos. 8439, 8440, and 8441 were high due to matrix interference. The DCB recoveries were out of the advisory limit for Sample No. 8426 DL, 8423, 2425 DL, 8442 DL, 8476 DL, 8477 DL, 8478 DL, 8479 DL, 8480 DL, and 8481 DL due to dilutions.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 84232425DL, 8440, and 8442DL.

Spike and Spike Duplicate:

The % Recovery and % RPD of Heptachlor for Reagent Spike and Reagent Spike Duplicate exceeded the QC limit by a margin of 5% and 1% respectively.

Sample No. 8477 MS/MSD were extracted and analyzed, but unable to be quantified due to matrix interference.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Shao-Pin Yo, Ph.D.
Laboratory Director

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER 1420753250

1420753250

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RECIPIENT'S COPY

1 Date 11/15/91

From (Your Name) Please Print: W. Jaime Bruton, Ph.D
Your Phone Number (Very Important): (206) 623-1800
Company: [illegible]
Department/Floor No:
Street Address: [illegible]
City: SEATTLE
State:
ZIP Required:

2 To (Recipient's Name) Please Print: Richard Cheatham
Recipient's Phone Number (Very Important): (303)
Company: CCJM
Department/Floor No: Suite 215
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes): 215 Union Boulevard
City: Lakewood
State: CO
ZIP Required: 80228

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice): CTQ-51 30510.12

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address:
City:
State:
ZIP Required:

3 PAYMENT 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct No 3 [ ] Bill 3rd Party FedEx Acct No 4 [ ] Bill Credit Card
5 [ ] Cash/Check

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
11 [ ] YOUR PACKAGING
16 [ ] FEDEX LETTER *
12 [ ] FEDEX PAK *
13 [ ] FEDEX BOX
14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon†)
51 [ ] YOUR PACKAGING
56 [ ] FEDEX LETTER *
52 [ ] FEDEX PAK *
53 [ ] FEDEX BOX
54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day†)
30 [ ] ECONOMY

Government Overnight (Restricted to authorized users only)
46 [ ] GOVT LETTER
41 [X] GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
70 [ ] OVERNIGHT FREIGHT ** (Confirmed reservation required)
80 [ ] TWO-DAY FREIGHT **
†Delivery commitment may be later in some areas.
*Declared Value Limit $100
**Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)
1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [ ] DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra Charge) [ ] (Not available to all locations)
4 [ ] DANGEROUS GOODS (Extra charge)
5 [ ]
6 [ ] DRY ICE Lbs
7 [ ] OTHER SPECIAL SERVICE
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra Charge)
10 [ ]
11 [ ]
12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE
1	20	NA
Total 1	Total 20	Total NA

DIM SHIPMENT (Chargeable Weight)
[ ] lbs.
___ x ___ x ___ = ___

Received At
1 [X] Regular Stop 3 [ ] Drop Box
2 [ ] On-Call Stop 4 [ ] BSC 5 [ ] Station

7 Release Signature:
FedEx Emp No. Date/Time

Emp No. Date
[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Det [ ] Chg. To Hold
Street Address
City State Zip
Received By: X
Date/Time Received FedEx Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 6/91
PART #137204 FXEM 9/91
FORMAT #099

099

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/27/91 – 10/01/91

Instrument ID: HP 5890

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
MS (REAGENT)	~~X~~	ALL				X					
8439	X						X				
8440	X						X				
8441	X						X				
MSD (REAGENT)							X				
8476 DL	X								X		
8479 DL	X								X		
8480 DL	X								X		
8481 DL	X								X		
8477 DL	X								X		

*≥60% Resolved ✓ ♦≥60% Resolved ✓ §≥60% Resolved ✓
in Initial Resolution Check

DB-608 ✓ or Equivalent _____

09/27/91 Calibrations:

	Initial %RSD>20	Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→ 09	Day→	29	29	29	30	30	01	01		
COMPOUND↓	Time→	2053	0819	2047	0817	2021	0817	2103		
alpha-BHC		✓	✓	✓	✓	✓	✓	✓		
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦	20.5									
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor ¤										
Endrin Ketone ¤										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)	✓	✓	✓	✓	✓	✓				
Decachlorobiphenyl (DCB)	✓	✓	✓	✓	✓	RT				

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/27/91 – 10/01/91

Instrument ID: HP 5890

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
8423425DL	X				NONE						
8442DL	X				NONE			OUT	OF	12	HOUR
8426DL	X				NONE			OUT	OF	12	HOUR.

*≥60% Resolved ✓ ♦≥60% Resolved ✓ §≥60% Resolved ✓
in Initial Resolution Check

DB-608 or Equivalent ✓	Initial %RSD>20	Calibrations: Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
	↓									
Cont.Cal.Date, Month→ 09	Day→									
COMPOUND↓	Time→									
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦	20.5									
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosufan II										
4,4'-DDD										
Endosufan sulfate										
4,4'-DDT										
Methoxychlor *										
Endrin Ketone *										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)	✓									
Decachlorobiphenyl (DCB)	✓									

* Validation Criteria:

	Quantitation Colum		Confirmation Colum
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/04/91 10/05/91

Instrument ID: VARIAN 600

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
MS (REAGENT)						X					
MSD (REAGENT)						X					
8476DL	X						X				
8477DL	X						X				
8478DL	X						X				
8479DL	X						X				
8480DL	X						X				
8481DL	X						X				
84232425DL	X						X				
8426DL	X						X				

o≥60% Resolved ✓ ♦≥60% Resolved ✓
in Initial Resolution Check

DB-1701 or Equivalent DB-17	Initial %RSD>20	Calibrations: Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
	↓									
Cont.Cal.Date, Month→ 10	Day→	04	04	05						
COMPOUND↓	Time→	0445	1708	0446						
alpha-BHC										
beta-BHC	20.2	38.9		39.6						
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin										
4,4'-DDE										
Endrin	21.4		26.0	38.1						
Endosulfan II			28.0							
4,4'-DDD			29.0							
Endosulfan sulfate *	26.0		26.0							
4,4'-DDT										
Methoxychlor *										
Endrin Ketone	34.7									
Endrin Aldehyde	26.0									
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)	✓	RT	RT	RT						
Decachlorobiphenyl (DCB)	✓	RT	RT	RT						

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/04/91 – 10/05/91

Instrument ID: VARIAN 6000

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
8439	X						X				
8440	X						X				
8441	X						X				
8442DL	X						X				

✓ ✓

*≥60% Resolved____ ♦≥60% Resolved____
in Initial Resolution Check

DB-1701 or Equivalent OV-17	10/03/91 Initial %RSD>20	Calibrations: Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→ 10 Day→		04	04	05						
COMPOUND↓ Time→		0445	1708	0446						
alpha-BHC										
beta-BHC	20.2	33.9		28.9						
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin										
4,4'-DDE										
Endrin	21.4		26.0	38.1						
Endosufan II			28.0							
4,4'-DDD			29.0							
Endosufan sulfate *	26.0		76.0							
4,4'-DDT										
Methoxychlor *										
Endrin Ketone	34.7									
Endrin Aldehyde	24.0									
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)	✓	RT	RT	RT						
Decachlorobiphenyl (DCB)	✓	RT	RT	RT						

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

ACID FRACTION

Sample Numbers																								
Surrogate(s) outside QC limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Compound less than 10%? (Y/N)																								
Reanalysis required? (Y/N)																								
If blank, were associated samples reanalyzed? (Y/N)																								
Initial Analysis Qualifiers																								
Sample Number for reanalysis.																								
Reanalysis surrogates outside limits (show % R)																								
Re-extraction required? (Y/N)																								
If blank, were associated samples re-extracted? (Y/N)																								
Sample number for re-extract.																								
Re-extraction outside limits (show % R)																								
Reanalysis qualifiers.																								

QC Limits (%R)	SOIL	WATER
S4 = Phenol-d6	24-113	10-110
S5 = 2-Fluorophenol	25-121	21-110
S6 = 2,4,6-Tribromophenol	19-122	10-123
S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8423/8425DL		8426DL		8439		8440		8441		8442DL	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	D	D	D	D	-/-	203/-	-/-	-/170	-/-	-/252	D	D
Qualifier, if applied.						J-S/-		J-S/-		J-S/-		

Limits (%R)	SOIL	WATER
Pesticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
Pesticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

ACID FRACTION

Sample Numbers																								
	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside QC limits (show %R)																								
Compound less than 10%? (Y/N)																								
Reanalysis required? (Y/N)																								
If blank, were associated samples reanalyzed? (Y/N)																								
Initial Analysis Qualifiers																								
Sample Number for reanalysis.																								
Reanalysis surrogates outside limits (show % R)																								
Re-extraction required? (Y/N)																								
If blank, were associated samples re-extracted? (Y/N)																								
Sample number for re-extract.																								
Re-extraction outside limits (show % R)																								
Reanalysis qualifiers.																								

Note: The circled sample number is the analysis/reanalysis recommended for use.

QC Limits (%R)	SOIL	WATER
id S4 = Phenol-d6	24-113	10-110
id S5 = 2-Fluorophenol	25-121	21-110
id S6 = 2,4,6-Tribromophenol	19-122	10-123
id S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

PESTICIDE FRACTION

Sample Numbers	8476 DL		8477 DL		8478 DL		8479 DL AKA		8480 DL		8481 DL	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	0	650/0	-/-	?/188	~~0~~/~~0~~ AKA ?/0		0/0	522/0	-/0	608/0	-/0	213/0
Qualifier, if applied.	J-S/R	J-S/R		J-S/-	J-S/R	J-S/R	J-S/R	J-S/R	J-S/R	J-S/R	J-S/R	J-S/R

Limits (%R)	SOIL	WATER
sticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
sticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

\SHELL\SURROG-2.WK3

ACID FRACTION

ample Numbers																				
urrogate(s) outside C limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
ompound less than 10%? (Y/N)																				
eanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
nitial Analysis Qualifiers																				
ample Number for reanalysis.																				
eanalysis surrogates outside imits (show % R)																				
e-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
ample number for re-extract.																				
e-extraction outside limits (show % R)																				
eanalysis qualifiers.																				

	QC Limits (%R)	SOIL	WATER
1	S4 = Phenol-d6	24-113	10-110
2	S5 = 2-Fluorophenol	25-121	21-110
3	S6 = 2,4,6-Tribromophenol	19-122	10-123
3	S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	MS		MSD		PBLK1							
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	-/-	-/-	-/-	-/-	-/-	~~40~~ 41/-						
Qualifier, if applied.												

Limits (%R)	SOIL	WATER
Pesticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
Pesticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

SHELL\SURROG-2.WK3

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DOCUMENT NO.: 070NCODS.RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

Case No. 0051 URS TDCN 3001421 Project No. CTO-0051

Site Name St. Lawrence Island, AK Project Name N.E. Cape

Contract Laboratory Eureka Laboratories, Inc.

Sample Delivery Group (SDG) 8449 Sampling Date (Month/Year) 8/91

Sample Matrix 20 low level soils

Type of Analyses Volatile Organics, Pesticide/PCB (see page 2)

Data Reviewer Roger Simon/Alan Alai Date 12/28/91

QA Review by Jeralyn Guthrie Date 12/28/91

CCJM Approval by Richard Cheatham Date 12/28/91

Telephone logs/correspondence attached? Yes X No ____ Not Appl. ____

Laboratory case narrative attached? Yes X No ____ Not Avail. ____

Required deliverables provided? Yes ____ No X Not Appl. ____

Airbill enclosed? Yes X No ____ Not Avail. ____

CLP SOW used by laboratory for analysis 3/90

Remarks: Report is based on resubmission (rec'd 12/19/91) and is considered to be final.

Note:

-- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, the EPA's Functional Guidelines for Organic Analyses and Method Specific References have been used by the date reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.

-- Please see data flagging definitions on the last page of this report.

Sample Number	Sample Matrix	VOA	Pest/PCB
8449	soil	X	X
8450	soil	X	X
8451	soil	X	X
8452	soil	X	X
8453	soil	X	X
8454	soil	X	X
8455	soil	X	X
8456	soil	X	X
8457	soil	X	X
8458	soil	X	X
8459	soil	X	X
8460	soil	X	X
8461	soil	X	X
8462	soil	X	X
8463	soil	X	X
8464	soil	X	X
8465	soil	X	X
8466	soil	X	X
8467	soil	X	X

(continued next page)

X = Analysis has been provided for validation.
0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

(continued from page 2)

Sample Number	Sample Matrix	VOA	Pest/PCB
8468	soil	X	X
8453MS	soil	X	--
8453MSD	soil	X	--
8466MS	soil	--	X
8466msd	soil	--	X

X = Analysis has been provided for validation.
0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. Deliverables

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes _____ No __X__

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY
__X__ Included in package
__O__ Not included and/or Not available
__NA__ Not applicable or Not required
__RS__ Provided as resubmission

__X__ Method blank spikes with each batch
__X/O__ Control chart developed by lab
__X__ Sample results - Form 1 or spreadsheet
__X/O__ CLP data flags used by laboratory
__X__ Sample chromatograms and mass spectra
__X/RS__ Holding times (sampling, prep and analysis dates provided)
__X__ System Monitoring Compounds (SMC) and Surrogate recoveries - Form 2
__X__ Matrix spike/matrix spike duplicate (MS/MSD) - Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
__X__ Method blank summary - Form 4
__X__ Report form for method blank results (Form 1 or spreadsheet)
__X/RS__ GC/MS tuning - Form 5
__X__ Initial calibration data and Resolution Summary, - Form 6
__X__ Continuing calibration data and Verification Summary - Form 7
__X__ Internal standard area summary and Analytical Sequence - Form 8
__X__ Pesticide Florisil Cartridge Check and GPC Calibration - Form 9

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines or SW846 holding time requirements. See the following table for a summarization of sample holding times.

Yes _____ No __X__

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or UJ).

Holding Time Summary

Sample Number	Sampling Date	VTSR	VOA Analysis	Pesticide Extract	Pesticide Analysis
8449**	8/23/91	8/27	9/06	9/4 (*5)	9/28
8450	8/23/91	8/27	9/06	9/4 (*5)	9/28
8451**	8/23/91	8/27	9/06	9/4 (*5)	9/28
8452	8/23/91	8/27	9/06	9/4 (*5)	9/28
8453	8/23/91	8/27	9/06	9/4 (*5)	9/28
8453MS			X	----	----
8453MSD			X	----	----
8454**	8/23/91	8/27	9/06	9/4 (*5)	9/28
8455	8/23/91	8/27	9/06	9/4 (*5)	9/28
8456	8/23/91	8/27	9/06	9/4 (*5)	9/28
8457	8/23/91	8/27	9/06	9/4 (*5)	9/28
8458	8/23/91	8/27	9/06	9/4 (*5)	9/28
8459	8/23/91	8/27	9/06	9/4 (*5)	9/28
8460	8/23/91	8/27	9/06	9/4 (*5)	9/28
8461	8/23/91	8/27	9/06	9/4 (*5)	9/28
8462	8/23/91	8/27	9/06	9/4 (*5)	9/28
8463	8/23/91	8/27	9/06	9/4 (*5)	9/28
8464	8/23/91	8/27	9/06	9/4 (*5)	9/28
8465	8/23/91	8/27	9/05	9/4 (*5)	9/28
8466	8/23/91	8/27	9/05	9/4 (*5)	9/28
8466MS			----	X	X
8466MSD			----	X	X
8467	8/23/91	8/27	9/05	9/4 (*5)	9/28
8468	8/23/91	8/27	9/05	9/4 (*5)	9/28

** analyzed at dilution for Pest/PCB analysis. Form I's labeled with "DL".

III. GC/MS Tuning and Mass Calibration

The BFB and/or DFTPP performance results summaries were included for all samples, and were reported to be within specified criteria at the appropriate frequency.

Yes __X__ No _____

Comments: In the original submission the ratios for masses 177/176 were calculated incorrectly for all tunes. Instead of 100%, the initial (7/19) and continuing (9/5 and 9/6) tune ratios should be 8.0%, 6.9% and 7.0% respectively. The laboratory has provided the corrected Forms 5A as resubmissions.

IV. A. Instrument Calibration (Volatiles)

1. The instrument response factor (RRF) data summaries were reviewed for the initial and continuing calibrations. All information was present and reported on the required summary forms. Response factors met the required criteria for volatile analyses, thus no data have been qualified.

Yes _____ No __X__

Comments: The RRF values outside of data validation guideline specifications for the SPCC's are listed below. All volatile compounds have been reviewed with a control limit of 0.050 being used as a minimum response factor. (NOTE: This procedure has been used by the reviewer in order to prevent the qualification of compounds that had acceptable response factors.) The following out-of-control calibration compound(s) have resulted in associated sample data being flagged as estimated (J or UJ) or in those instances where a response factor of <0.050 was reported the data for the compound has been rejected (R) if reported as undetected in the sample. All samples have been affected.

Other compounds	Control Limit	Init. Cal. Date / RRF	Cont. Cal. Date / RRF	Cont. Cal. Date / RRF
2-butanone	0.050	7-19/0.049	9-5/0.049	9-6/0.044

It was noted by the reviewer that 2-butanone has a minimum RRF of 0.010 according to the SOW 3/90. While contractually compliant, a significant calibration problem is demonstrated and all 2-butanone results have been qualified per Functional Guidelines criteria.

2. The percent relative standard deviation (%RSD) for the initial calibrations and the percent difference (%D) for the continuing calibrations were reviewed. The %RSD and %D values reported met the data validation criteria (i.e., < 30 %RSD and < 25 %D) for volatile analyses, thus no data have been qualified.

Yes __X__ No _____

Comments: No comments.

B. Instrument Calibration (Pesticide/PCB)

1. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes _____ No __X__

Comments: The compliant and non-compliant %RSD values found to be above 20% are summarized on the attached Table 1-P. A data validation specification of 20% RSD for any compound identified, has been applied for the column used in quantifying the sample result(s).

2. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes __X__ No _____

Comments: No comments.

3. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes _____ No __X__

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

4. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes _____ No __X__

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

5. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes _____ No __X__

Comments: The retention times for alpha BHC, beta-BHC, gamma-BHC, endrin, 4,4'-DDT, methoxychlor, heptachlor, tetrachloro-m-xylene (INDA an B surrogate), aldrin, heptachlor, endrin, aldehyde, alpha-chlorodane, gamma-chlorodane, decachlorobiphenyl (IND B, surrogate) did not meet the specified criteria for the DB-17 column analysis as stated in the SOW. This deficiency is considered to be non-compliant as specified in the 3/90 SOW. However, no additional qualifiers have been applied to any sample data.

6. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses.

Yes _____ No __X__

Comments: The following standard analyses did not meet the % breakdown criteria.

			% Breakdown		
Calibration	Column	DDT	Endrin	Combined	Affected Samples
Initial 10/02/91, 1901	DB-17	---	30.6	30.6	All
Initial 10/03/91, 0522	DB-17	---	32.6	35.2	All
Verification 09/27/91, 2219	DB-608	16.2	14.6	30.8	8449DL, 8450, 8452, 8452,8453, 8454DL, 8455, 8456, 8457, 8458, 8459

All pesticide/PCB data is qualified on the basis of holding times and no additional qualifiers have been applied to the data based on the % breakdown of DDT or Endrin.

7. The florisil cartridge check and, when applicable, the GPC calibration were found to be within specified criteria.

Yes __X__ No _____

Comments: No comments.

8. The retention times for the surrogates were within criteria for every sample.

Yes _____ No __X__

Comments: An asterisk (*) on the following table indicates that the retention time was not within established retention time windows. No additional qualifiers have been applied to the sample data based on this non-compliancy.

Sample No.	TCX 1	TCX 2	DCB 1	DCB 2
00MS				
00MSD				
8449DL				*
8450				*
8451DL		*		
8452		*		*
8453		*		*
8454DL				*
8455		*		*
8456		*		
8457		*		*
8458		*		*
8459		*		*
8460		*		*
8461		*		*
8462		*		*
8463		*		*
8464		*		*
8465		*		*
8466		*		*
8466MS		*		*
8466MSD		*		
8467		*		*
8468		*		
PBLK1				

V. Blanks

A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes _____ No __X__

Comments: Contaminant quantities reported in the laboratory preparation blanks are listed below. Associated samples which have been flagged "UJ" due to the blank contaminants are also shown.

Blank ID	Analyte	Amount (µg/kg)	Associated Samples
VBLK1, VBLK2	methylene chloride	8, 6	all

B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes _____ No _____ Not Identified _____

Comments: No trip blanks were found in this data package.

C. Other Blanks - No other types of blanks have been identified in the data package.

VI. Surrogate and System Monitoring Compound (SMC) Recovery

The surrogate and System Monitoring Compound (SMC) recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes _____ No __X__

Comments: Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.

VII. Blank Spike - Laboratory Control Sample(s)

A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes __X__ No _____

Comments:

1. The compounds used for the Pesticide/PCB blank spike were matrix spike compounds.

2. The reagent spike for volatile analysis was spiked with the matrix spike compounds. Matrix spike control limits were applied by the reviewer.

B. Laboratory control charts for LCS analysis were provided in the package for the spike compounds.

Yes _____ No __X__

Comments:

1. The pesticide/PCB control charts provided for the LCS analysis were used for review.

2. The volatile control charts provided with the data package were for system monitoring compounds (SMC) analysis instead of LCS analysis. The CLP limits were used for the review of the volatile analysis.

VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes _____ No __X__

Comments:

1. Sample 8453 was used for volatile MS/MSD. Sample 8466 was used for Pesticide/PCB MS/MSD.

2. The following spike analytes were reported to be outside limits:

Analyte	% Recovery MS / MSD	RPD	Control Limits % Rec. / RPD
heptachlor	76 / 49	43	35 - 130 / 31
aldrin	84 / 53	45	34 - 132 / 43

3. No additional qualifiers have been applied to any sample results on the basis of MS/MSD recoveries or RPD values.

IX. Additional Comments

1. It was noted by the reviewer that CRDL's have not been adjusted to SOW 3/90 levels for most VOA compounds.

2. Several contract requirements were not met as indicated in the following sections: Section IV.B.1., IV.B.5, IV.B.6., IV.B.8.

3. The laboratory did not flag pesticide/PCB results which were sufficiently high in concentration with a "C" indicating GC/MS confirmation. The reviewer was unable to determine that the requirements as stated in the 3/90 SOW were met with regard to GC/MS confirmation analysis of Pesticide/PCB positive hits.

4. As addressed in the laboratory case narrative, the higher of the two columns analyses was reported for the Pesticide/PCB Form I's. This procedure is specifically non-compliant as stated in the 3/90 SOW.

5. The case narrative/certification statement was not signed by the laboratory director or a designee.

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.

R - Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.

J - The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.

B - The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.

JN - Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

CCJM
ENVIRONMENTAL ENGINEERS & SCIENTISTS

SILVER SPRING
CHICAGO
DENVER
DETROIT
GRAND RAPIDS

C.C.J.M. FILE COPY

MEMORANDUM

TO: Jamie Bruton, URS/Seattle

FROM: Roger Simon, Jeralyn Guthrie, Richard Cheatham, CCJM/Denver

DATE: December 5, 1991

DOCUMENT NO: 0721NCRAI.MEM

SUBJECT: Volatile Organics Tuning Problems for CTO-051

Per our conversation of 12/5/91, please find herein a detailed description of tuning problems found with all volatile organics analyses performed at Eureka Laboratories for CTO-051. These data packages are considered "on hold" until these issues have been resolved. Data packages have been identified by TDCN numbers and SDG.

1. For all CTO-051 data packages with volatile organics analyses (SDG 8449/TDCN 3001421, SDG 8484/TDCN 301210, SDG 8401/TDCN 3001436 and SDG 8416/TDCN 3001439), the values reported for the percent relative abundance of masses 177/176 were incorrectly reported as 100% on the Form V Tuning Summaries. This appeared to be a computer error since calculation of this ratio by the reviewer resulted in acceptable tunes. The laboratory should provide corrected summary forms.

2. In SDG 8484/TDCN 3001210, the relative abundance for masses 176/174 was reported and found by the reviewer to be 119.4%. Since there is no expanded criteria for this critical ratio, all data will have to be qualified as unusable (R); raw data to verify the values reported on the Form V Tuning Summary were not included with the Level C data package, so it could not be determined whether the reported ratio was a transcription problem with the base mass percentages reported for m/z 174 and 176, software problem or something else. Please indicate if a calculation/transcription problem existed and provide a corrected summary form or the correct values for masses 176 and 174.

If you should have any questions, please do not hesitate to call us at (303) 987-2928.

cc: URS / Navy Clean PF

YG RAC

RESUBMISSION 12/19/91 AKA

URS **MEMORANDUM** C.C.J.M.

Date: 12-18-91

Page: 1 of 1

TO: CCJM

215 Union Blvd. Suite 215

Lakewood, CO 80228

ATTENTION: ~~Rolf Reindt~~ Geralyn Guthrie

[illegible] 1991

FROM: URS Consultants, Inc.

RECEIVED 1100 Olive Way, Suite 200

Seattle, Washington 98101-1832

BY: Analytical Support Activities

PHONE: (206) 623-1800

FAX: (206) 233-9570

SUBJECT: Resubmitted FORM I for Volatile Analysis by Eureka Laboratories Inc for CTO-51

Please find the above referenced resubmitted Form I for volatile analysis. They are for four (4) separate SDG numbers and are as follows:

1.	Eureka	SDG: 8401	URS TDCN: 3001436
2.	Eureka	SDG: 8416	URS TDCN: 3001439
3.	Eureka	SDG: 8449	URS TDCN: 3001421
4.	Eureka	SDG: 8484	URS TDCN: 3001210

C.C.J.M.

[illegible] 1991

RECEIVED

If you have any questions, please feel free to call any time.

DISTRIBUTION: Lab File

Sincerely Yours,

W. J. Brenton, PhD

URS CONSULTANTS

I. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc.
Lab Certification Number: E765
SDG Number: 8449
Purchase Order Number: AN-91-P-0019
Contract Task Order Number: 0051
NEESA QA/QC Level C
Analysis: Initial
Sample No.: 20

A. Sample Description/Analytical Description

Client ID	Lab ID	Date Sampled	Date Received	Matrix	Analysis/Method
8449	9108213-1A	08/23/91	08/27/91	Soil	VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW
8450	9108213-2A	08/23/91	08/27/91	Soil	Same as above
8451	9108213-3A	08/23/91	08/27/91	Soil	Same as above
8452	9108213-4A	08/23/91	08/27/91	Soil	Same as above
8453	9108213-5A	08/23/91	08/27/91	Soil	Same as above
8454	9108213-6A	08/23/91	08/27/91	Soil	Same as above
8455	9108213-7A	08/23/91	08/27/91	Soil	Same as above
8456	9108213-8A	08/23/91	08/27/91	Soil	Same as above
8457	9108213-9A	08/23/91	08/27/91	Soil	Same as above
8458	9108213-10A	08/23/91	08/27/91	Soil	Same as above
8459	9108213-11A	08/23/91	08/27/91	Soil	Same as above
8460	9108213-12A	08/23/91	08/27/91	Soil	Same as above
8461	9108213-13A	08/23/91	08/27/91	Soil	Same as above
8462	9108213-14A	08/23/91	08/27/91	Soil	Same as above
8463	9108213-15A	08/23/91	08/27/91	Soil	Same as above
8464	9108213-16A	08/23/91	08/27/91	Soil	Same as above
8465	9108213-17A	08/23/91	08/27/91	Soil	Same as above
8466	9108213-18A	08/23/91	08/27/91	Soil	Same as above
8467	9108213-19A	08/23/91	08/27/91	Soil	Same as above
8468	9108213-20A	08/23/91	08/27/91	Soil	Same as above

B. Sample Receipt

Samples were received in one delivery batch on August 27, 1991. Samples were in good condition. Sample receipt conditions, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bill. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Number 91-08-213.

C. Quality Control Report

1. Volatile Analysis by 3/90 CLP SOW

Method Blank

Methylene chloride, a common laboratory introduced contaminant, was found in the method blanks, as well as in the samples. The concentration of Methylene Chloride found in the method blanks were 6 and 8 ug/l (ppb) as compared to the 8 - 30 ug/L (ppb) detected in the samples. In such an event, Methylene chloride is not identified as positive analyte in the samples when the contamination is taken into consideration.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

2. Pesticide/PCB by 3/90 CLP SOW

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (I) Telecation Software used the Response Factors of the Aroclors standards analyzed in the intial calibration for the quantification. (II) ELI manual worksheet used the response factors of a higher concentration of Aroclor standards which were analyzed after the sample run and used for quantification per 3/90 CLP SOW.

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.

ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEM02 (Performance Evalutation Mixture #2) from the first column analysis exceeded the limit by 8%. The % combined breakdown for PEM08 and PEM10 exceeded the limit by 2.5% and 11% respectively.

The % combined breakdown for PEM01 from the second column analysis exceeded the limit by 0.6%.

Calibration Verification

There is a total of eight continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence as required by CLP protocol.

RPD value (26.1) for gamma-BHC (Lindane) for one of the form VII Pest-I exceeded the control limit (25) by a margin of 1.1%.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

DCB was slightly outside the Surrogate Retention Time (RT) window in two analyses for the first column analysis. DCB and TCX were slightly ouside the RT window in twenty three and twenty one analyses respectively for the 2nd column analysis.

Surrogate Recovery

The % recovery of TCX for Sample No. 8457, 8465, 8466 MS/MSD, 8468, and PBLK1 were out of the advisory QC limit. The % recoveries of DCB for Sample No. 8453, 8459 were high due to matrix interference. The DCB recoveries were out of the advisory limit for Sample No. 8449 DL, 8451 DL, and 8454 DL, due to dilutions.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I without P flag.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 8468, 8466, 8464, 8463, 8461, 8459, 8455, 8453, 8452, 8450.

Matrix Spike and Matrix Spike Duplicate:

The % RPD of Heptachlor, Aldrin, and Lindane for 8466 MS and 8466 MSD exceeded the QC limit by a margin of 12%, 2%, and 1%, respectively.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Shao-Pin Yo, Ph.D.
Laboratory Director

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 1420753250

1420753250

RECIPIENT'S COPY

1 Date 11/15/91

From (Your Name) Please Print: W. Jaime Bruton, Ph.D Your Phone Number (Very Important): (206) 623-1800

Company: [illegible] Department/Floor No:

Street Address: [illegible]

City: Seattle State: ZIP Required:

2 To (Recipient's Name) Please Print: Richard Cheatham Recipient's Phone Number (Very Important): (303)

Company: CCJM Department/Floor No: Suite 215

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes): 215 Union Boulevard

City: Lakewood State: CO ZIP Required: 80228

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): CTQ-51 30510.12

3 PAYMENT 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash/Check

H IF HOLD FOR PICK-UP, Print FEDEX Address Here: Street Address City State ZIP Required

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)		Standard Overnight (Delivery by next business afternoon†)	
11	YOUR PACKAGING	51	YOUR PACKAGING
16	FEDEX LETTER *	56	FEDEX LETTER *
12	FEDEX PAK *	52	FEDEX PAK *
13	FEDEX BOX	53	FEDEX BOX
14	FEDEX TUBE	54	FEDEX TUBE
Economy Two-Day (Delivery by second business day†)		**Government Overnight** (Restricted to authorized users only)	
30	ECONOMY	46	GOVT LETTER
		41 [X]	GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)

70 [ ] OVERNIGHT FREIGHT ** (Confirmed reservation required) 80 [ ] TWO-DAY FREIGHT **

†Delivery commitment may be later in some areas *Declared Value Limit $100 **Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)

1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [ ] DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra Charge) [ ] (Not available to all locations)
4 [ ] DANGEROUS GOODS (Extra Charge)
5 [ ]
6 [ ] DRY ICE Lbs
7 [ ] OTHER SPECIAL SERVICE
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra Charge)
10 [ ]
11 [ ]
12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE
1	20	NA
Total 1	Total 20	Total NA

DIM SHIPMENT (Chargeable Weight) [ ] lbs ___ x ___ x ___ =

Received At: [X] 1 Regular Stop 2 On-Call Stop 3 Drop Box 4 BSC 5 Station

7 Release Signature

FedEx Emp. No. Date/Time

Emp. No. Date

[ ] Cash Received [ ] Return Shipment [ ] Third Party [ ] Chg. To Del [ ] Chg. To Hold

Street Address

City State Zip

Received By: X

Date/Time Received FedEx Employee Number

Federal Express Use

Base Charges

Declared Value Charge

Other 1

Other 2

Total Charges

REVISION DATE 6/91
PART #137204 FXEM 9/91
FORMAT #099

099

TABLE 1 (3/90, OLM01.8)
VOA Qualifier Summary
Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed: 9/6

Instrument ID: VOA2

Method Blank ID: VBLK1
Date: 9/6 Time: 7:42

Sample Identifier:	Hold Time Out		Standards: (↑, ↓; ↓↓=<10%) SMCs			Internal (IS)		
	Ar	All	1	2	3	1	2	3
3457								
3458								
3459								
3460								
3461								
3462								
3463								
3464								

ICal Date: 7/19/91 CCal Time: 9/6 ____

* RRF must be ≥ .010 ∞System Monitor Compound COMPOUND:	MIN RRF	Initial Cal. $\overline{RRF}$ < MIN	Initial Cal. %RSD >20.5	Continuing Cal. RRF < MIN	Continuing Cal. %D >25	Blanks Method	Blanks Trip	Qualifiers (+/-)	Internal Standard
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					6 J		UJ	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049		0.044				R	▼
1,1,1-Trichloroethane	.100								2
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								▼
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								▼
Toluene-d8 ∞	*								3
Bromofluorobenzene ∞	.200								3
1,2-Dichloroethane-d4 ∞	*								1

Blank Tentatively Identified Compounds

Blank ID	Reported as:	RT	(µg/kg or µg/L)	Qualifiers

TABLE 1 (3/90, OLM01.8)
VOA Qualifier Summary
Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed: 9/6

Instrument ID: VOA2

Method Blank ID: VBLK1
Date: 9/6 Time: 7:42

Sample Identifier:	Hold Time Out		Standards: (↑, ↓; ↓↓=<10%) · ✓ SMCs			Internal (IS)		
	Ar	All	1	2	3	1	2	3
8449								
8450								
8451								
8452								
8453								
8453 MS								
8453 MSD								
8454								
8455								
8456								

ICal Date: 7/19 CCal Time: 9/6

* RRF must be ≥ .010 ¤System Monitor Compound	MIN	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	Internal
COMPOUND:	RRF	RRF < MIN	%RSD >20.5	RRF < MIN	%D >25	Method	Trip	(+/-)	Standard
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					6 J		VJ	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049						R	
1,1,1-Trichloroethane	.100								2
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8 ¤	*								3
Bromofluorobenzene ¤	.200								3
1,2-Dichloroethane-d4 ¤	*								1

Blank Tentatively Identified Compounds

Blank ID	Reported as:	RT	(µg/kg or µg/L)	Qualifiers

TABLE 1 (3/90, OLM01.8)
VOA Qualifier Summary
Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed: 9/5

Instrument ID: VOA2

Method Blank ID: VBLK2
Date: 9/5 Time: 16:35

Sample Identifier:	Hold Time Out		Standards: (↑, ↓; ↓↓=<10%)					
			✓ SMCs			Internal (IS)		
	Ar	All	1	2	3	1	2	3
3465								
3466								
3467								
3468								

ICal Date: 7/19/91 CCal Time: 9/5/91 16:03

* RRF must be ≥ .010 ∝System Monitor Compound	MIN	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	Internal
COMPOUND:	RRF	RRF < MIN	%RSD >20.5	RRF < MIN	%D >25	Method	Trip	(+/-)	Standard
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					8 J		UJ	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049		0.049				R	
1,1,1-Trichloroethane	.100								2
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8 ∝	*								3
Bromofluorobenzene ∝	.200								3
1,2-Dichloroethane-d4 ∝	*								1

Blank Tentatively Identified Compounds

Blank ID	Reported as:	RT	(µg/kg or µg/l)	Qualifiers
~~VBLK2~~	~~Unknown~~	~~21.2~~		
		~~22.4~~		

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/28/91 - 09/29/91

Instrument ID: HP 5890

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
9449 DL						X					
9450						X					
9452						X					
9453						X					
9454 DL						X					
9455						X					
9456						X					
9457						X					
9458						X					
9459						X					

*≥60% Resolved ✓ ♦≥60% Resolved ✓ §≥60% Resolved ✓
in Initial Resolution Check

DB-608 ✓ or Equivalent_____

09/27/91

	Initial %RSD>20	Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→ 09	Day→	27	28	28	29	29				
COMPOUND↓	Time→	2219 ✓	1006 ✓	2114 ✓	0819 ✓	2123 ✓				
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦	20.5									J-C/-
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor *										
Endrin Ketone *										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)										
Decachlorobiphenyl (DCB)										

* Validation Criteria:

	Quantitation Colum		Confirmation Colum
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/28/91 - 09/29/91

Instrument ID: HP5890

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec.(%) TCX	Surr. Rec.(%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
B461							X				
B462							X				
B463							X				
B464							X				
B465							X				
B466							X				
B467							X				
B468							X				
B451DL							X				
B466MS							X				

*≥60% Resolved ✓ ♦≥60% Resolved ✓ §≥60% Resolved ✓
in Initial Resolution Check

DB-608 ✓ or Equivalent_____

09/27/91 Calibrations:

COMPOUND↓	Initial %RSD>20	Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→	09									
	Day→	27	28	28	29	29				
	Time→	2219 ✓	1006 ✓	2114 ✓	0859 ✓	2165 ✓				
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦	20.5									J-C/-
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosufan II										
4,4'-DDD										
Endosufan sulfate										
4,4'-DDT										
Methoxychlor *										
Endrin Ketone *										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)	✓									
Decachlorobiphenyl (DCB)	✓									

* Validation Criteria:

	Quantitation Colum		Confirmation Colum
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/28/91 - 09

Instrument ID: HP 5890

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
8460							X				
MS (REAGENT)								X			
MSD (REAGENT)									X		

*≥60% Resolved ___ ♦≥60% Resolved ___ §≥60% Resolved ___
in Initial Resolution Check

DB-608 or Equivalent _____

	Initial %RSD>20	Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
	↓	1	2	3	4	5	6	7		
Cont.Cal.Date, Month→	Day→	27	28	28	29	29				
COMPOUND↓	Time→	2219	1006	2114	0849	2129				
alpha-BHC		✓	✓	✓	✓	✓				
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦	20.5									J+/-
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor *										
Endrin Ketone *										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)										
Decachlorobiphenyl (DCB)										

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):
10/03/91 - 10/04/91

Instrument ID:
VARIAN 6000

Method Blank ID(s): PBLK1

Extract Date(s):
09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
8449DL						X					
8450						X					
8451DL						X					
8452						X					
8453						X					
8454DL						X					
8455						X					
8456					NONE						
8457						✓					
8458						✓					

≤60% Resolved ✓ ≥60% Resolved ✓
in Initial Resolution Check

DB-1701 ✓ or Equivalent DB-17

~~09/2~~ 10/03/91 Calibrations:

	Initial %RSD>20	Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→ 10	Day→	03	13							
COMPOUND↓	Time→	0522	1707							
alpha-BHC		26.1								J-C / -
beta-BHC	20.2									J-C / -
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin										
4,4'-DDE										
Endrin	21.4									J-C / -
Endosulfan II			33.0							J-C / -
4,4'-DDD										
Endosulfan sulfate ♦	26.0		33.0							J-C / -
4,4'-DDT										
Methoxychlor ♦										
Endrin Ketone	34.7									J-C / -
Endrin Aldehyde	26.0		NONE							J-C / -
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)			RT					P	RT	
Decachlorobiphenyl (DCB)		RT								

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/03/91 - 10/04/91

Instrument ID: VARIAN 6100

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
8454					NONE						
8460											
8461											
8462											
8463											
8464											
8465											
8466											
8467											
8468					↓						

*≥60% Resolved ✓ ♦≥60% Resolved ✓
in Initial Resolution Check

DB-1701 or Equivalent DB-17	Initial 10/03/91 %RSD>20	Calibrations: Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers (+/-)
Cont.Cal.Date, Month→	Day→	03	03							
COMPOUND↓	Time→	0522	1707							
alpha-BHC		26.1								J-C/-
beta-BHC	20.2									J-C/-
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin										
4,4'-DDE										
Endrin	21.4									J-C/-
Endosufan II			33.0							J-C/-
4,4'-DDD										
Endosufan sulfate *	26.0		380							J-C/-
4,4'-DDT										
Methoxychlor *										
Endrin Ketone	34.7									J-C/-
Endrin Aldehyde	26.0		NONE							J-C/-
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)			RT						RT	
Decachlorobiphenyl (DCB)		RT								

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):
10/03/91 - 10/04/91

Instrument ID: VARIAN 6000

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime Out Ext	HoldTime Out Anal	Surr. Rec. (%) TCX	Surr. Rec. (%) DCB	Standard(s) After Sample Analysis: 1	2	3	4	5	6	7
8466MS					NONE						
8466MSD					↓						

*≥60% Resolved ✓ ♦≥60% Resolved ✓
in Initial Resolution Check

DB-1701 or Equivalent DB-17 ✓	Initial %RSD>20	Continuing: RPD > 25% * PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7	Blank Conc.	Qualifiers
	↓									
Cont.Cal.Date, Month→ 10	Day→	03	03							
COMPOUND↓	Time→	0522	1707							(+/-)
alpha-BHC		26.1								J-C/-
beta-BHC	20.2									J-C/-
delta-BHC	N/A									
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin										
4,4'-DDE										
Endrin	21.4									J-C/-
Endosufan II			33.0							J-C/-
4,4'-DDD										
Endosufan sulfate *	26.0		38.0							J-C/-
4,4'-DDT										
Methoxychlor *										
Endrin Ketone	34.7									J-C/-
Endrin Aldehyde	26.2		NONE							J-C/-
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)			RT						RT	
Decachlorobiphenyl (DCB)		RT								

* Validation Criteria:

	Quantitation Column		Confirmation Column
Compound Detected	RPD% < 25%	and	RPD < 25%
Compound Undetected	RPD% < 25%	or	RPD < 25%

TABLE 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 1 of 3

VOA FRACTION

All OK

A. Sample Numbers																		
B. Surrogate(s) outside QC limits (show %R)	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3
C. Compound less than 10%? (Y/N)																		
D. Initial Analysis Qualifiers																		
E. Reanalysis required? (Y/N)																		
o If blank, were associated samples reanalyzed? (Y/N)																		
F. Sample Number for reanalysis.																		
G. Reanalysis surrogates outside limits (show % R)																		
H. Reanalysis qualifiers.																		

QC Limits (%R)	SOIL	WATER
VOA S1 = Toluene-d8	84-138	88-110
VOA S2 = Bromofluorobenzene	59-113	86-115
VOA S3 = 1,2-Dichloroethane-d4	70-121	76-114

A:\SURROG-1.WK3

NOTE: The circled sample number is the analysis/reanalysis recommended for use.

ACID FRACTION

Sample Numbers																						
Surrogate(s) outside QC limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Compound less than 10%? (Y/N)																								
Reanalysis required? (Y/N)																								
If blank, were associated samples reanalyzed? (Y/N)																								
Initial Analysis Qualifiers																								
Sample Number for reanalysis.																								
Reanalysis surrogates outside limits (show % R)																								
Re-extraction required? (Y/N)																								
If blank, were associated samples re-extracted? (Y/N)																								
Sample number for re-extract.																								
Re-extraction outside limits (show % R)																								
Reanalysis qualifiers.																								

QC Limits (%R)	SOIL	WATER
id S4 = Phenol-d6	24-113	10-110
id S5 = 2-Fluorophenol	25-121	21-110
id S6 = 2,4,6-Tribromophenol	19-122	10-123
id S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8449 DL		8452		8451 DL		8452		8453		8454	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	-/+	27a/237	-/-	145.4/-	-/-	-/166	-/-	-/-	-/-	37/166		
Qualifier, if applied.												

Limits (%R)	SOIL	WATER
sticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
sticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

8454 DL
-/- 269/18

\SHELL\SURROG-2.WK3

ACID FRACTION

Sample Numbers																						
Surrogate(s) outside QC limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Compound less than 10%? (Y/N)																								
Reanalysis required? (Y/N)																								
If blank, were associated samples reanalyzed? (Y/N)																								
Initial Analysis Qualifiers																								
Sample Number for reanalysis.																								
Reanalysis surrogates outside limits (show % R)																								
Re-extraction required? (Y/N)																								
If blank, were associated samples re-extracted? (Y/N)																								
Sample number for re-extract.																								
Re-extraction outside limits (show % R)																								
Reanalysis qualifiers.																								

QC Limits (%R)	SOIL	WATER
d S4 = Phenol-d6	24-113	10-110
d S5 = 2-Fluorophenol	25-121	21-110
d S6 = 2,4,6-Tribromophenol	19-122	10-123
d S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	5455		5456		5457		5458		5459		5460	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	-/-	-/-	-/-	44.7/-	26.2/35.6	44.4/-	-/-	45.3/-	-/-	43.1/183	-/-	46.2/-
Qualifier, if applied.												

Limits (%R)	SOIL	WATER
sticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
sticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

\SHELL\SURROG-2.WK3

H. G.

ACID FRACTION

Sample Numbers																						
Surrogate(s) outside QC limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Compound less than 10%? (Y/N)																								
Reanalysis required? (Y/N)																								
If blank, were associated samples reanalyzed? (Y/N)																								
Initial Analysis Qualifiers																								
Sample Number for reanalysis.																								
Reanalysis surrogates outside limits (show % R)																								
Re-extraction required? (Y/N)																								
If blank, were associated samples re-extracted? (Y/N)																								
Sample number for re-extract.																								
Re-extraction outside limits (show % R)																								
Reanalysis qualifiers.																								

QC Limits (%R)	SOIL	WATER
d S4 = Phenol-d6	24-113	10-110
d S5 = 2-Fluorophenol	25-121	21-110
d S6 = 2,4,6-Tribromophenol	19-122	10-123
d S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8461		8462		8463		8464		8465		8466	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	-/-	43.2/-	-/-	-/-	-/-	40.1/-	-/-	-/-	45.3/44.1	5/-	-/-	-/-
Qualifier, if applied.												

: Limits (%R)	SOIL	WATER
:sticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
:sticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

\SHELL\SURROG-2.WK3

ABLE 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 3 of 3

ACID FRACTION

Sample Numbers																							
Surrogate(s) outside QC limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Compound less than 10%? (Y/N)																							
Reanalysis required? (Y/N)																							
If blank, were associated samples reanalyzed? (Y/N)																							
Initial Analysis Qualifiers																							
Sample Number for reanalysis.																							
Reanalysis surrogates outside limits (show % R)																							
Re-extraction required? (Y/N)																							
If blank, were associated samples re-extracted? (Y/N)																							
Sample number for re-extract.																							
Re-extraction outside limits (show % R)																							
Reanalysis qualifiers.																							

QC Limits (%R)	SOIL	WATER
Acid S4 = Phenol-d6	24-113	10-110
Acid S5 = 2-Fluorophenol	25-121	21-110
Acid S6 = 2,4,6-Tribromophenol	19-122	10-123
Acid S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	S466 ms				S466 msd				S467				S468				PBLK1				BLSP (CLEANED)			
QC limits exceeded (show %R)	S1	S2			S1	S2			S1	S2			S1	S2			S1	S2			S1	S2		
	51.0/48.8	48.8/-			17.8/18.3	36.1/-			52.6/-	35.5/-			46.1/43.0	49.2/-			27.5/30.0	13.5/32.5			-/0	44.3/		
Qualifier, if applied.																								

QC Limits (%R)	SOIL	WATER
Pesticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
Pesticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

A:\SHELL\SURROG-2.WK3

BLE 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 3 of 3

ACID FRACTION

Sample Numbers																				
Surrogate(s) outside QC limits (show %R)	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Compound less than 10%? (Y/N)																				
Reanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analysis Qualifiers																				
Sample Number for reanalysis.																				
Reanalysis surrogates outside limits (show % R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract.																				
Re-extraction outside limits (show % R)																				
Reanalysis qualifiers.																				

QC Limits (%R)	SOIL	WATER
id S4 = Phenol-d6	24-113	10-110
id S5 = 2-Fluorophenol	25-121	21-110
id S6 = 2,4,6-Tribromophenol	19-122	10-123
id S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	BLSP (REAGENT											
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	-/0	-/0										
Qualifier, if applied.												

QC Limits (%R)	SOIL	WATER
Pesticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
Pesticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

C:\SHELL\SURROG-2.WK3

CCJM
ENVIRONMENTAL ENGINEERS & SCIENTISTS

SILVER SPRING
CHICAGO
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DETROIT
GRAND RAPIDS

DOCUMENT NO.: 067NCODS.RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

Case No. 0051 URS TDCN 3001210 Project No. CTO-051

Site Name St. Lawrence Island, AK Project Name N.E. Cape

Contract Laboratory Eureka Laboratories, Inc.

Sample Delivery Group (SDG) 8484 Sampling Date (Month/Year) 8/91

Sample Matrix 5 low waters

Type of Analyses Volatiles (see page 2)

Data Reviewer Roger Simon Date 12/28/91

QA Review by Jeralyn Guthrie Date 12/28/91

CCJM Approval by Richard Cheatham Date 12/28/91

Telephone logs/correspondence attached? Yes ____ No ____ Not Appl. X

Laboratory case narrative attached? Yes X No ____ Not Avail. ____

Required deliverables provided? Yes ____ No X Not Appl. ____

Airbill enclosed? Yes X No ____ Not Avail. ____

CLP SOW used by laboratory for analysis 3/90

Remarks: Report is based on resubmissions (rec'd 12/19/91) and is considered final.

Note:

-- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, the EPA's Functional Guidelines for Organic Analyses and method specific references have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.

-- Please see data flagging definitions on the last page of this report.

Sample Number	Sample Matrix	VOA
8484	water	X
8485	water	X
8486	water	X
8487	water	X
8488	water	X
8484MS	water	X
8484MSD	water	X

X = Analysis has been provided for validation.
0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. Deliverables

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes _____ No __X__

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY
__X__ Included in package
__O__ Not included and/or Not available
__NA__ Not applicable or Not required
__RS__ Provided as resubmission

__X__ Method blank spikes with each batch
__X/O__ Control chart developed by lab
__X__ Sample results - Form 1 or spreadsheet
__X__ CLP data flags used by laboratory
__X__ Sample chromatograms and mass spectra
__RS__ Holding times (sampling, prep and analysis dates provided)
__X__ Surrogate recoveries - Form 2
__X__ Matrix spike/matrix spike duplicate (MS/MSD) - Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
__X__ Method blank summary - Form 4
__X__ Report form for method blank results (Form 1 or spreadsheet)
__X__ GC/MS tuning - Form 5
__X__ Initial calibration data, GC/MS - Form 6
__NA__ Pesticide/PCB calibration standards summary - Form 8D (listed as Form 9 on NEESA Table 7.6)
__X__ Continuing calibration data, GC/MS - Form 7
__X__ Internal standard area summary, GC/MS - Form 8A, 8B, or 8C
__NA__ Pesticide/PCB continuing calibration data - Form 9
__NA__ Pesticide/PCB 2nd column confirmation - chromatograms

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines. See the following table for a summarization of sample holding times.

Yes __X__ No _____

Comments:

Holding Time Summary

Sample Number	Sampling Date	VTSR	VOA Analysis	
8484	8/23/91		8/27	8/29
8484 MS				X
8484 MSD				X
8485	8/23/91		8/28	8/29
8486	8/24/91		8/27	8/29
8487	8/24/91		8/27	8/29
8488	8/23/91		8/28	8/29

X - indicates MS/MSD was performed

Chain of Custody records were provided as a resubmission.

III. GC/MS Tuning and Mass Calibration

The BFB and/or DFTPP performance results summaries were included for all samples, and were reported to be within specified criteria at the appropriate frequency.

Yes _____ No __X__

Comments:

1. In the original submission the value reported for the relative absorbance determined at 8:15 on 7/19/91 for mass 177 relative to mass 176 was incorrectly reported as 100%. It should have been 8.1% (ratio of 7.2 to 89.6 for masses 177/176). The laboratory has provided the corrected Form 5A as a resubmission.

2. In the original data package for the instrument tune on 8/29/91 at 14:19 the relative abundance for masses 176/174 was reported as 119.4% which was outside of tuning control limits. The laboratory has provided a new Form 5A as a resubmission showing the tune for that date to be within control limits. No data has been qualified on this basis.

IV. A. Instrument Calibration (Volatiles)

1. The instrument response factor (RRF) data summaries were reviewed for the initial and continuing calibrations. All information was present and reported on the required summary forms. Response factors met the required criteria for volatile analyses, thus no data have been qualified.

Yes _____ No __X__

Comments: Although within the SOW criteria (Min RRF = 0.010), 2-butanone had a min. RRF of 0.049. Volatile compounds have been reviewed with a control limit of 0.050 being used as a minimum response factor. While contractually complieant, a calibration problem is demonstrated and all 2-butanone results have been qualified per Functional Guidelines criteria.

2. The percent relative standard deviation (%RSD) for the initial calibrations and the percent difference (%D) for the continuing calibrations were reviewed for all compounds. The %RSD and %D values reported met the data validation criteria (i.e., < 30 %RSD and < 25 %D) for volatile analyses, thus no data have been qualified.

Yes __X__ No _____

Comments: No comments.

V. Blanks

A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes _____ No __X__

Comments: Contaminant quantities reported in the laboratory preparation blanks are listed below. Associated samples which have been flagged "UU" due to the blank contaminants are shown below.

Blank ID	Compound	Amount (µg/L)	Associated Samples
VBLK	methylene chloride	11	all except 8485

B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes _____ No __X__ Not Identified _____

Comments: All samples in this SDG were identified as trip blanks. Contaminants reported in these trip blanks typically included methylene chloride, chloroform and an occasional unknown TIC.

C. Other Blanks - No other types of blanks have been identified in the data package.

VI. Surrogate Recovery

The surrogate recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes __X__ No _____

Comments: No comments.

VII. Blank Spike - Laboratory Control Sample(s)

A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes __X__ No _____

Comments:

1. All recoveries for non-surrogate compounds found in the blank spike/blank spike duplicate were calculated incorrectly by the laboratory. For example, a spike with a sample value of 0 µg/L, a spike value of 53 µg/L and a true value of 50 µg/L for the spike added, was reported by the laboratory as a recovery of 90% instead of 106%.

2. The blank spike was spiked with the matrix spike compounds, so the matrix spike control limits were applied by the reviewer for assessment purposes.

B. Laboratory control charts were provided in the package and the limits specified by the control charts were used for review.

Yes _____ No __X__

Comments: The control charts provided with the data package were for surrogate compounds instead of the compounds found in the blank spike, thus were not used for review.

VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes __X__ No _____

Comments: Sample 8484 was used for MS/MSD.

IX. Additional Comments

1. All internal standards showed acceptable performance.

2. It was noted by the reviewer that CRQL's have not been adjusted to SOW 3/90 levels for most VOA compounds.

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.

R - Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.

J - The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.

B - The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.

JN - Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER 1420753250

1420753250

RECIPIENT'S COPY

Date 11/15/91

1 From (Your Name) Please Print: W. Jaime Bruton, Ph.D
Your Phone Number (Very Important): (206) 623-1600
Company:
Department/Floor No:
Street Address:
City: SEATTLE State: ZIP Required:

2 To (Recipient's Name) Please Print: Richard Cheatham
Recipient's Phone Number (Very Important): (303)
Company: CCJM
Department/Floor No: Suite 215
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes): 215 Union Boulevard
City: Lakewood State: CO ZIP Required: 80228

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): C16-51 30510.12

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address:
City: State: ZIP Required:

3 PAYMENT 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct No 3 [ ] Bill 3rd Party FedEx Acct No 4 [ ] Bill Credit Card
5 [ ] Cash/Check

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)		Standard Overnight (Delivery by next business afternoon†)	
11	YOUR PACKAGING	51	YOUR PACKAGING
16	FEDEX LETTER *	56	FEDEX LETTER *
12	FEDEX PAK *	52	FEDEX PAK *
13	FEDEX BOX	53	FEDEX BOX
14	FEDEX TUBE	54	FEDEX TUBE
Economy Two-Day (Delivery by second business day†)		**Government Overnight** (Restricted to authorized users only)	
30	ECONOMY	46	GOVT LETTER
		41 [X]	GOVT PACKAGE

Freight Service (An Extra Charge is applied for each shipment over 150 lbs.)
70 OVERNIGHT FREIGHT ** (Confirmed reservation required)
80 TWO-DAY FREIGHT **
† Delivery commitment may be later in some areas
*Declared Value Limit $100
**Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)

1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [ ] DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) [ ] (Not available to all locations)
4 [ ] DANGEROUS GOODS (Extra charge)
5 [ ]
6 [ ] DRY ICE Lbs
7 [ ] OTHER SPECIAL SERVICE
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra Charge)
10 [ ]
11 [ ]
12 [ ] HOLIDAY DELIVERY (If offered) (Extra Charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE
1	20	NA
Total 1	Total 20	Total NA

DIM SHIPMENT (Chargeable Weight) [ ] lbs
____ X ____ X ____ = ____

Received At
1 [X] Regular Stop 3 [ ] Drop Box
2 [ ] On Call Stop 4 [ ] BSC
5 [ ] Station

7 Release Signature
FedEx Emp. No Date/Time

Emp. No Date
[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Del [ ] Chg. To Hold
Street Address
City State Zip
Received By: X
Date/Time Received FedEx Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 6/91
PART #137204 FXEM 9/91
FORMAT #099
099
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I. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc.
Lab Certification Number: E765
SDG Number: 8484
Purchase Order Number: AN-91-P-0019
Contract Task Order Number: 0051
NEESA QA/QC Level C
Analysis: Initial
Sample Numbers: 5

A. Sample Description/Analytical Description

Client ID	Lab ID	Date Sampled	Date Received	Matrix	Analysis/Method
8484	9108214-1A	08/23/91	08/27/91	Water	VOA/3-90 CLP SOW
8485	9108219-2A	08/23/91	08/28/91	Water	Same as above
8486	9108214-3A	08/24/91	08/27/91	Water	Same as above
8487	9108214-4A	08/24/91	08/27/91	Water	Same as above
8488	9108219-4A	08/23/91	08/28/91	Water	Same as above

B. Sample Receipt

Samples were received in two delivery batch on August 27 & 28, 1991. Samples were in good condition. Sample receipt conditions, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bills. For Order Numbers 91-08-214 and 91-08-219, the following discrepancy is observed:

For several samples, "Trip" was indicated as the analysis on the Chain-of-Custody forms.

A memo was faxed to ELI by URS with approved signature to clarify that all samples with the "Trip" analysis should be analyzed for V-CLP only.

C. Quality Control Report

Method Blank

Methylene Chloride, a common laboratory introduced contaminant, was found in the method blank as well as in the samples. The concentration of Methylene Chloride found in the method blank was 11 ug/L (ppb) as compared to 5 ug/L (ppb) detected in Samples Nos. 8484, 8486, 8487, and 8488.

QC Chromatograms

QC Chromatograms for all samples as well as the blank are presented in this package. Calibration chromatograms and QC chromatograms are not pesented in this package but will be available for checking if a problem arises or during on-site audits.

3. Deliverable

Level C data package is presented for this SDG per contract requirement.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Shao-Pin Yo, Ph.D.
Laboratory Director

CCJM
ENVIRONMENTAL ENGINEERS & SCIENTISTS

SILVER SPRING
CHICAGO
DENVER
DETROIT
GRAND RAPIDS

MEMORANDUM

TO: Jamie Bruton, URS/Seattle

FROM: Roger Simon, Jeralyn Guthrie, Richard Cheatham, CCJM/Denver

DATE: December 5, 1991

DOCUMENT NO: 072INCRAI.MEM

SUBJECT: Volatile Organics Tuning Problems for CTO-051

Per our conversation of 12/5/91, please find herein a detailed description of tuning problems found with all volatile organics analyses performed at Eureka Laboratories for CTO-051. These data packages are considered "on hold" until these issues have been resolved. Data packages have been identified by TDCN numbers and SDG.

1. For all CTO-051 data packages with volatile organics analyses (SDG 8449/TDCN 3001421, SDG 8484/TDCN 301210, SDG 8401/TDCN 3001436 and SDG 8416/TDCN 3001439), the values reported for the percent relative abundance of masses 177/176 were incorrectly reported as 100% on the Form V Tuning Summaries. This appeared to be a computer error since calculation of this ratio by the reviewer resulted in acceptable tunes. The laboratory should provide corrected summary forms.

2. In SDG 8484/TDCN 3001210, the relative abundance for masses 176/174 was reported and found by the reviewer to be 119.4%. Since there is no expanded criteria for this critical ratio, all data will have to be qualified as unusable (R); raw data to verify the values reported on the Form V Tuning Summary were not included with the Level C data package, so it could not be determined whether the reported ratio was a transcription problem with the base mass percentages reported for m/z 174 and 176, software problem or something else. Please indicate if a calculation/transcription problem existed and provide a corrected summary form or the correct values for masses 176 and 174.

If you should have any questions, please do not hesitate to call us at (303) 987-2928.

cc: URS / Navy Clean PP

YG RAC

RESUBMISSION 12/19/91 AKA

URS **MEMORANDUM** C.C.J.M. | Date 12-18-91 | Page 1 of 1

TO: CCJM

215 Union Blvd. Suite 215

Lakewood, CO 80228

ATTENTION: ~~Rolf Reindt~~ Geralyn Guthrie

FROM: URS Consultants, Inc.

1100 Olive Way, Suite 200

Seattle, Washington 98101-1832

BY: Analytical Support Activities

PHONE: (206) 623-1800 FAX: (206) 233-9570

C.C.J.M. RECEIVED DEC 19 1991

SUBJECT: Resubmitted FORM I for Volatile Analysis by Eureka Laboratories Inc for CTO-51

Please find the above referenced resubmitted Form I for volatile analysis. They are for four (4) separate SDG numbers and are as follows:

1. Eureka SDG: 8401 URS TDCN: 3001436
2. Eureka SDG: 8416 URS TDCN: 3001439
3. Eureka SDG: 8419 URS TDCN: 3001421
4. Eureka SDG: 8484 URS TDCN: 3001210

If you have any questions, please feel free to call any time.

DISTRIBUTION: Lab File

Sincerely Yours,

W. J. Burton, PhD

URS CONSULTANTS

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

RESUBMISSION
12/19/91
AMH

Lab Name: EUREKA LABS Contract: URS WA

Lab Code: 000001 Case No.: 0051 SAS No.: PR215A SDG No.: 8484

Lab File ID: GE573 BFB Injection Date: 7/19/91

Instrument ID: VOA2 BFB Injection Time: 0815

GC Column: DB-624 ID: 0.53 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	20.2
75	30.0 - 66.0% of mass 95	49.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0(0.0)1
174	50.0 - 120.0% of mass 95	91.6
175	4.0 - 9.0% of mass 174	7.3(8.0)1
176	93.0 - 101.0% of mass 174	89.6(97.8)1
177	5.0 - 9.0% of mass 176	7.2(8.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD, BLANKS AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	GE574	GE574	7/19/91	0841
02	VSTD010	GE575	GE575	7/19/91	0913
03	VSTD020	GE577	GE577	7/19/91	1023
04	VSTD100	GE580	GE580	7/19/91	1206
05	VSTD200	GE584	GE584	7/19/91	1424
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22					

00063

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

RESUBMISSION
12/19/91

Lab Name: EUREKA LABS Contract: URS WA

Lab Code: 000001 Case No.: 0051 SAS No.: PR215A SDG No.: 8484

Lab File ID: GE965 BFB Injection Date: 8/29/91

Instrument ID: VOA2 BFB Injection Time: 1419

GC Column: DB-624 ID: 0.53 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	22.3
75	30.0 - 66.0% of mass 95	52.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.6
173	Less than 2.0% of mass 174	0.0(0.0)1
174	50.0 - 120.0% of mass 95	81.5
175	4.0 - 9.0% of mass 174	7.0(8.6)1
176	93.0 - 101.0% of mass 174	79.3(97.3)1
177	5.0 - 9.0% of mass 176	5.1(6.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD, BLANKS AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	GE969	GE969	8/29/91	1457
02	VBLK	9108214-30A	GE970	8/29/91	1529
03	RS	9108214-34A	GE971	8/29/91	1601
04	RSD	9108214-35A	GE972	8/29/91	1633
05	8484	9108214-23A	GE973	8/29/91	1707
06	8484MS	9108214-32A	GE974	8/29/91	1739
07	8484MSD	9108214-33A	GE975	8/29/91	1818
08	8486	9108214-07A	GE976	8/29/91	1851
09	8487	9108214-10A	GE977	8/29/91	1924
10	8485	9108219-17A	GE982	8/29/91	2206
11	8488	9108219-21A	GE983	8/29/91	2230
12					
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00064

TABLE 1 (3/90, OLM01.8)
VOA Qualifier Summary
Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed:
8/29/91

Instrument ID:

Method Blank ID: VBLK
Date: 8/29/91 Time: _____

Sample Identifier:	Hold Time ✓ Out		Standards: (↑, ↓; ↓↓=<10%) ✓ SMCs			Internal (IS)		
	Ar	All	1	2	3	1	2	3
8484								
8484 MS								
8484 MSD								
8485								
8486								
8487								
8488								

ICal 7/19/91 Time: 9:13
CCal 8/29/91 Time: 14:57

* RRF must be ≥ .010 ∝System Monitor Compound COMPOUND:	MIN RRF	Initial Cal. RRF < MIN	Initial Cal. %RSD >20.5	Continuing Cal. RRF < MIN	Continuing Cal. %D >25	Blanks Method	Blanks Trip	Qualifiers (+/-)	Internal Standard
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					11		~~J~~ J/U5	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049						J/R	
1,1,1-Trichloroethane	.100								2
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8 ∝	*								3
Bromofluorobenzene ∝	.200								3
1,2-Dichloroethane-d4 ∝	*								1

Blank Tentatively Identified Compounds

Blank ID	Reported as:	RT	(µg/kg or µg/L)	Qualifiers

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EUREKA LABS Contract: URS WA

Lab Code: 000001 Case No.: 0051 SAS No.: PR215A SDG No.: 8484

Lab File ID: GE965 BFB Injection Date: 8/29/91

Instrument ID: VOA2 BFB Injection Time: 1419

GC Column: DB-624 ID: 0.53 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	22.3
75	30.0 - 66.0% of mass 95	52.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.6
173	Less than 2.0% of mass 174	0.0(0.0)1
174	50.0 - 120.0% of mass 95	81.5
175	4.0 - 9.0% of mass 174	8.6(10.6)1
176	93.0 - 101.0% of mass 174	97.3(119.4)1
177	5.0 - 9.0% of mass 176	6.5(~~100.0~~ 6.7)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD, BLANKS AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	GE969	GE969	8/29/91	1457
02	VBLK	9108214-30A	GE970	8/29/91	1529
03	RS	9108214-34A	GE971	8/29/91	1601
04	RSD	9108214-35A	GE972	8/29/91	1633
05	8484	9108214-23A	GE973	8/29/91	1707
06	8484MS	9108214-32A	GE974	8/29/91	1739
07	8484MSD	9108214-33A	GE975	8/29/91	1818
08	8486	9108214-07A	GE976	8/29/91	1851
09	8487	9108214-10A	GE977	8/29/91	1924
10	8485	9108219-17A	GE982	8/29/91	2206
11	8488	9108219-21A	GE983	8/29/91	2230
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