LAIDLAW ENVIRONMENTAL SERVICES
CHEMICAL QUALITY CONTROL REPORT

CONTRACT DACA85-91-C-0044
ROOSEVELT ROAD TRANSMITTER SITE
PCB REMEDIATION
FT. RICHARDSON, ALASKA
AUGUST 14, 1992

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1.0 INTRODUCTION

As stated in the Contractor Chemical Quality Control Plan (CCQCP), Contract DACA85-91-C-0044, for the Roosevelt Road Transmitter Site PCB Remediation at Fort Richardson, Alaska, the chemical quality control issues revolve around a sampling program to confirm that contaminated soils have been removed during excavation to clean-up criteria. U.S. Environmental Protection Agency (EPA) policy requires that all remedial action activities be under the control of a centrally managed Quality Assurance (QA) program. This requirement applies to all environmental monitoring and measurement activities mandated or supported by EPA. Each contractor that generates data has full responsibility to implement minimum procedures to ensure that precision, accuracy, representativeness, completeness, and comparability (PARCC) of these data are known. To meet this objective, a site-specific CCQCP was prepared detailing Quality Assurance/Quality Control (QA/QC) procedures to ensure data generated during the remedial activities are accurate, precise, comparable, and complete, and therefore representative of site conditions.

2.0 PROJECT DESCRIPTION

2.1 *Site Description and History*

The Roosevelt Road Transmitter Site is located within the boundaries of the Ft. Richardson military installation. Ft. Richardson is located approximately six miles east of Anchorage, Alaska. The Roosevelt Road Site was a high-frequency transmitter communication center, in use from World War II through the Korean War. The transmitter site itself has been inactive since the late 1960s, when the transmitter was removed.

While the site has occasionally been used for military maneuvers, training, and staging activities, most equipment and structures have been removed, leaving only concrete foundations and a concrete bunker which was part of the original transmitter installation. Several potential underground hazards do exist in the form of abandoned utilities and underground tunnels constructed to allow passage of personnel between facilities. The tunnels, which have timber ceilings, are no longer structurally sound; some have collapsed prior to and during the excavation of this site.

2.2 *Nature and Extent of Contamination*

Remedial investigations and feasibility studies were conducted at the site under the Installation Restoration Program. These activities indicated that portions of surface structures and some surface and subsurface soils have been contaminated with polychlorinated biphenyls (PCBs), namely Aroclor 1260 (as Askarel). Approximately 600 tons of material was originally thought to be contaminated. Contaminated surface structures under the scope of work for this contract included the foundation from the power hut, a portion of the transmitter annex concrete pad, and a portion of the bunker entrance directly adjacent to the transmitter annex.

Contaminated soil was identified on the drawings included with the Bidding Documents. These areas were originally believed to reach contamination depths of 15 feet, possibly more. This report details the findings in these areas, as identified on the drawings, and additional contamination discovered during excavation activities and upon receipt of sampling analyses at excavation depths set forth in this contract.

3.0 CONTRACTOR QUALITY CONTROL OPERATIONS

Laidlaw Environmental Services is directly responsible for the quality control for all operations at this site. Laidlaw has contracted Sterling & Associates, Inc. (Milpitas, California) to function in the capacity of Contractor Quality Control (CQC) Officer. The CQC Officer has performed the required sampling, monitoring, and documentation of all on-site activities. Sampling has been conducted to verify whether clean-up criteria have been met, with analyses being conducted by an Army Corps of Engineer approved laboratory. The laboratory chosen for the PCB analyses within the scope of this project is the Chemical & Geological Laboratory of Anchorage, Alaska.

4.0 QUALITY ASSURANCE OBJECTIVE

Quality assurance objectives are used to ensure that the remedial action for the Roosevelt Road Transmitter Site is performed in a manner that is consistent with the requirements of the Specifications (as provided in the Bidding Documents, DACA-91-B-0044, August, 1991). The quality assurance objective for measurement data is to ensure that environmental sampling data of known and acceptable quality are provided. Results from site samples are being used to determine whether or not clean-up criteria have or have not been met, thus giving Laidlaw and the Corps direction for progress.

Analytical methodology for testing soil samples is derived from the *Test Methods for Evaluating Solid Wastes (Physical/Chemical Methods), SW-846, Fourth Edition, November 1990.*

5.0 FIELD ACTIVITIES

5.1 *Sampling, Handling, and Shipping*

Series 200, 8-ounce glass sample jars cleaned to EPA specifications were obtained from the laboratory. Samples were collected using a hand sampler with a single 2.5 inch diameter stainless steel liner. At each sampling point, the top six inches of soil was removed to permit retrieval of the soil sample below. Each container was labeled at the time of sampling, identifying the sample number, sampler's name, date and time of collection, and location of sampling point. Each container was then placed in a resealable storage bag, placed in an insulated cooler with ice packs, and delivered under Chain of Custody (COC) to the laboratory. Split samples were taken and packaged in the same manner, and were delivered by Federal Express to the North Pacific Division Laboratory for quality assurance verification. Coolers containing samples destined for either laboratory were sealed with evidence tape. Copies of all

Chain of Custody forms can be found in Appendix I; sample inventory/integrity reports can be found in Appendix II of this report.

5.2 *Summary of Power Control Hut, North Bunker Entrance, and Original Transmitter Annex Sampling Activities*

Upon completion of excavation of the Power Control Hut, North Bunker Entrance, and Original Transmitter Annex, samples from each of these sites were taken according to the grids shown in figures 1, 2, 3, 4, and 5 respectively. Sampling was performed in accordance with the procedures described in section 5.1 of this report. The following tables summarize the laboratory results for samples taken according to these grids.

POWER CONTROL HUT SAMPLING ACTIVITIES SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	EXCAVATION DEPTH	ppm AROCLOR 1260
D11	7/12/92	2'	7.84
D12	7/12/92	2'	1.58
D13	7/12/92	2'	5.01
D14	7/12/92	2'	429
D15	7/12/92	2'	144
* D30 (D15 split)	7/12/92	2'	1180
D16	7/12/92	2'	5.84
D17	7/12/92	2'	3.29
D18	7/12/92	2'	4.48
D19	7/12/92	2'	0.701

TABLE 1

* D40 (additional D15 split) sent to NPD laboratory for QA verification.

NORTH BUNKER ENTRANCE SAMPLING ACTIVITIES SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	EXCAVATION DEPTH	ppm AROCLOR 1260
C11	7/12/92	2'	0.709
C12	7/12/92	2'	2.47
C13	7/12/92	2'	0.937
* C30 (C13 split)	7/12/92	2'	0.861
C14	7/12/92	2'	0.924
C15	7/12/92	2'	0.381

TABLE 2

* C40 (additional C13 split) sent to NPD laboratory for QA verification.

ORIGINAL TRANSMITTER ANNEX SAMPLING ACTIVITIES SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	EXCAVATION DEPTH	ppm AROCLOR 1260
A11	7/12/92	2'	ND < 0.020
A12	7/12/92	2'	ND < 0.020
A13	7/12/92	2'	ND < 0.020
A14	7/12/92	2'	ND < 0.020
* A30 (A14 split)	7/12/92	2'	0.086
A15	7/12/92	2'	0.457
A16	7/12/92	2'	1.60
A17	7/12/92	2'	1.44
** A31 (A17 split)	7/12/92	2'	1.60
A18	*not taken*	*concrete pad*	N/A
A19	7/12/92	2'	0.142
W7	7/27/92	*trench wipe*	6.02
W14	7/27/92	*trench wipe*	6.13
W21	7/27/92	*trench wipe*	4.76
W28	7/27/92	*wipe blank*	ND <0.020

TABLE 3

* A40 (additional A14 split) sent to NPD laboratory for QA verification.

** A41 (additional A17 split) sent to NPD laboratory for QA verification.

5.3 *Summary of East Bunker Sampling Activities*

The East Bunker excavation included a portion a transmitter annex concrete pad, and a portion of the bunker entrance directly adjacent to the transmitter annex. Concrete in the transmitter annex area was saw cut and removed prior to the excavation of underlying contaminated soils. Larger pieces of contaminated concrete were broken up into manageable pieces suitable for transport and disposal. Concrete that was suspected to contain <10 ppm PCB was stockpiled for later use as backfill material. The results from these concrete stockpiles are detailed later in this report.

In addition to the concrete removal, Laidlaw excavated surface and subsurface soils at the East Bunker area, which were also contaminated with PCBs. Excavation was completed to the lines, grades, and depths indicated in the plans, and sampling activities as described in section 5.1 of this report were performed at each individual excavation limit.

5.3.1 *Sampling of Drill Tailings*

Five piles of drill tailings remnant of the 1990 Ecology & Environment, Inc. (E&E) sight assessment were found on the concrete transmitter annex, and directly adjacent (north) to the East Bunker stairway entrance on a portion of soil clearly labeled "clean soil" on the Drawings. Additionally, PCB labels and pertinent borehole/drilling information in ziplock bags were found buried in most of the piles. Preliminary screening with the Dexsil L2000 PCB/Chloride analyzer indicated PCB contamination and subsequently each of these piles were sampled, and the results are summarized in table 4. The piles were removed and combined into one supersack for disposal.

DRILL TAILINGS SAMPLING ACTIVITIES SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	EXCAVATION DEPTH	ppm AROCLOR 1260
T1	7/9/92	*surface*	187
T2	7/9/92	*surface*	4.52
T3	7/9/92	*surface*	4.72
T4	7/9/92	*surface*	13.7
T5	7/9/92	*surface*	0.542

TABLE 4

5.3.2 *Sampling of "Clean Soil"*

Figures 6, 7, and 8 show the sampling that was done at 6', 8', and 10' depths while excavating that portion of the site. The E&E drawings have labeled the area adjacent to the East Bunker Entrance "clean soil." The E&E report also illustrates a cross-section of the boreholes placed in the "clean soil" area, detailing a PCB plume traveling through the "clean soil" at depths of 0 to 13'. The original workplan called for excavating the "clean" material to thirteen feet and stockpiling it for later use as backfill material. Below thirteen feet was believed to be contaminated.

The aforementioned conflict in the drawings led to additional preliminary screening with the L2000 PCB/Chloride analyzer. Three samples pulled at 3' depth showed < 1.0 ppm Aroclor 1260. This material was stockpiled, and excavation continued to 6' depth. Figure 6 shows sampling done at this depth based on a preliminary screening result of 193 ppm Aroclor 1260. Excavation was then continued to 8' and then 10' depths, with sampling done according to the grids shown in figures 7 and 8, respectively. The results of preliminary screening and laboratory analyses are shown in table 5.

"CLEAN SOIL" SAMPLING ACTIVITIES SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	EXC. DEPTH	L2000 - ppm Aroclor 1260	ppm Aroclor 1260
C200	7/10/92	3'	0.9	*not sent*
C201	7/10/92	3'	1.0	*not sent*
C202	7/10/92	3'	0.4	*not sent*
* C300	7/10/92	6'	117.4	76.4
C301	7/10/92	6'	6.4	*not sent*
C400	7/13/92	8'	99.0	243
C401	7/13/92	8'	3.2	*not sent*
C402	7/13/92	8'	35.5	4.66
** C403	7/13/92	8'	>2000	1290
C404	7/13/92	8'	98.0	206
C500	7/13/92	10'	367	*not sent*
C501	7/13/92	10'	360	314
C502	7/13/92	10'	628	*not sent*
C503	7/13/92	10'	806	*not sent*
C504	7/13/92	10'	69.8	83.4

TABLE 5

* C340 (C300 split) sent to NPD Laboratory for QA verification.

** C440 (C403 split) sent to NPD Laboratory for QA verification.

5.3.3 *Sampling of East Bunker Entrance, Limit of Exc. 0 to 5 Feet Depth*

Figure 9 shows the sampling grid for the 0 to 5' limit of excavation. Four samples were pulled at this depth, rather than six, due to an unexpected change in sight conditions: an underground storage tank, located to the right of the grid, was encountered at a depth of four feet. Separating the tank from the rest of the 5' excavation is an underground cement wall. Contaminated soils to the left of the wall were excavated; upon removal of the tank the remaining contaminated soil will be excavated. The area will then be sampled in grid format, however, while the tank remained in the ground, soil samples were taken at locations north, south, east, and west of the tank for preliminary screening with the L2000. The grid sample results and preliminary screening results are shown in tables 6 and 7, respectively.

EAST BUNKER ENTRANCE, LIMIT OF EXCAVATION 0 TO 5 FEET DEPTH
SAMPLING ACTIVITIES SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	EXCAVATION DEPTH	ppm Aroclor 1260
B210	7/16/92	5'	315
B220	7/21/92	5'	41.9
B230	7/16/92	5'	997
* B234 (B230 split)	7/16/92	5'	664
B240	7/21/92	5'	0.145

TABLE 6

* B235 (additional B230 split) sent to NPD Laboratory for QA verification.

EAST BUNKER ENTRANCE, UNDERGROUND STORAGE TANK AREA
PRELIMINARY SCREENING SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	LOCATION AND DEPTH	L2000 - ppm Aroclor 1260
Tank A21	7/14/92	East, 4'	1.8
Tank A22	7/14/92	South, 4'	0.9
Tank A23	7/14/92	North, 4'	142.5
Tank A24	7/14/92	West, 4'	4.3

TABLE 7

5.3.4 ***Sampling of East Bunker Entrance, Limit of Exc. 10 to 15 Feet Depth***
Figure 10 shows the sampling grid for the 10 to 15' limit of excavation. Four samples were pulled at 12' depth and the results are summarized in table 8.

5.3.5 ***Sampling of East Bunker Entrance, Limit of Exc. 15 to 30 Feet Depth***
Figure 11 shows the approximate locations for samples pulled at 33' depth, on the outside walls of the 15 to 30' excavation at 10' depth, and underneath the concrete bunker on the inside walls at 28' depth. The results are summarized in table 9.

EAST BUNKER ENTRANCE, LIMIT OF EXCAVATION 10 TO 15 FEET, SAMPLING ACTIVITIES SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	EXCAVATION DEPTH	ppm Aroclor 1260
B410	7/16/92	12'	2.16
B420	7/16/92	12'	24.3
B430	7/16/92	12'	53.9
* B440	7/16/92	12'	70.5
B444 (B440 split)	7/16/92	12'	617

TABLE 8

* B445 (additional B440 split) sent to NPD Laboratory for QA verification.

EAST BUNKER ENTRANCE, LIMIT OF EXCAVATION 15 TO 30 FEET, SAMPLING ACTIVITIES SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	LOCATION & EXC. DEPTH	ppm Aroclor 1260
B3301	7/21/92	Floor, 33'	70.5
B3302	7/21/92	Floor, 33'	777
B3303	7/21/92	Floor, 33'	42.9
* B4303 (B3303 split)	7/21/92	Floor, 33'	339
B3304-10	7/21/92	Outside walls, 10'	0.647
B3305-10	7/21/92	Outside walls, 10'	11.3
B3306-10	7/21/92	Outside walls, 10'	2300
B3307	7/22/92	Under Bunker, 28'	2.26
B3308	7/22/92	Under Bunker, 28'	ND <0.020

TABLE 9

* B5303 (additional B3303 split) sent to NPD Laboratory for QA verification.

5.3.6 *Sampling of East Bunker Entrance, Limits of Excavation within this Scope of Work Completed*

Figure 12 shows the sampling pattern of entire East Bunker excavation upon completion of contracted scope of work. Samples were pulled at 5' and 10' depths on the walls, and on the floor at an approximate depth of 13'. Results of sampling the walls at 5' and 10' depths are shown in tables 10 and 11, respectively. Results of sampling the floor of the excavation at approximately 13' depth are shown in table 12.

EAST BUNKER ENTRANCE, COMPLETED EXCAVATION (5' DEPTH) WALL SAMPLING ACTIVITIES SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	LOCATION & EXC. DEPTH	ppm Aroclor 1260
B5001	7/21/92	Wall, 5'	0.813
B5002	7/21/92	Wall, 5'	15.2
B5003	7/21/92	Wall, 5'	0.339
B5004	7/21/92	Wall, 5'	5.23
* B6004 (B5004 split)	7/21/92	Wall, 5'	0.105
B5005	7/21/92	Wall, 5'	10.1
B5006	7/21/92	Wall, 5'	0.040
B5007	7/21/92	Wall, 5'	0.128
B5008	7/21/92	Wall, 5'	0.193
B5009	7/21/92	Wall, 5'	0.256
B5010	7/21/92	Wall, 5'	3.81

TABLE 10

* B7004 (additional split of B5004) sent to NPD Laboratory for QA verification.

EAST BUNKER ENTRANCE, COMPLETED EXCAVATION (10' DEPTH) WALL SAMPLING ACTIVITIES SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	LOCATION & EXC. DEPTH	ppm Aroclor 1260
B10001	7/21/92	Wall, 10'	0.024
B10002	7/21/92	Wall, 10'	42.4
B10003	7/21/92	Wall, 10'	0.045
B10004	7/21/92	Wall, 10'	0.098
B10005	7/21/92	Wall, 10'	118
B10006	7/21/92	Wall, 10'	2.32
B10007	7/21/92	Wall, 10'	ND <0.020
* B11007 (B10007 split)	7/21/92	Wall, 10'	ND <0.020
B10008	7/21/92	Wall, 10'	ND <0.020
B10009	7/21/92	Wall, 10'	0.126
B10010	7/21/92	Wall, 10'	0.122

TABLE 11

* B12007 (additional B10007 split) sent to NPD Laboratory for QA verification.

EAST BUNKER ENTRANCE, COMPLETED EXCAVATION (13' DEPTH) FLOOR SAMPLING ACTIVITIES SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	LOCATION & EXC. DEPTH	ppm Aroclor 1260
B13001	7/21/92	Floor, 13'	0.450
B13002	7/21/92	Floor, 13'	76.5
B13003	7/21/92	Floor, 13'	471
B13004	7/21/92	Floor, 13'	1280
B13005	7/21/92	Floor, 13'	184
B13006	7/21/92	Floor, 13'	6.03
B13007	7/21/92	Floor, 13'	1.26
B13008	7/21/92	Floor, 13'	0.884
B13009	7/21/92	Floor, 13'	17.1
* B14009 (B13009 split)	7/21/92	Floor, 13'	19.9
B13010	7/21/92	Floor, 13'	3.06

TABLE 12

* B15009 (additional 13009 split) sent to NPD Laboratory for QA verification.

5.4 *Summary of Stockpile Sampling Activities*

Sloughing of the side slopes of the East Bunker excavation was anticipated in areas requiring deeper excavation. Laidlaw held that the least costly and most easily managed method for upholding the walls of the deeper excavated areas would be to "bench in" on a slope over clean areas, as opposed to shoring up the excavation. The only draw-back to this simple construction method was the potential for mixing clean soils with contaminated ones, thereby increasing the volume of material which would require transportation and disposal. Based on previous construction experience, Laidlaw found that the best method for controlling the potential for mixing contaminated and noncontaminated soil is to excavate them concurrently. Subsequently, careful excavation management and complete segregation of soil leads to a minimal increase in volume of contaminated materials.

Soils believed to have been clean when excavated during sloping of deeper excavations were stockpiled in piles no higher than 20 feet, sloped as required in the Technical Specifications, and placed in areas which were not objectionable to the Contracting Officer. These piles were to be reserved for backfilling of excavations upon receipt of confirmatory sampling that clean-up criteria have been met. Similarly, soils believed to have been contaminated when excavated during sloping of deeper excavations, soil removed from the "clean soil" area as shown on the Drawings (see section 5.3.2), and the soil/concrete removed from the northeast portion of the excavation, were stockpiled according to the previously described specifications. These contaminated stockpiles

were not placed into supersacks because they were not part of the scope of work under this contract. Figure 13 shows a site map of the stockpiles located around the East Bunker excavation. Each pile was sampled and remains covered with Visqueen. On Friday, August 1, 1992, a Corps representative arrived on-site to pull samples from the following stockpiles for QA verification by NPD Laboratory: SPB01, 05, 08, 13, 19, and 20. The results from Laidlaw's sampling of all stockpiles are shown in table 13.

STOCKPILE SAMPLING ACTIVITIES SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	ORIGIN OF STOCKPILE	ppm Aroclor 1260
SPB01	7/10/92	0-6' "Clean Soil"	556
SPB02 (Concrete)	7/12/92	Slab Under Stairs	3.46
SPB03 (Concrete)	7/12/92	No. Wall Stairway	5.45
SPB04 (Concrete)	7/12/92	Stairs & Floor	830
SPB05	7/17/92	6-13' "Clean Soil"	424
* SPB06	7/17/92	East Bunker	1.09
SPB07	N/A	No Pile With This #	N/A
SPB08	7/16/92	East Bunker	94.0
SPB09	7/16/92	10-15', East Bunker	11.9
SPB10	7/16/92	East Bunker	1.38
SPB11	7/16/92	East Bunker	7.88
SPB12	7/17/92	East Bunker	1.28
SPB13	7/17/92	East Bunker	0.814
SPB14	7/17/92	East Bunker	3.34
SPB15	7/17/92	East Bunker	1.09
SPB16	7/17/92	East Bunker	8.41
SPB17	7/17/92	East Bunker	1.04
SPB18	7/21/92	East Bunker	5.13
SPB19 (conc. + soil)	7/21/92	N.E. Conc. Pad	75.3
SPB20 (conc. + soil)	7/21/92	N.E. Conc. Pad	203

TABLE 13

* SPB40 (SPB06 split) sent to NPD Laboratory for QA verification.

5.5 *Summary of Blank Sampling Activities*

Blank samples were obtained from an area outside of the exclusion zone and submitted to the laboratory. Blank soil samples were obtained six inches below the ground surface, in the same manner as samples taken inside the exclusion zone. Results for all blanks are shown in table 14.

BLANK SAMPLING ACTIVITIES SUMMARY

SAMPLE ID NUMBER	SAMPLING DATE	ppm Aroclor 1260
A50	7/15/92	ND <0.020
B50	7/15/92	ND <0.020
C50	7/15/92	ND <0.020
D50	7/15/92	0.468
B54	7/15/92	Sent To NPD
B1	7/21/92	ND <0.020
B2	7/21/92	ND <0.020
B3	7/21/92	ND <0.020
B4	7/21/92	ND <0.020
B5	7/21/92	Sent to NPD

TABLE 14

6.0 QUALITY ASSURANCE OBJECTIVES FOR CHEMICAL ANALYSIS

6.1 *CCQCP Quality Assurance Specifications*

As stated in the CCQCP, the precision of laboratory results and field sampling efforts are to be evaluated by examining laboratory and field QC sample results. Analytical precision is to be evaluated by comparing the QC criteria stipulated in the method standard operating procedure (SOP) to the results from laboratory matrix spike/matrix spike duplicate samples and field duplicate samples. The accuracy of the analytical data is to be assessed by examining the results obtained from the analysis of sample blanks, duplicate samples, laboratory matrix spike/matrix spike duplicate samples, and method required laboratory QA/QC samples.

6.2 *Receipt and Format of Analytical Results*

Analytical results have been submitted by the Chemical & Geological Laboratory in the form of five (5) separate data packages. Each of these packages are identified by Chem-Geo's internal "Chemlab Reference Number," and each sample incorporated in the data packages are referred to by and internal "Chemlab Sample #." Each of the data packages contained the following information:

- *Data Package Summary*
  - Case Narrative
  - Chain of Custody
  - Laboratory Chronicles
  - Glossary of Result Qualifiers
- *Sample Data Results Summaries*
- *PCB Analyses*
  - Quality Control Summaries
  - Raw Analytical Data

Due to the lengthiness of the data, the pertinent components from each package have been separated out and placed in the Appendices. Additionally, Laidlaw Sample ID numbers and the reported results have been added to the tabulated Chem-Geo Method Blank Summary sheets (see Appendix V) for easier correlation. Sterling & Associates did comment to Chem-Geo on the difficulty and significant effort required to read and interpret Chem-Geo's data packages, due to the absence of Laidlaw's Sample ID numbers throughout the reports.

6.3 *Calibration Verification Summary*

The Quality Control Summary sheets shown in Appendix VI list acceptance criteria for calibration verification standards (CVS) as 70 - 130% of the actual value. Tables 15, 16, and 17 each summarize the percent recoveries for 10 ppm 1242, 1254, and 1260, respectively, according to date and instrument ID number. For each standard, the average CVS percent recovery, median, and mode are shown following each summary table. The original Calibration Verification Summary sheets can be found in Appendix VII. The average CVS percent recovery for Aroclors 1242 and 1254 are biased high, but still within the acceptance criteria specified by Chem-Geo. *EPA Method 8000A, Gas Chromatography, SW-846, Fourth Edition, November 1990, section 7.4.2.3,* details the requirements for calibration verification:

> *The working calibration curve or calibration factor must be verified on each working day by the injection of one or more calibration standards. The frequency of verification is dependent on the detector. Detectors, such as the electron capture detector (ECD), that operate in the sub-nanogram range are more susceptible to changes in detector response caused by GC column and sample effects. Therefore, more frequent verification of calibration is necessary. The flame ionization detector is much less sensitive and requires less frequent verification. If the response for any analyte varies from the predicted response by more than +/- 15%, a new calibration curve must be prepared for that analyte.*

It is the opinion of the CQC Officer that a 70-130% recovery range for calibration verification standards is too wide. A more acceptable recovery range is 80-120% at the broadest, 85-115% according to 8000A, section 7.4.2.3. There were several instances when the CQC Officer addressed this point to Chem-Geo, and in each instance, Chem-Geo refused to tighten their percent recovery range. A final written rebuttal by Chem-Geo is shown in Appendix X.

Additionally, the CQC Officer noted that on almost every CVS Summary sheet, the recovered concentration was rounded off to a whole number, but the percent recovery reflected the unrounded recovered concentration. The three summary tables reflect percent recoveries based on rounded off recovered concentrations, not those reported by Chem-Geo. These tables should be reported by Chem-Geo with more consistency between recovered concentrations and percent recoveries.

CALIBRATION VERIFICATION SUMMARY FOR AROCLOR 1242

DATE	INSTR. ID NUMBER	ACTUAL CONC. (ppm)	RECOVERED CONC. (ppm)	% RECOVERY
7/16/92	ECD#2	10	11	110
7/17/92	ECD#2	10	13	130
7/20/92	ECD#2	10	12	120
7/21/92	ECD#3	10	11	110
7/21/92	ECD#3	10	11	110
7/21/92	ECD#3	10	9	90
7/22/92	ECD#3	10	11	110
7/22/92	ECD#3	10	10	100
7/23/92	ECD#3	10	11.022	110
7/23/92	ECD#3	10	8.959	90
7/24/92	ECD#3	10	9	90
7/24/92	ECD#3	10	9.146	91
7/24/92	ECD#3	10	11.412	114
7/25/92	ECD#3	10	9.146	91
7/25/92	ECD#3	10	8.399	84
7/25/92	ECD#3	10	11	110
7/25/92	ECD#3	10	9	90
7/26/92	ECD#3	10	11	110
7/26//92	ECD#2	10	12	120
7/26/92	ECD#3	10	9	90
7/26/92	ECD#2	10	12	120
7/26/92	ECD#2	10	12	120
7/26/92	ECD#2	10	12	120
7/26/92	ECD#3	10	12	120
7/26/92	ECD#3	10	9	90
7/26/92	ECD#2	10	12	120
7/28/92	ECD#2	10	11	110
7/28/92	ECD#2	10	13	130
7/28/92	ECD#2	10	13	130

TABLE 15

Note: Average CVS Recovery = 107.93 +/- 14.25 %
Median = 107%
Mode = 110%

CALIBRATION VERIFICATION SUMMARY FOR AROCLOR 1254

DATE	INSTR. ID NUMBER	ACTUAL CONC. (ppm)	RECOVERED CONC. (ppm)	% RECOVERY
7/16/92	ECD#2	10	11	110
7/17/92	ECD#2	10	12	120
7/20/92	ECD#2	10	10	100
7/21/92	ECD#3	10	12	120
7/21/92	ECD#3	10	12	120
7/21/92	ECD#3	10	10	100
7/22/92	ECD#3	10	12	120
7/22/92	ECD#3	10	11	110
7/23/92	ECD#3	10	11.618	116
7/23/92	ECD#3	10	9.7	97
7/24/92	ECD#3	10	10	100
7/24/92	ECD#3	10	10.121	101
7/24/92	ECD#3	10	12.145	121
7/25/92	ECD#3	10	9.858	99
7/25/92	ECD#3	10	10	100
7/26/92	ECD#3	10	12	120
7/26/92	ECD#2	10	10	100
7/26/92	ECD#3	10	10	100
7/26/92	ECD#2	10	12	120
7/26/92	ECD#2	10	10	100
7/26/92	ECD#3	10	12	120
7/26/92	ECD#3	10	10	100
7/26/92	ECD#2	10	12	120
7/28/92	ECD#2	10	9	90
7/28/92	ECD#2	10	13	130
7/28/92	ECD#2	10	13	130
7/29/92	ECD#2	10	10	100

TABLE 16

Note: Average CVS Recovery = 109.78 +/- 11.48 %
Median = 113.5%
Mode = 110%, 120%

CALIBRATION VERIFICATION SUMMARY FOR AROCLOR 1260

DATE	INSTR. ID NUMBER	ACTUAL CONC. (ppm)	RECOVERED CONC. (ppm)	% RECOVERY
7/16/92	ECD#2	10	10	100
7/17/92	ECD#2	10	12	120
7/20/92	ECD#2	10	8	80
7/21/92	ECD#3	10	10	100
7/21/92	ECD#3	10	10	100
7/21/92	ECD#3	10	10	100
7/22/92	ECD#3	10	10	100
7/22/92	ECD#3	10	10	100
7/22/92	ECD#3	10	9.628	96
7/22/92	ECD#3	10	10	100
7/24/92	ECD#3	10	9	90
7/24/92	ECD#3	10	9.5	95
7/24/92	ECD#3	10	9.123	91
7/25/92	ECD#3	10	10.9	109
7/25/92	ECD#3	10	8.156	82
7/25/92	ECD#3	10	9	90
7/25/92	ECD#3	10	10	100
7/26/92	ECD#3	10	10	100
7/26/92	ECD#2	10	9	90
7/26/92	ECD#3	10	10	100
7/26/92	ECD#2	10	11	110
7/26/92	ECD#2	10	9	90
7/26/92	ECD#3	10	11	92
7/26/92	ECD#3	10	10	100
7/26/92	ECD#2	10	11	110
7/28/92	ECD#2	10	7	70
7/28/92	ECD#2	10	12	120
7/28/92	ECD#2	10	12	120
7/29/92	ECD#2	10	8	80

TABLE 17

Note: Average CVS Recovery = 97.76 +/- 11.87 %
Median = 100%
Mode = 100%

6.4 *Matrix Spike/Matrix Spike Duplicate Summary*

The Quality Control Summary sheets shown in Appendix VI list acceptance criteria for matrix spike/matrix spike duplicates as 70-130% recovery, with +/- 30% Relative Percent Difference (RPD). Matrix Spike/Matrix Spike Duplicate Summary sheets are shown in Appendix VIII.

The CQC Officer noted several discrepancies among the summary sheets:

1. Aroclor 1262 is the matrix spike. Aroclor 1262 recoveries should be quantitated using a 1262 calibration curve. No calibration verification data for Aroclor 1262 was provided to Laidlaw in any of the data packages.

2. *EPA Method 8000A, Gas Chromatography, SW-846, Fourth Edition, November 1990, section 8.5.1.* describes procedures for determining the concentration of the spike in the sample; more specifically, *8.5.1.1* recommends the following:

   > *If, as in compliance monitoring, the concentration of a specific analyte in the sample is being checked against a regulatory limit, the spike should be at that limit, or 1 to 5 times higher than the background concentration determined in Section 8.5.2 (of EPA 8000A), whichever concentration would be larger.*

   It is the opinion of the CQC Officer that the spike concentration should be higher than 1 ppm, more specifically, a minimum 10 ppm, so as to match the federal regulatory level of PCBs in soil, and the clean-up criteria for this project.

3. The PCB concentration of each sample designated for matrix spike/matrix spike duplicate analysis is 0.00 ppm. The purpose of analyzing spiked samples in duplicate is to document the effect of the matrix on method performance. Obviously, if no PCB is detected in the sample prior to spiking it, there presumably would not be a problem in recovering an added spike. A more representative soil sample population for this project would be soils containing various levels of PCBs encountered, rather than samples falling into the category of "ND ,0.020 ppm."

4. The spike duplicates run 7/21/92, during the analysis of samples 92.3422 (16-17, 19-26, 32-36), lists the spike concentration of the matrix spike sample as 2.00 ppm Aroclor 1262. The matrix spike duplicate sample, however, lists the added spike concentration as 1.00 ppm. It is the opinion of the CQC Officer that the spike concentration added to both samples should be the same amount in order to make a quality assurance comparison. Additionally, the recoveries for these samples were 116% and 79%, respectively, with a reported RPD value of 98%.

5. % RPD values did not meet the QC acceptance criteria for two analytical runs on 7/21/92. QC Summary sheets incorporating these runs were approved and signed, with "All criteria met" for this QC category.

6.5 *Surrogate Recovery Summary*

EPA Method 8080A, Organochlorine Pesticides and PCBs by Gas Chromatography, SW-846, Fourth Edition, November 1990, section 5.7 addresses surrogate standards according to the following:

> *Surrogate standards: The analyst should monitor the performance of the extraction, cleanup (when used), and analytical system and the effectiveness of the method in dealing with each sample matrix by spiking each sample, standard, and organic-free reagent water blank with pesticide surrogates. Because GC/ECD data are much more subject to interference than GC/MS, a secondary surrogate is to be used when sample interference is apparent. Two surrogate standards (tetrachloro-m-xylene (TCMX) and decachlorobiphenyl) are added to each sample, however, only one need be calculated for recovery.*

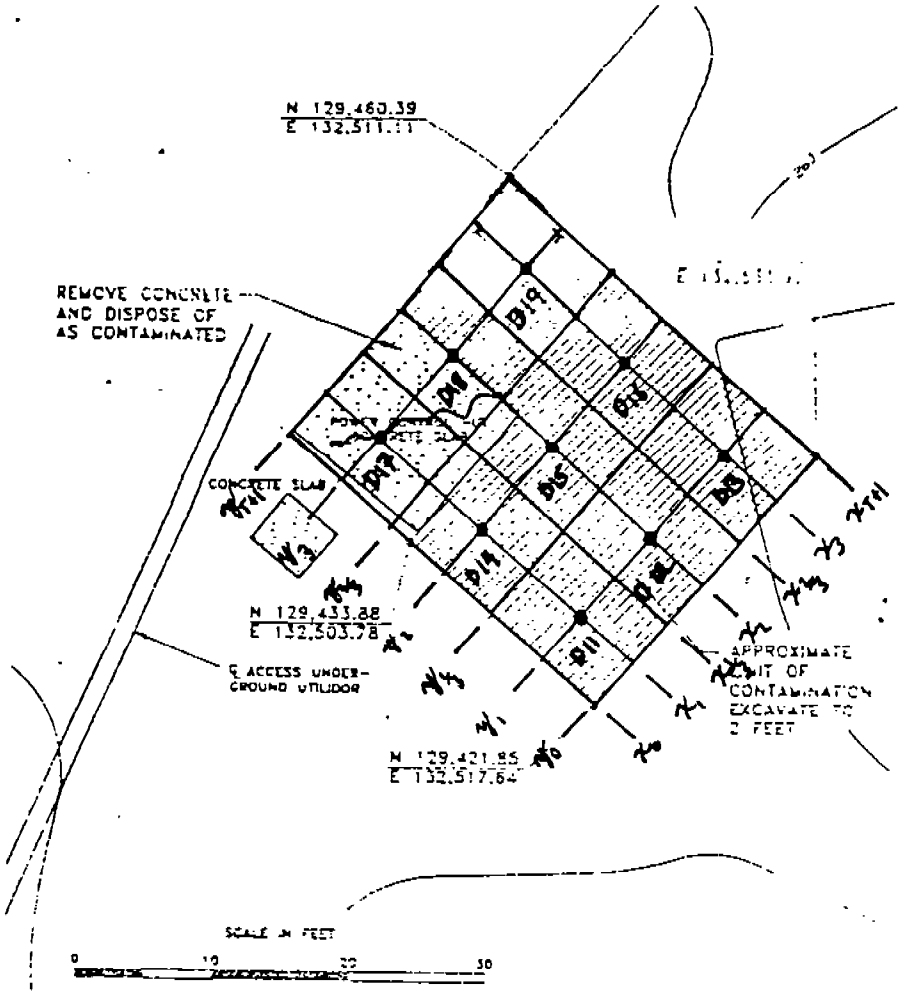
Surrogate Recovery sheets are shown in Appendix IX. Chem-Geo's acceptance criteria for surrogate recovery is 70-130%. EPA 8080A specifies that only one of the surrogates must meet acceptance criteria. There were several concerns with samples not meeting the surrogate QC criteria, and other instances where data should have been flagged with an appropriate data qualifier. Chem-Geo addresses samples needing rerunning in its rebuttal, shown in Appendix X.

7.0 CONCLUDING REMARKS

At the time this report was written, analytical data from rerun samples was not available and will be submitted to the Corps upon receipt by Laidlaw. The greatest reported data discrepancy is with sample B3306-10, which was originally reported to Laidlaw and subsequently the Corps as 231 ppm Aroclor 1260. Reviewing the chromatograms for each sample, the CQC Officer noted several small discrepancies between what was previously reported and what was reported in the data packages. Sample B3306-10 actually contains 2300 ppm Aroclor 1260, not 231 ppm Aroclor 1260.

Although there are some QC discrepancies warranting corrective action, most of the data in this report can probably be considered acceptable for determining whether clean-up criteria has or has not been met for this project. The final decision regarding data acceptability will rest with the Corps and its Regional Laboratory personnel.

SAMPLING GRIDS

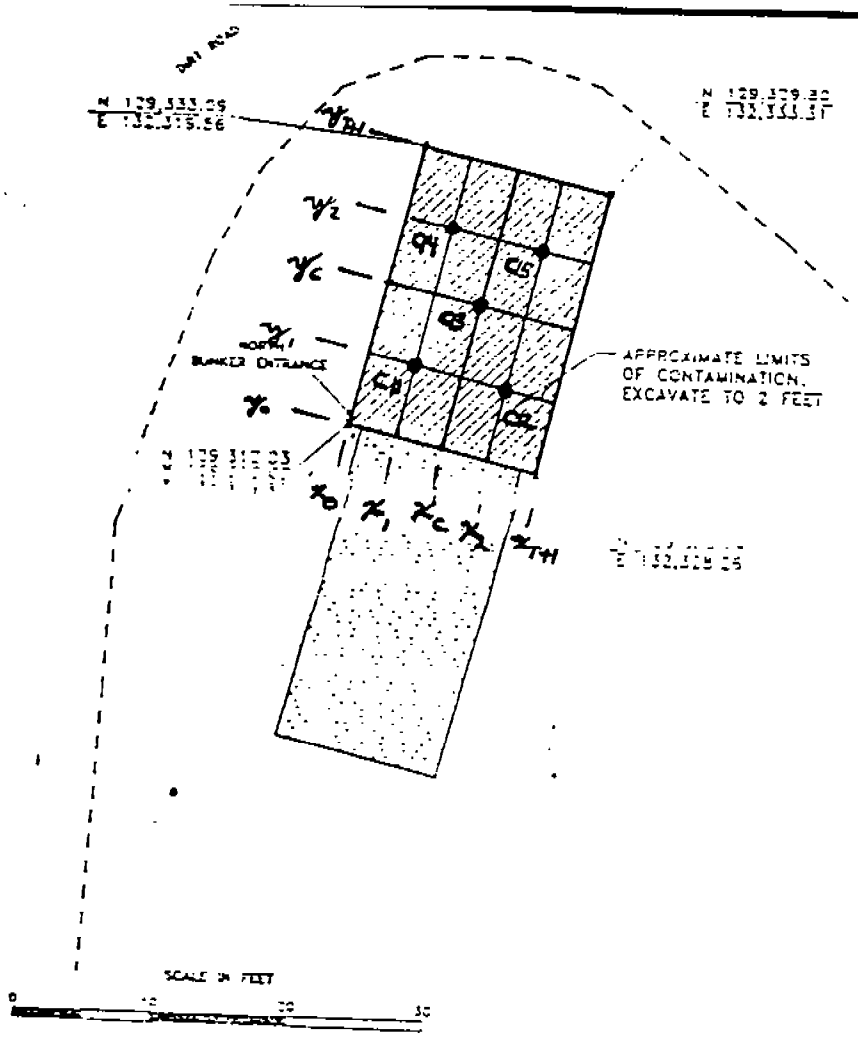


$x_0 = 0'$ $y_0 = 0'$
$x_1 = 4.10'$ $y_1 = 5.02'$
$x_{\frac{1}{3}} = 8.19'$ $y_{\frac{1}{3}} = 10.47'$
$x_2 = 12.29'$ $y_2 = 15.07'$
$x_{\frac{2}{3}} = 16.39'$ $y_{\frac{2}{3}} = 20.09'$
$x_3 = 20.48'$ $y_3 = 25.12'$
$x_{T+L} = 24.58'$ $y_{T+L} = 30.14'$

Sample ID	x (ft)	y (ft)	z (ft)
D11	4.10	5.02	2.00
D12	12.29	5.02	2.00
D13	20.48	5.02	2.00
D14	4.10	15.07	2.00
D15	12.29	15.07	2.00
D16	20.48	15.07	2.00
D17	4.10	25.12	2.00
D18	12.29	25.12	2.00
D19	20.48	25.12	2.00

STERLING & ASSOCIATES INC.

POWER CONTROL HUT		
PROJECT NO.	DATE	FIGURE NO.
920415.2	August 14, 1992	1



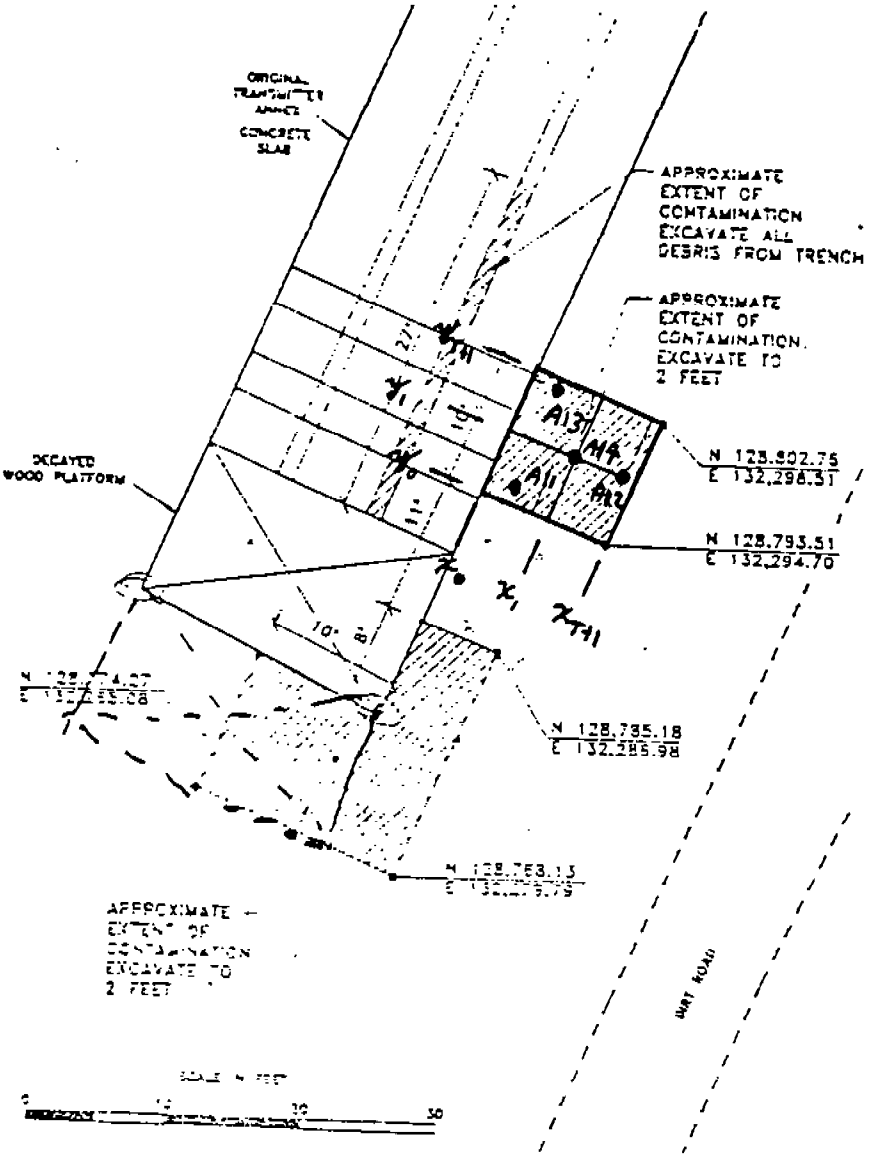
$x_0 = 0'$	$y_0 = 0'$
$x_1 = 3.54'$	$y_1 = 5.49'$
$x_c = 7.09'$	$y_c = 10.98'$
$x_2 = 10.63'$	$y_2 = 16.46'$
$x_{T+l} = 14.17'$	$y_{T+l} = 21.95'$

Sample ID	x (ft.)	y (ft)	z (ft)
C11	3.54	5.49	2.00
C12	10.63	5.49	2.00
C13	7.09	10.98	2.00
C14	3.54	16.46	2.00
C15	10.63	16.46	2.00

STERLING & ASSOCIATES INC.

NORTH BUNKER ENTRANCE

PROJECT NO.	DATE	FIGURE NO.
920415.2	August 14, 1992	2



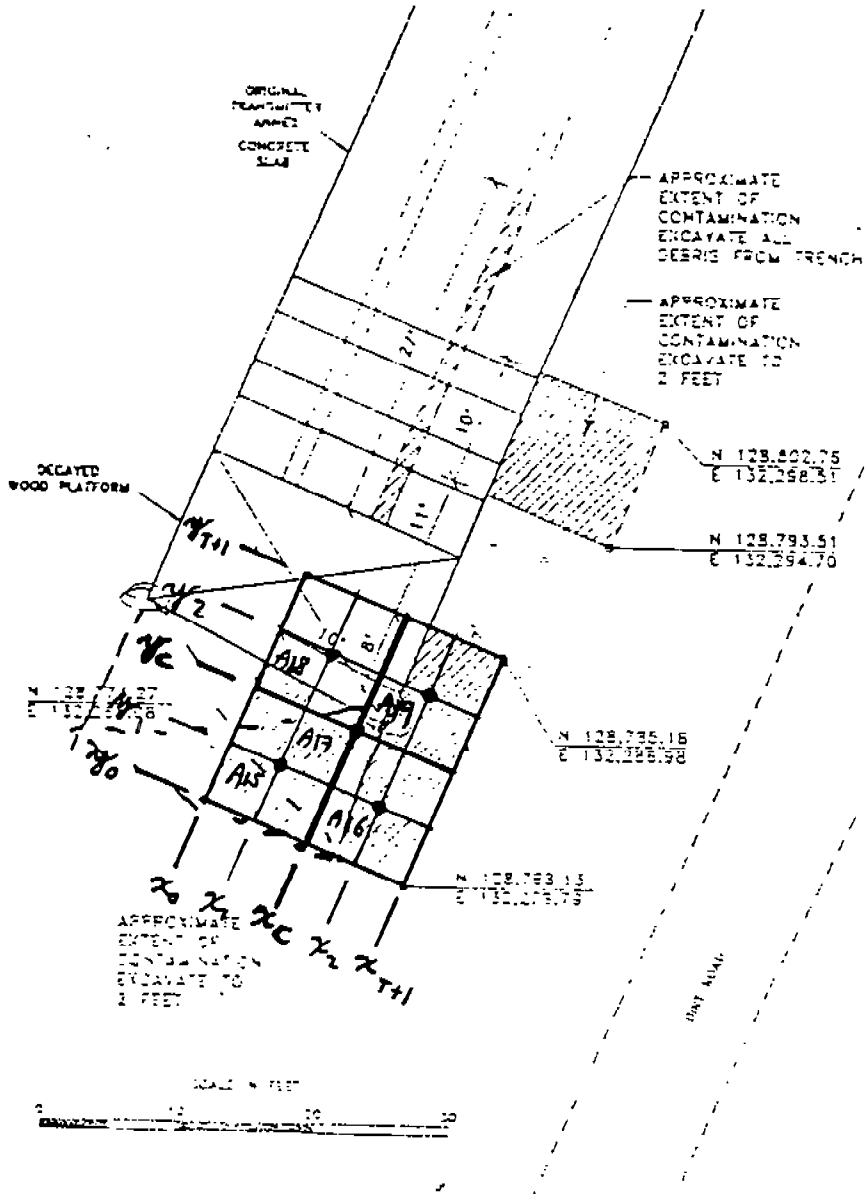
$x_0 = 0'$ $y_0 = 0'$

$x_1 = 5'$ $y_1 = 5'$

$x_{T+1} = 10'$ $y_{T+1} = 10'$

Sample ID	x (ft.)	y (ft.)	z (ft)
A11	2.00	1.00	2.00
A12	9.00	5.00	2.00
A13	2.00	9.00	2.00
A14	5.00	5.00	2.00

STERLING & ASSOCIATES INC.	ORIGINAL TRANSMITTER ANNEX		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	August 14, 1992	3



$x_0 = 0'$ $y_0 = 0'$

$x_1 = 3.99'$ $y_1 = 4.58'$

$x_c = 7.99'$ $y_c = 9.17'$

$x_2 = 11.98'$ $y_2 = 13.75'$

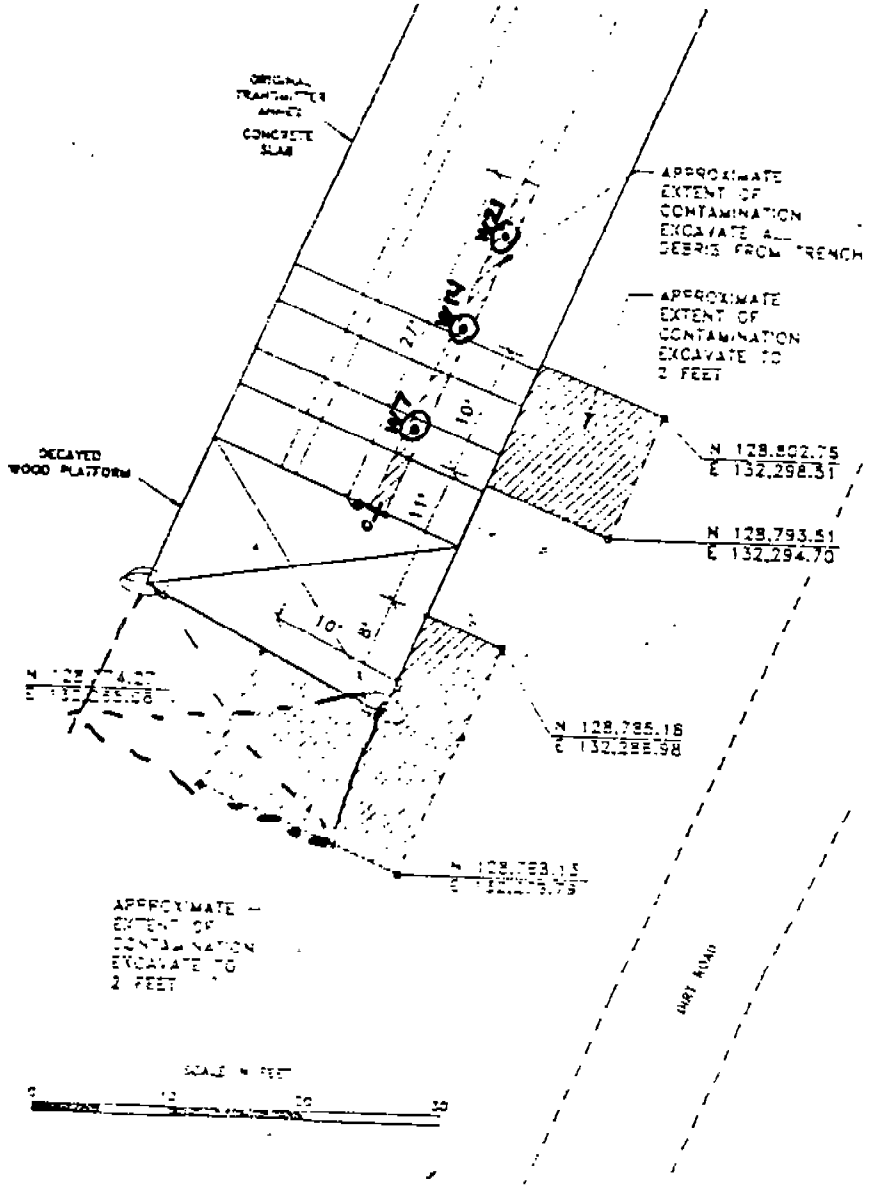
$x_{Tel} = 15.97'$ $y_{Tel} = 18.33'$

Sample ID	x(ft)	y(ft)	z(ft)
A15	3.99	4.58	2.00
A16	11.98	4.58	2.00
A17	7.99	9.17	2.00
A18	3.99	13.75	cement
A19	11.98	13.75	2.00

STERLING & ASSOCIATES INC.

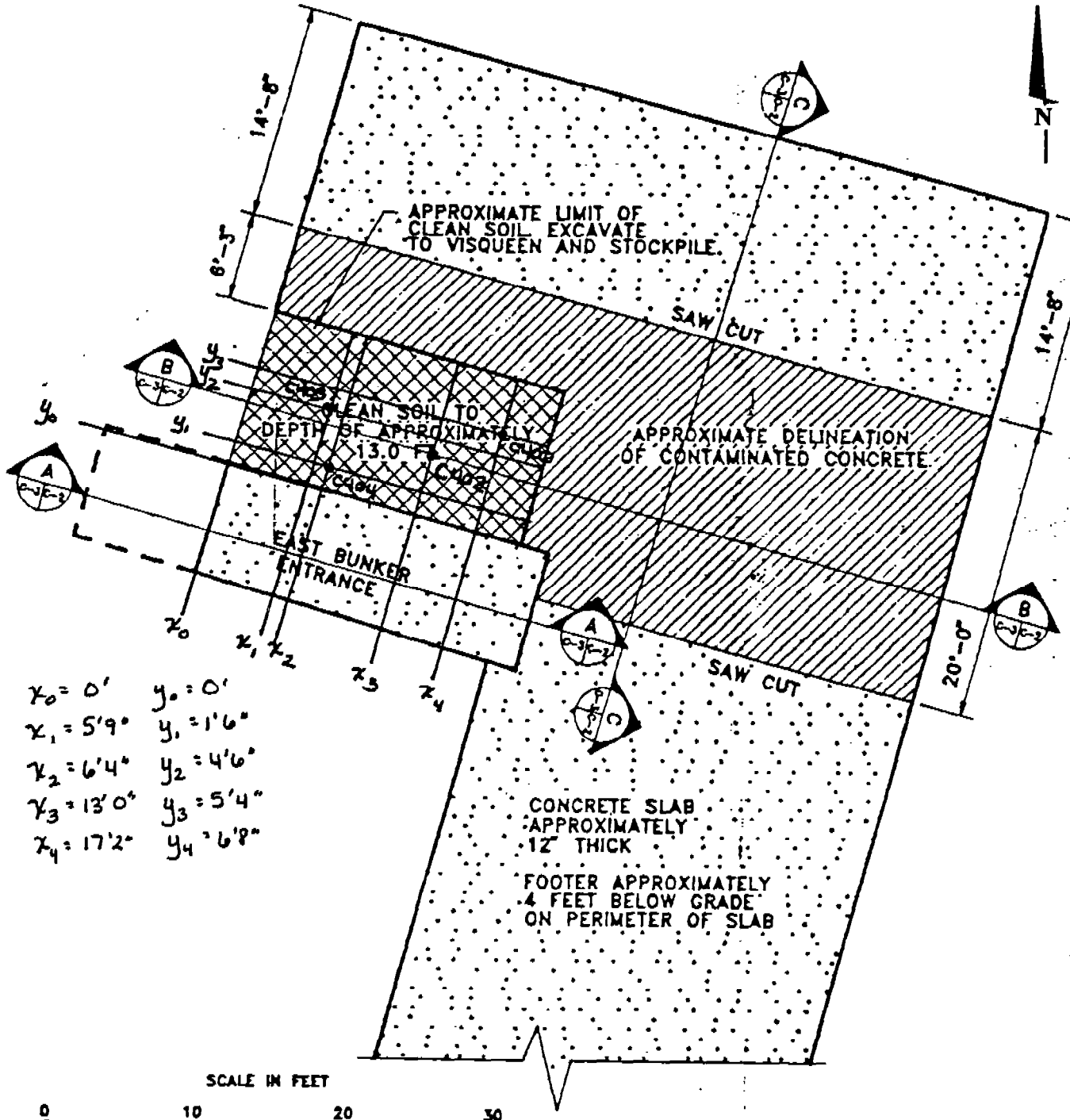
ORIGINAL TRANSMITTER ANNEX

PROJECT NO.	DATE	FIGURE NO.
920415.2	August 14, 1992	4



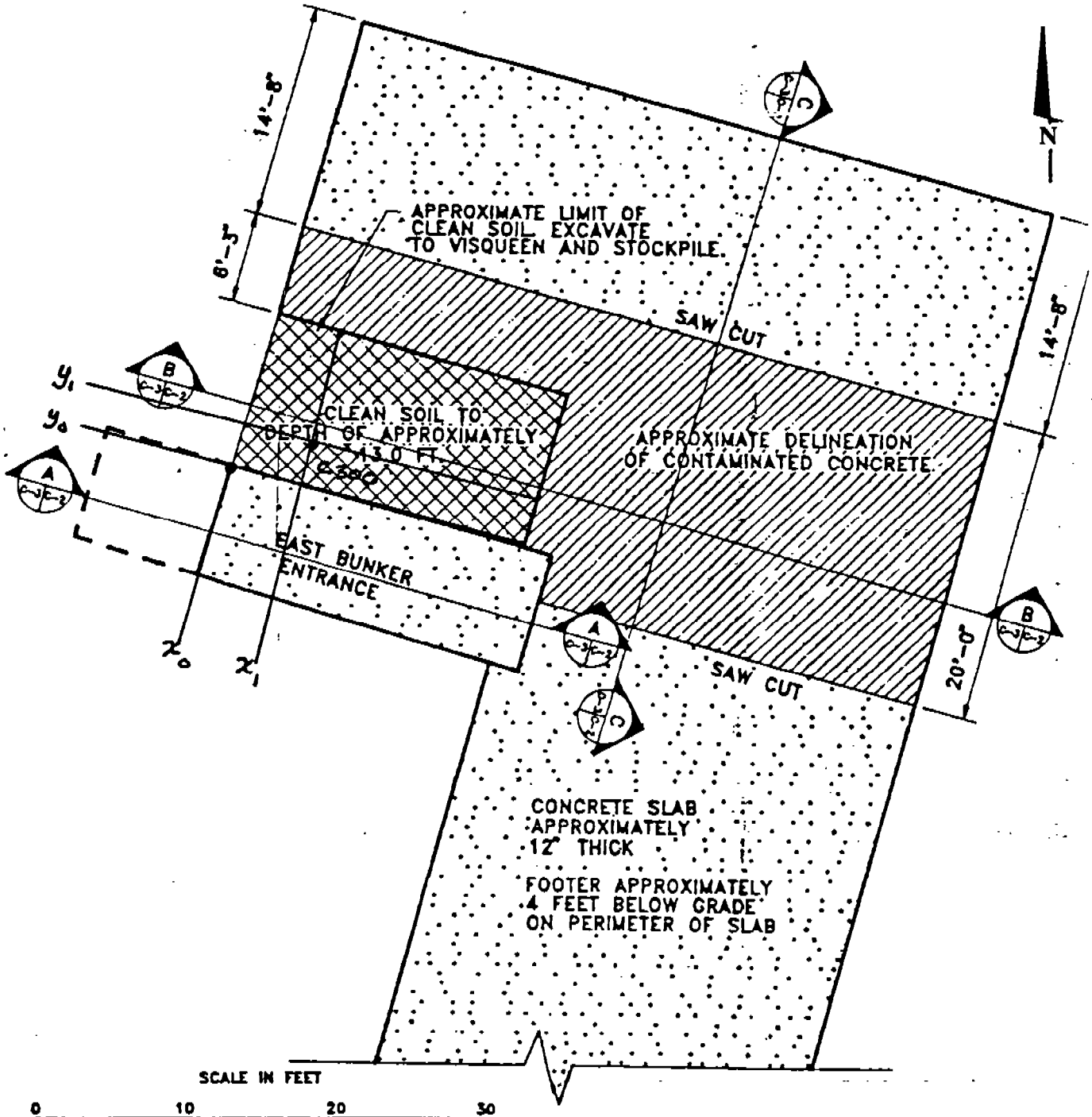
Sample ID	Dist. from Origin (ft)
W7	7.00'
W14	14.00'
W21	21.00'
W28	Blank

STERLING & ASSOCIATES INC.	ORIGINAL TRANSMITTER ANNEX (trench)		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	August 14, 1992	5



Sample ID	x (ft)	y (ft)	z (ft)
C400	17'2"	6'8"	8'0"
C402	13'0"	4'6"	8'0"
C403	5'9"	5'4"	8'0"
C404	6'4"	1'6"	8'0"

STERLING & ASSOCIATES INC.	"CLEAN SOIL" at 8' depth		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	August 14, 1992	7

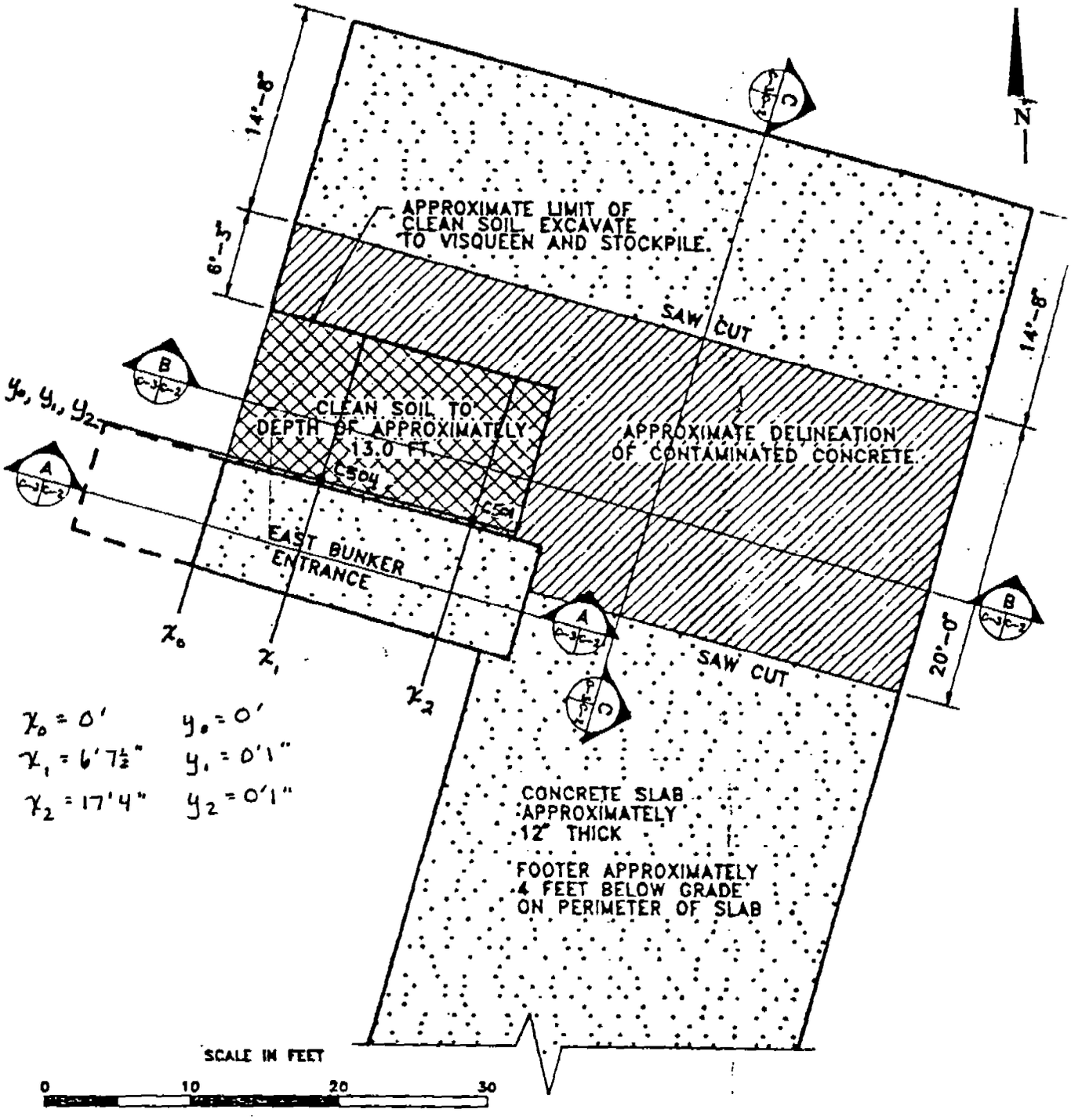


Sample ID	x (ft)	y (ft)	z (ft)
C300	4.8'	3.1'	6.0'

$x_0 = 0'$ $y_0 = 0'$

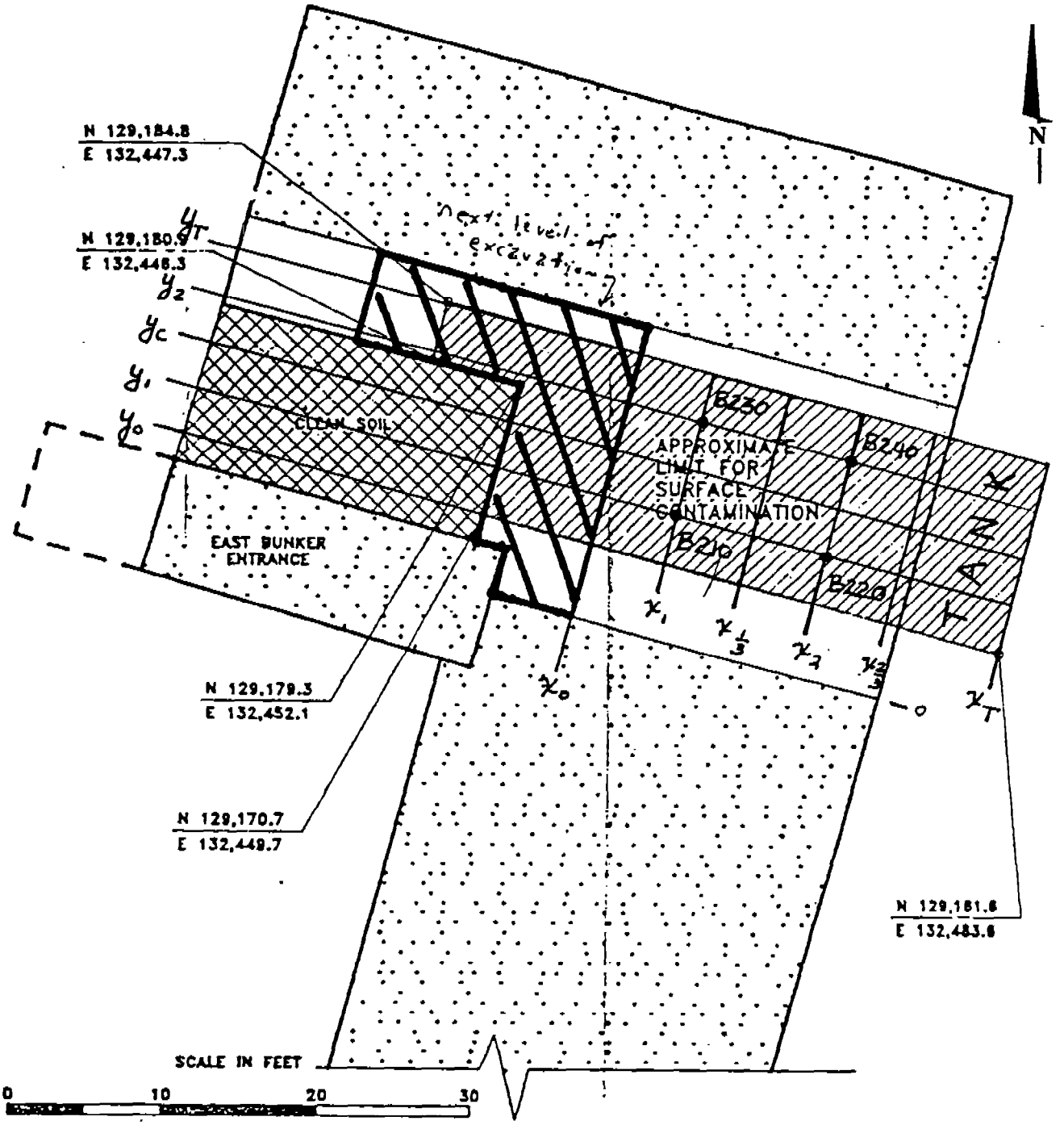
$x_1 = 4.8'$ $y_1 = 3.1'$

STERLING & ASSOCIATES INC.	"CLEAN SOIL" at 6' depth		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	August 14, 1992	6



Sample ID	x(ft)	y(ft)	z(ft)
C501	17'4"	0'1"	10'0"
C504	6'7½"	0'1"	10'0"

STERLING & ASSOCIATES INC.	"CLEAN SOIL" at 10' depth		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	August 14, 1992	8



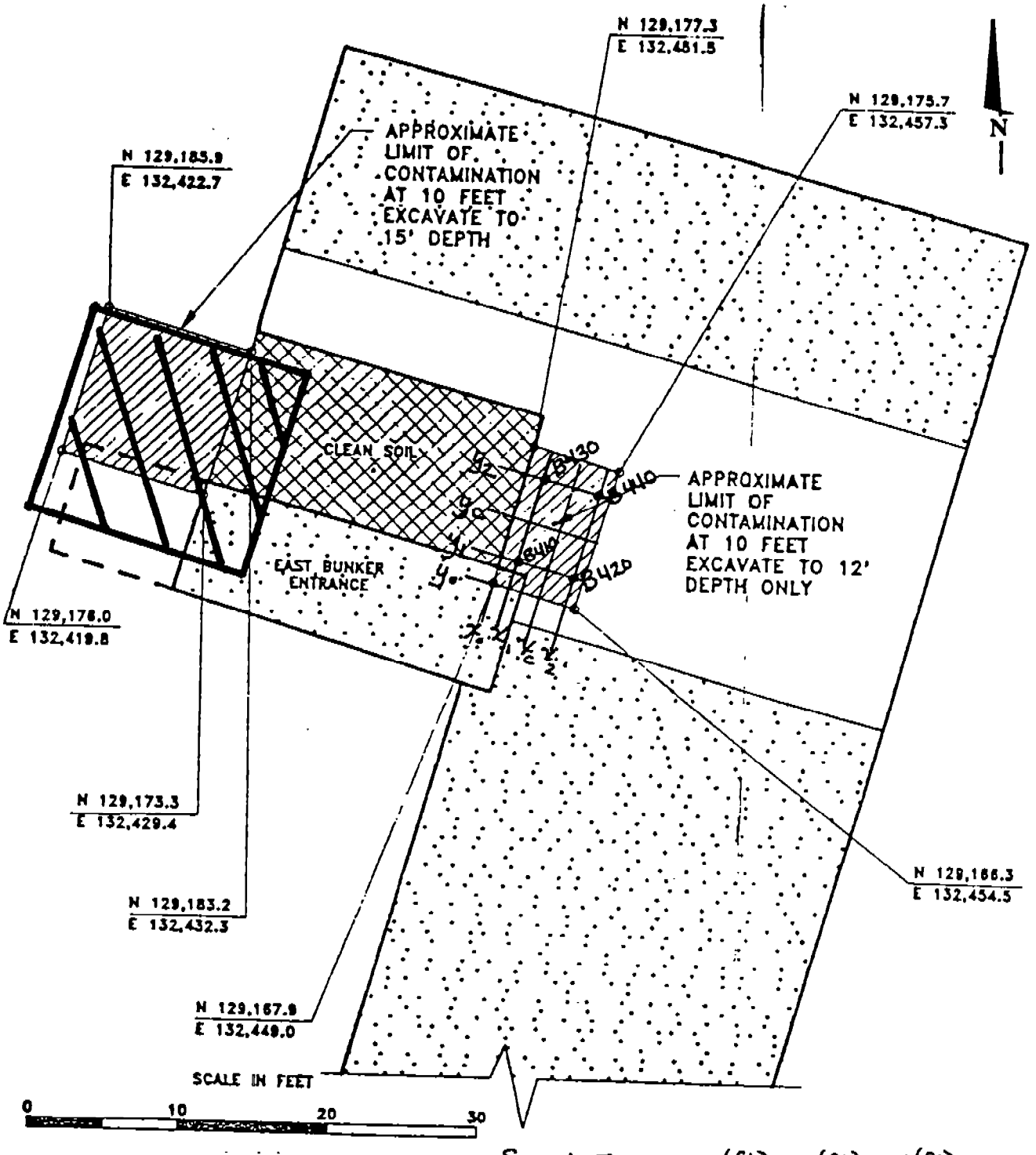
$x_0 = 0'$ $y_0 = 0'$
$x_1 = 5'$ $y_1 = 3'3"$
$x_{\frac{1}{3}} = 10'$ $y_c = 6'6"$
$x_2 = 15'$ $y_2 = 9'9"$
$x_{\frac{2}{3}} = 20'$ $y_T = 13'$
$x_T = 28'$

Sample ID	x(ft)	y(ft)	z(ft)
B210	5'0"	3'3"	5'0"
B220	15'0"	3'3"	5'0"
B230	5'0"	9'9"	5'0"
B240	15'0"	9'9"	5'0"

STERLING & ASSOCIATES INC.

EAST BUNKER ENTRANCE, 5' depth

PROJECT NO.	DATE	FIGURE NO.
920415.2	August 14, 1992	9



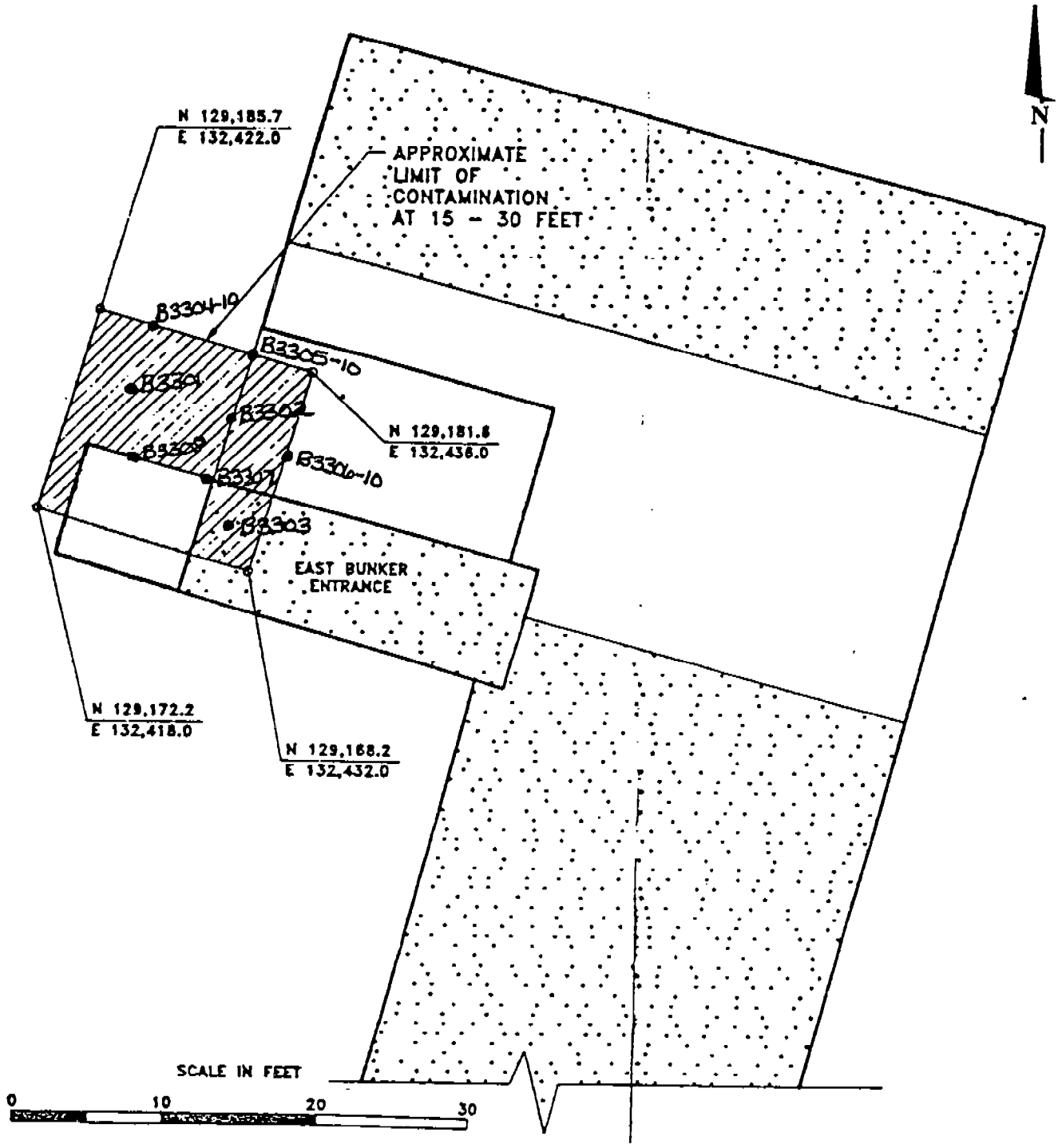
$x_0 = 0'$ $y_0 = 0'$
$x_1 = 1'$ $y_1 = 2'$
$x_c = 3'$ $y_c = 5'$
$x_2 = 5'$ $y_2 = 8'$

Sample ID	x(ft)	y(ft)	z(ft)
B410	1.0'	2.0'	12.0'
B420	5.0'	2.0'	12.0'
B430	1.0'	8.0'	12.0'
B440	5.0'	8.0'	12.0'

STERLING & ASSOCIATES INC.

EAST BUNKER ENTRANCE, 12' depth

PROJECT NO.	DATE	FIGURE NO.
920415.2	August 14, 1992	10

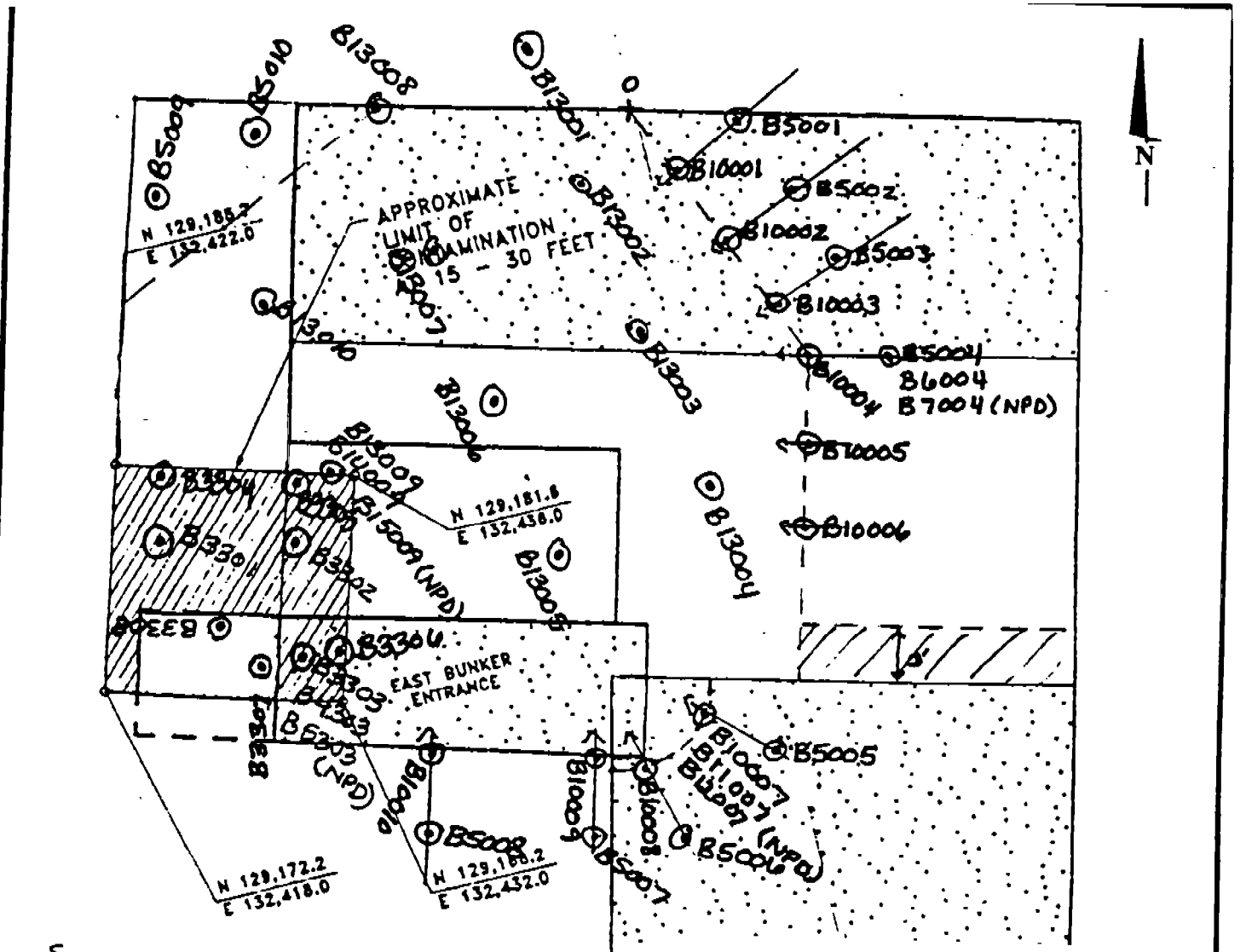


Sample ID	Location	Depth (ft)
B3301	Floor	~33'
B3302	Floor	~33'
B3303	Floor	~33'
B3304-10	Outside Wall	~10'
B3305-10	Outside Wall	~10'
B3306-10	Outside Wall	~10'
83307, 3308	Underneath Bunker, Inside Wall	~28'

STERLING & ASSOCIATES INC.

EAST BUNKER ENTRANCE, 33' depth

PROJECT NO.	DATE	FIGURE NO.
920415.2	August 14, 1992	11



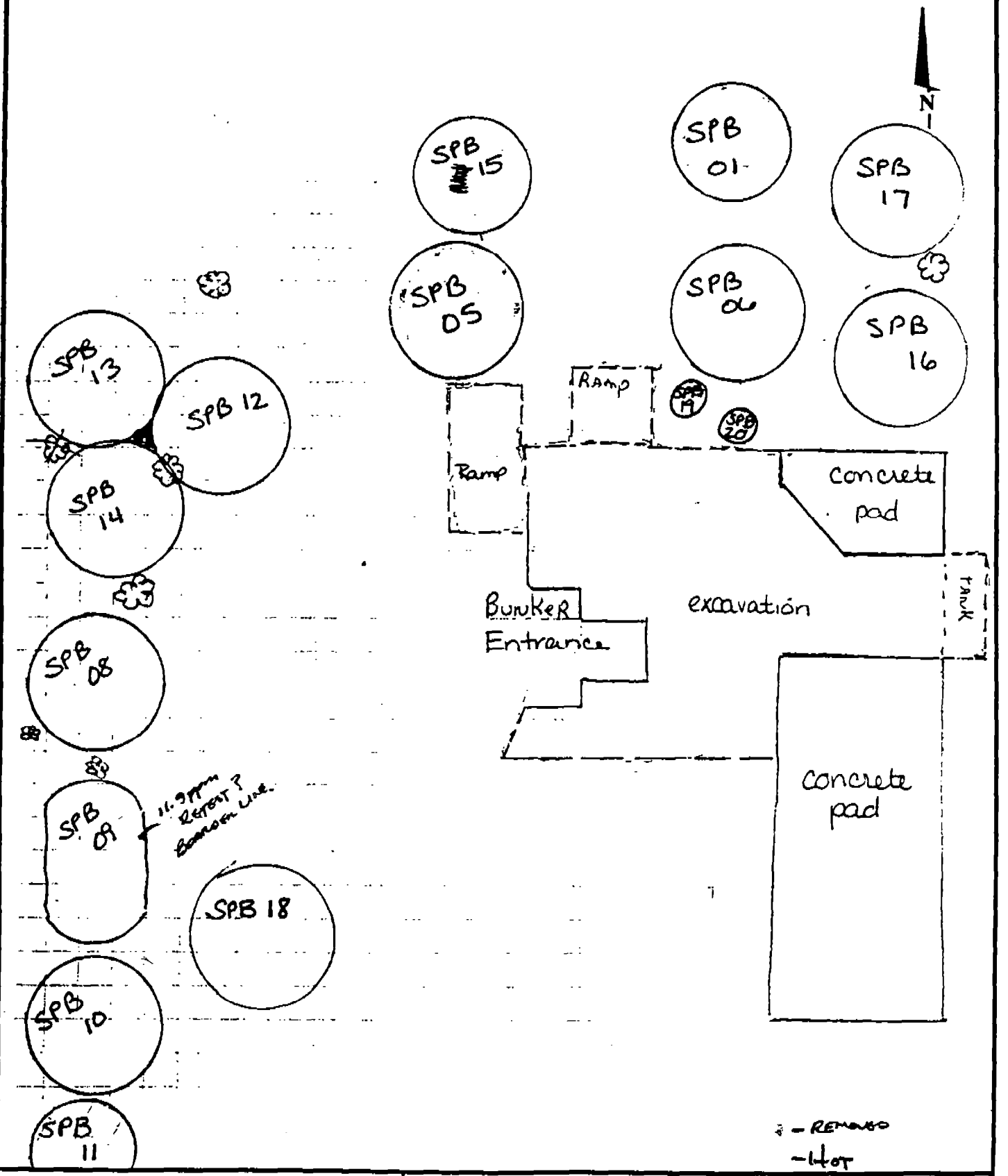
Sample ID	Location	Depth (ft)
B5001	Wall	5'
B5002	Wall	5'
B5003	Wall	5'
B5004	Wall	5'
B5005	Wall	5'
B5006	Wall	5'
B5007	Wall	6'
B5008	Wall	5'
B5009	Wall	5'
B5010	Wall	5'
B10001	Wall	10'
B10002	Wall	10'
B10003	Wall	10'
B10004	Wall	10'
B10005	Wall	10'
B10006	Wall	10'
B10007	Wall	10'
B10008	Wall	10'
B10009	Wall	10'

Sample ID	Location	Depth (ft)
B10010	Wall	10'
B13001	Floor	13'
B13002	Floor	13'
B13003	Floor	13'
B13004	Floor	13'
B13005	Floor	13'
B13006	Floor	13'
B13007	Floor	13'
B13008	Floor	13'
B13009	Floor	13'
B13010	Floor	13'

STERLING & ASSOCIATES INC.

EAST BUNKER ENTRANCE, LIMITS OF EXC. COMP.

PROJECT NO.	DATE	FIGURE NO.
920415.2	August 14, 1992	12



STERLING & ASSOCIATES INC.	STOCKPILES		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	August 14, 1992	13

APPENDIX I

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

CHAIN OF CUSTODY RECORD 92.3422

PROJECT: ROOSEVELT ROAD TRANSMITTER SITE

AUTHORIZATION NUMBER:

CLIENT: LAIDLAW ENVIRONMENTAL SERVICES, INC.
5500 Ming Ave.
Bakersfield, CA 93309

SAMPLERS: (Printed) BRIONNÉ BISCHKE
(Signature) Brionne P. Bischke

WITNESS: (Printed) Deborah Campbell
(Signature) Deborah Campbell

	ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
1	A30 ✓	8 oz soil Original Transmitter Annex	7/12/92	1542	grid	1	EPA method 8080 PCB only	yes
2	D11 ✓	8 oz soil Power Control Hut	7/12/92	0905	grid	1	EPA method 8080	yes
3	D12 ✓			0910		1		
4	D13 ✓			0912		1		
5	D14 ✓			0914		1		
6	D15 ✓			0918		1		
7	D16 ✓			0924		1		
8	D17 ✓			0925		1		
9	D18 ✓			0928		1		

Relinquished by: (Printed) Brionne Bischke (Signature) Brionne P Bischke	Received by: (Printed) Amelia Hill (Signature) Amelia Hill	Date / Time 7/13/92 | 11:03
Relinquished by: (Printed) A. Hill (Signature) Amelia A. Hill	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Rhonda Curtis Date / Time 7/13/92 | 1430
Method of Shipment: Personal vehicle	Condition of Containers:	Seals (yes) / no

Comments:
Sampling is complete; Follow US Army Corps of Engineers Specifications;
On-site Superintendent is Truman Hill

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

CHAIN OF CUSTODY RECORD

92.3422

PROJECT: ROOSEVELT ROAD TRANSMITTER SITE

AUTHORIZATION NUMBER:

CLIENT: LAIDLAW ENVIRONMENTAL SERVICES, INC.
5500 Ming Ave.
Bakersfield, CA 93309

SAMPLERS: (Printed) BRIANNE BISCHKE
(Signature) Brianne J. Bischke

WITNESS: (Printed) Deborah Campbell
(Signature) Deborah Campbell

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
10 A15 ✓	8 oz soil Original Transmitter Annex	7/12/92	1037	grid	1	EPA method 8080 PCBs only	Yes
11 A16 ✓			1040		1		
12 A17 ✓			1042		1		
13 A19 ✓			1047		1		
14 A31 ✓			1044		1		
15 A11 ✓	8 oz soil Original Transmitter Annex	7/12/92	1533	grid	1	EPA method 8080	Yes
16 A12 ✓			1535		1		
17 A13 ✓			1537		1		
18 A14 ✓			1540		1		

Relinquished by: (Printed) Brianne Bischke (Signature) Brianne J. Bischke	Received by: (Printed) Amelia Hill (Signature) Amelia Hill	Date / Time 7/13/92 | 11:03
Relinquished by: (Printed) A Hill (Signature) Amelia Hill	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Rhonda Ward Date / Time 7/13 | 1430
Method of Shipment: Personal vehicle	Condition of Containers:	Seals (yes) no

Comments:
Sampling is complete; Follow US Army Corps of Engineers specifications;
On-Site Superintendent is Truman Hill

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

* NEED # SPB02 ASAP

92.3422

CHAIN OF CUSTODY RECORD

PROJECT: ROOSEVELT ROAD TRANSMITTER SITE

AUTHORIZATION NUMBER:

CLIENT: LAIDLAW ENVIRONMENTAL SERVICES, INC
5500 Ming Ave.
Bakersfield, CA 93309

SAMPLERS: (Printed) BRIANNE BISCHKE
(Signature) Brianne J. Bischke

WITNESS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell

	ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
19	D19 ✓	8 oz soil Power Control Hut	7/12/92	0930	grid	1	EPA method 8080 PCBs only	Yes
20	D30 ✓	↓	↓	0920	↓	1	↓	↓
21	C11 ✓	8 oz soil North Bunker Entrance	7/12/92	0956	grid	1	EPA method 8080	Yes
22	C12 ✓			0959		1		
23	C13 ✓			1001		1		
24	C14 ✓			1005		1		
25	C15 ✓			1007		1		
26	C30 ✓			1002		1		
27	SPB02 ✓	8 oz concrete chunks & soil Slab under stairway East Bunker	7/12/92	1505	Composite	1	EPA method 8080	

Relinquished by: (Printed) Brianne Bischke (Signature) Brianne J. Bischke	Received by: (Printed) Amelia Hill (Signature) Amelia Hill	Date / Time 7/13/92 | 11:03
Relinquished by: (Printed) A. Hill (Signature) Amelia Hill	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Thomas Lund — Date / Time 7/13/92 | 1430
Method of Shipment: Personal vehicle	Condition of Containers:	Seals (yes) no

Comments:
Sampling is complete; Follow US Army Corps of Engineers Specifications; On-site Superintendent is Truman Hill

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO. 92.3422

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

~~NEED #T1, T2, T3, T4, T5 ASAP!!~~

* NEED #SPB03 & SPB04, C3 SPB01 ASAP!!

CHAIN OF CUSTODY RECORD

PROJECT: ROOSEVELT ROAD TRANSMITTER SITE

AUTHORIZATION NUMBER:

CLIENT:
LAIDLAW ENVIRONMENTAL SERVICES, INC.
5500 Ming Ave.
Bakersfield, CA 93309

SAMPLERS: (Printed) BRIONNE BISCHKE
(Signature) Brionne Bischke

WITNESS: (Printed) Deborah Campbell
(Signature) Deborah A. Campbell

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
1) SPB03 ✓	8 oz concrete chunks & soil North wall East Bunker	7/12/92	1510	Composite	1	EPA method 8080 PCBs only	Yes
2) SPB04 ✓	8 oz concrete chunks & soil Stairway & floor East Bunker	7/12/92	1514	Composite	1	EPA method 8080	Yes
3) C300 ✓	8 oz soil 6' depth East Bunker Clean Soil	7/10/92	0800	grid	1	EPA method 8080	Yes
4) SPB01 ✓	8 oz soil 6' depth East Bunker stairwell	7/10/92	0800	composite	1	EPA method 8080	Yes ✓
5) T1 ✓	8 oz soil drilling tailings East Bunker	7/9/92	0800	composite	1	EPA method 8080	Yes
33) T2 ✓					1		
34) T3 ✓					1		
35) T4 ✓					1		
36) T5 ✓					1		

Relinquished by: (Printed) Brionne Bischke (Signature) Brionne Bischke	Received by: (Printed) Amelia Hill (Signature) Amelia Hill	Date / Time 7/13/92	11:03
Relinquished by: (Printed) (Signature) Amelia Hill	Received by: (Printed) (Signature)	Date / Time	
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Thandeka David	Date / Time 7/13/92	1430
Method of Shipment: personal vehicle		Condition of Containers:	Seals (yes) no

Comments: 1.39C
Sampling is complete; Follow US Army Corps of Engineers Specifications;
On-site Superintendent is Truman Hill

ENVIRONMENTAL SERVICES

CHAIN-OF-CUSTODY RECORD

OUA 0003073

OJECT NAME/NUMBER Roosevelt Road Transmitter Site

LAB DESTINATION Chemical & Geological Laboratory

MPLE TEAM MEMBERS Browne Bischke

CARRIER/WAYBILL NO. personal vehicle

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
C400 ✓	8 oz Soil 8' Depth East Bunker Clean Soil	7/13/92 1004 hours	grid	8 oz 200 series		
C402 ✓	↓	7/13/92 1005 hours	↓	↓		
C403 ✓	↓	7/13/92 1006 hours	↓	↓		
C404 ✓	↓	7/13/92 1011 hours	↓	↓		

ecial Instructions: Need C400, C402, C403, C404 ASAP; Sampling is complete; Follow US Army Corps of Engineers

ssible Sample Hazards: Specifications; On-site Superintendent is Truman Hill; Perform EPA method 8080 PCBs only; Perform QA/QC

GNATURES: (Name, Company, Date and Time)

Relinquished By: Browne Bischke 7/13/92 11:03

Received By: Amelia Hill Amelia Hill

Relinquished By: Amelia A Hill

Received By: [signature] 7/13/92 1430

3. Relinquished By:

Received by:

4. Relinquished By:

Received By:

HITE - To accompany samples
ELLOW - Job File
NK - Customer

4501 Pacheco Boulevard, Martinez, CA 94553

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

CHAIN OF CUSTODY RECORD

PROJECT: ROOSEVELT ROAD TRANSMITTER SITE

AUTHORIZATION NUMBER:

CLIENT:
LASOLAW ENVIRONMENTAL SERVICES, INC
5500 Ming Ave.
Bakersfield, CA 93309

SAMPLERS: (Printed) BRIANNE BISCHKE
(Signature) Brianne N. Bischke

WITNESS: (Printed) Deborah Campbell
(Signature) Deborah Campbell

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
-501	8 oz soil Ezst Bunker Clean Soil 10'	7/13/92	1618	grid	1	EPA METHOD 8080 PCB's only	Yes
1504	↓	↓	1620	↓	1	↓	↓
1210	8 oz soil Ezst Bunker 5' depth	7/16/92	1548	grid	1	EPA METHOD 8080 PCB's only	Yes
1230	↓	↓	1549	↓	1	↓	↓
1234	↓	↓	1550	↓	1	↓	↓
1450	8 oz soil 6" depth	7/15/92	1013	grab	1	EPA METHOD 8080 PCB's only	Yes
1B50	↓	↓	1016	↓	1	↓	↓
1450	↓	↓	1017	↓	1	↓	↓
1D50	↓	↓	1018	↓	1	↓	↓

Relinquished by: (Printed) BRIANNE BISCHKE (Signature) Brianne N. Bischke	Received by: (Printed) AMELIA HILL (Signature) Amelia Hill	Date / Time 7/17/92 | 16.14
Relinquished by: (Printed) (Signature) Amelia Hill	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Nancy Lee 7/17/92 | 1730
Method of Shipment: Personal Vehicle	Condition of Containers:	Seals (yes) / no

Comments:
Sampling is complete; Follow US Army Corps of Engineers specifications; On-site superintendent is Truman Hill

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

CHAIN OF CUSTODY RECORD

PROJECT: ROOSEVELT ROAD TRANSMITTER SITE

AUTHORIZATION NUMBER:

CLIENT:
.AIDLAW ENVIRONMENTAL SERVICES, INC.
5500 Ming Ave.
Bakersfield, CA 93309

SAMPLERS: (Printed) BRIANNE BISCHKE
(Signature) Brianne C. Bischke

WITNESS: (Printed) Deborah Campbell
(Signature) Deborah Campbell

I#	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
110	8 oz Soil East Bunker 12' depth	7/16/92	1615	grab	1	EPA METHOD 8080 PCB's only	Yes
120			1616		1		
130			1617		1		
140			1618		1		
144			1619		1		
PB05	8 oz Soil Stockpile [redacted] from E. Bunker	7/17/92	1127	Composite	1	EPA method 8080 PCB's only	Yes
B06	8 oz Soil Stockpile [redacted] from E. Bunker		1235		1		
PB08			1117		1		
PB09			1110		1		

Relinquished by: (Printed) BRIANNE BISCHKE	Received by: (Printed) Amelia Hill	Date / Time	
(Signature) Brianne C. Bischke	(Signature) Amelia Hill	7/17/92	16.14
Relinquished by: (Printed)	Received by: (Printed)	Date / Time	
(Signature) Amelia Hill	(Signature)		
Dispatched by: (Printed)	Date / Time	Received at Laboratory by:	Date / Time
(Signature)			7/17/92 173
Method of Shipment: Personal vehicle	Condition of Containers:	Seals (yes) no	

Comments:
Sampling is complete; Follow US Army Corps of Engineers specifications;
On-site superintendent is Truman Hill

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

CHAIN OF CUSTODY RECORD

PROJECT: Roosevelt Road Transmitter Site

AUTHORIZATION NUMBER:

CLIENT:
Labolaw Environmental Services, Inc.
5500 Ming Ave
Bakersfield, CA 93309

SAMPLERS: (Printed) Brianne Bischke
(Signature) Brianne Bischke

WITNESS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell

I.D #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
PB10	8 oz Soil Stockpile from E. Bunker	7/17/92	1102	Composite	1	EPA method 8080 PCB's only	Yes
PB11	↓	↓	1057	↓	1	↓	↓
PB12	↓	↓	1135	↓	1	↓	↓
PB13	↓	↓	1138	↓	1	↓	↓
PB14	↓	↓	1141	↓	1	↓	↓
PB15	↓	↓	1213	↓	1	↓	↓
PB16	↓	↓	1217	↓	1	↓	↓
PB17	↓	↓	1231	↓	1	↓	↓

Relinquished by: (Printed) Brianne Bischke (Signature) Brianne Bischke	Received by: (Printed) Amelia Hill (Signature) Amelia Hill	Date / Time 7/17/92 | 16.14
Relinquished by: (Printed) (Signature) Amelia Hill	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Nancy Jones Date / Time: 7/17/92 | 1730
Method of Shipment: Personal Vehicle	Condition of Containers:	Seals (yes) / no

Comments:
Sampling is complete; Follow US Army Corps of Engineers Specifications;
On-Site Superintendent is Truman H. Hill

5-day turn around !

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

Fax results : (907) 562-1912 *

CHAIN OF CUSTODY RECORD

PROJECT: Roosevelt Road Transmitter Site

AUTHORIZATION NUMBER:

CLIENT: Laidlaw Environmental Services, Inc.
5500 Ming Ave.
Bakersfield, CA 93309

SAMPLERS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell
WITNESS: (Printed) Richard Krentz
(Signature)

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
35001	8 oz. Soil, E. bunker exc. walls, 5' depth	7/21/92	1106	grid	1	EPA 8050 PCBs only	yes
35002			1108		1		
B5003			1110		1		
B5004			1120		1		
B6004			1123		1		
B5005			1128		1		
B5006			1129		1		
B5007			1150		1		
B5008			1155		1		

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah A Campbell	Received by: (Printed) Amelia Hill (Signature) Amelia Hill	Date / Time 7/21/92 | 1645
Relinquished by: (Printed) (Signature)	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time Received at Laboratory by:	Date / Time 7/21/92 | 1730
Method of Shipment: Personal Vehicle	Condition of Containers:	Seals (yes) no 2 coolers

Comments:
Sampling is complete; follow US Army Corps of Engr. Specs;
On-site Superintendent is Truman Hill

5-day turn around!

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

Fax results: (907) 562-1912*

CHAIN OF CUSTODY RECORD page 2 of 6

PROJECT: ROOSEVELT RD TRANSMITTER Site

AUTHORIZATION NUMBER:

CLIENT: LAIDLAW, ENVIRONMENTAL Service INC 5500 Ming AVE. Bakersfield, Ca 93309

SAMPLERS: (Printed) Deborah Campbell (Signature) Deborah A Campbell

WITNESS: (Printed) Richard Kreutz (Signature) [signature]

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
11007	8 oz. Soil, E Bunker Exc, walls, 10' depth.	7/21/92	11:38	grid	1	EPA 8080 PCBs only	yes
313001	8 oz. Soil, E. Bunker Exc. floor, 13' depth - 10' increments	7/21/92	10:29	grid	1	EPA 8080 PCB's only	yes
313002			10:33		1		
B13003			10.35		1		
B13004			10:37		1		
B13005			10:39		1		
B13006			10:43		1		
B13007			10:45		1		
B13008			10:50		1		

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah A Campbell	Received by: (Printed) Amelia Hill (Signature) Amelia Hill	Date / Time 7/21/92 1645
Relinquished by: (Printed) (Signature)	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature) — Date / Time	Received at Laboratory by: [signature]	Date / Time 7/21/92 1730
Method of Shipment: Personal Vehicle	Condition of Containers:	Seals (yes) / no 2 coolers

Comments:
Sampling is complete: follow U.S. Army Corps of Engr. Specs
ON-Site Superintendent is Truman Hill

3-day turn around!

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

Fax results: (907) 562-1912 *

CHAIN OF CUSTODY RECORD page 3 of 6

PROJECT: Roosevelt Rd. Transmitter Site

AUTHORIZATION NUMBER:

CLIENT: LAIDLAW ENVIRONMENTAL SERVICE INC.
5500 ming AVE
Bakersfield, CA. 93309

SAMPLERS: (Printed) Deborah Campbell
(Signature) Deborah Campbell
WITNESS: (Printed) Richard KRANTZ
(Signature)

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
B10001	8oz. Soil, E Bunker exc. walls, 10' depth	7/21/92	11.07	Grid	1	EPA 8080 PCB's only	yes
B10002			11.09		1		
B10003			11.11		1		
B10004			11.27		1		
B10005			11.30		1		
B10006			11.32		1		
B10007			11.35		1		
B10008			11.44		1		
B10009			11.55		1		
B10010			12.00		1		

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah Campbell	Received by: (Printed) Amelia Hill (Signature) Amelia Hill	Date / Time 7/21/92 | 1645
Relinquished by: (Printed) (Signature)	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time Received at Laboratory by:	Date / Time 7/21/92 | 1730
Method of Shipment: Personal Vehicle	Condition of Containers:	Seals (yes) no 2 coolers

Comments:
Sampling is complete: follow U.S. Army Corps of Engr. Specs.
ON-SITE SUPERINTENDENT IS TRUMAN Hill

Fax Turnaround !

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

fax results: (907) 562-1912*

CHAIN OF CUSTODY RECORD

PROJECT: Roosevelt Rd Transmitter Site

AUTHORIZATION NUMBER:

CLIENT: LAIDLAW ENVIORNMANTAL SERVICE INC.
5500 Mingaue.
Bakersfield, Ca 93309

SAMPLERS: (Printed) Deborah Campbell
(Signature) Deborah Campbell
WITNESS: (Printed) Richard Krentz
(Signature)

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
B13009	8oz. Soil, E. Bunker Excavated floor at	7/21/92	10:55	grID	1	EPA 8080	Yes
B13010	13' depth. or 10' Increments		11:05		1	PCB's only	
B14009			10:57		1		
B3301	8 oz. Soil, Backhoe Bucket 33'	7/21/92	14:35	grID	1	EPA 8080	Yes
B3302			14:40		1	PCB's only	
B3303			14:30		1		
B4303			14:38		1		

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah Campbell	Received by: (Printed) Amelia Hill (Signature) Amelia Hill	Date / Time 7/21/92 1645	
Relinquished by: (Printed) (Signature)	Received by: (Printed) (Signature)	Date / Time	
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by:	Date / Time 7/21/92 1730
Method of Shipment: Personal Vehicle		Condition of Containers:	Seals (yes) no 2 coolers

Comments:
Sampling is complete: Follow U.S. Army Corps of Engr. Specs
ON-SITE Superintendent is Truman Hill

5-day turn around !

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

fax results : (907) 562-1912 *

CHAIN OF CUSTODY RECORD Page 5 of 6

PROJECT: Roosevelt Rd TRANSMITTER SITE | AUTHORIZATION NUMBER:

CLIENT: LAIDLAW ENVIORNMANTAL, 5500 MING AVE. Bakersfield, Ca 93309

SAMPLERS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell
WITNESS: (Printed) Richard Krentz
(Signature)

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
B3304-10	8oz Soil From WALLS OF 33' excavation	7/21/92	14:40	grid		EPA 8080 PCB's ONLY	yes
B3305-10	↓	↓	14:45	↓		↓	↓
B3306-10	↓	↓	14:50	↓		↓	↓
PB018	8oz Soil Location Stockpile	7/21/92	1410	grab		EPA 8080 PCB's ONLY	yes
PB019	↓	7/21/92	14:15	↓		↓	↓
PBD20	↓	7/21/92	14:16	↓		↓	↓
B220	8oz Soil E Bunker 0-5'	7/21/92	14:16	grid		EPA 8080 PCB's ONLY	yes

Relinquished by: (Printed) Deborah Campbell	Received by: (Printed) Amelia Hill	Date / Time	
(Signature) Deborah A Campbell	(Signature) Amelia Hill	7/21/92	1645
Relinquished by: (Printed)	Received by: (Printed)	Date / Time	
(Signature)	(Signature)		
Dispatched by: (Printed)	Date / Time	Received at Laboratory by:	Date / Time
(Signature)			7/21/92 1730
Method of Shipment: Personal Vehicle	Condition of Containers:	Seals (yes) no	2 coolers

Comments:
Sampling is complete ; follows US Army Corps of Engr. Specs.
on-site superintendent is Truman Hill

Say your name!

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

fax results: (907) 562-1912*

CHAIN OF CUSTODY RECORD page 6 of 6

PROJECT: Roosevelt Rd Transmitter Site AUTHORIZATION NUMBER:

CLIENT: LAID LAW ENVIRONMENTAL Service INC
5500 Ming Ave
Bakersfield Ca. 93309

SAMPLERS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell
WITNESS: (Printed) Richard Krentz
(Signature)

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
B240	8 oz. 0-5' exc. Soil E. Bunker	7/21/92	14:18	grID		EPA 8080 PCB IS ONLY	YES
35009	8 oz Soil E. Bunker exc. WALLS, 5' depth	7/21/92	14:00	grID		↓	↓
35010	↓	7/21/92	14:05	↓		↓	↓
B1	8 oz Soil Lot	7/21/92	16:00	grAB		↓	↓
B2	↓		16:00	↓		↓	↓
B3	↓		16:00	↓		↓	↓
B4	↓		16:00	↓		↓	↓

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah A Campbell	Received by: (Printed) Amelia Hill (Signature) Amelia Hill	Date / Time 7/21/92 | 1645
Relinquished by: (Printed) (Signature)	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Date / Time 7/21/92 | 1730
Method of Shipment: Personal Vehicle	Condition of Containers:	Seals (yes) no 2 coolers

Comments:
Sampling is complete; follow US Army Corps of Engrs Specs;
ON-site superintendent is Truman Hill

CHEMICAL & GEOLOGICAL LABORATORY
A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.
5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

Fax Results : (907) 562-1912 *

CHAIN OF CUSTODY RECORD page 1 of 1

PROJECT: Roosevelt Road Transmitter Site

AUTHORIZATION NUMBER:

CLIENT:
Laidlaw Environmental Services, Inc.
5500 Ming Ave.
Bakersfield, CA 93309

SAMPLERS: (Printed) Richard Krentz
(Signature)
WITNESS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
B3307	8 oz. Soil under bunker, Front	7/22/92	0830	grab	1	EPA 8080 PCBs only	yes
33308	8 oz. Soil under bunker, side	↓	0835	↓	1	↓	↓

Relinquished by: (Printed) Deborah Campbell
(Signature) Deborah A Campbell
Received by: (Printed) Amelia Hill
(Signature) Amelia Hill
Date / Time 7/22/92 | 0915

Relinquished by: (Printed)
(Signature)
Received by: (Printed)
(Signature)
Date / Time

Dispatched by: (Printed)
(Signature)
Date / Time
Received at Laboratory by:
Date / Time 7/22/92 | 1240

Method of Shipment: Personal Vehicle
Condition of Containers:
Seals (yes) / no
1 cooler

Comments:
Sampling is complete; follows U.S. Army Corps of Engrs Specs; On-site superintendent is Truman Hill.

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

Fax Results: (907) 562-1912 ✓

92.3772

CHAIN OF CUSTODY RECORD

p1 of 1

PROJECT: Roosevelt Road Transmitter Site

AUTHORIZATION NUMBER:

CLIENT: Laidlaw Environmental Services, Inc.
5500 Ming Ave.
Bakersfield CA 93309

SAMPLERS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell

WITNESS: (Printed) Richard Krentz
(Signature)

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
W7 ✓	Wipe sample – 100 cm² trench @ Transmitter Annex	7/27/92	0905	Wipe	1	EPA 8080 PCBs only	Yes
W14 ✓	↓	↓	0910	↓	1	↓	↓
W21 ✓	↓	↓	0915	↓	1	↓	↓
W28 ✓	↓	↓	0920	↓	1	↓	↓

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah A Campbell	Received by: (Printed) Amelia Hill (Signature) Amelia Hill	Date / Time 7/27/92 | 15:15
Relinquished by: (Printed) (Signature) Amelia Hill	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Rhonda L David 7/27/92 | 1607
Method of Shipment: Personal Vehicle	Condition of Containers: good, Seals Intact	Seals (yes) no 1 cooler

Comments:
Sampling is complete. Follow U.S. Army Corps of Engrs. Specs.
On-site superintendent is Truman Hill. 6.9°C

APPENDIX II

OUA 0003086

RUSH

Computer W/O#: 55818 55831QC all others 7/21

Lab Due Date: 7/16

(new) Account#: Laidlaw

Extraction Date: 7/23 - 7/26

Client Name: Laidlaw Enviro

Holding Time: 14D

Ordered By: Brionne Bischke

Date Due: 7/22

Via: HC

Sample Received: 7/13 Time: 1430

Purchase Order#:

Date Collected: Time:

Requisition#:

Address:

Chem Lab Ref.# 92.3422

Phone#: Fax#:

Send Addt'l Reports To:

Phone#: Fax#:

Paid (Ck#)___ (Cash)___

Amount $

Special Instructions: RUSH

Fax results to Brionne @ 562-1912 plus *

Sample#	Description	Mtx	Test	Parameter	Amt
	Su COC	4	~~40035~~ 40080	8080 PCBs	See Quote
	1-40			all	13.00
41	Other lab charges	5	50098	X1.5 on # 27-31 37-40	32
42	QA/QC Data Package	5	50010	LEVEL III	

Sample Remarks EP Tox (GC) (GC PREP) H2O IC Metals Micro O/G Oils

Chain Of Custody: Y Tags: N

Custody Seals: (broken) N (intact) Y

Temp. of Samples: 1.3°C

Sample Condition: (Good) Fair Poor

Rec'd By: RD

Logged By: RD

Entered By: JC

Proofed By:

Sample Containers: (40) 250cc IChem

Figure 7-2
Sample Check-in List

Project Name or ID # : Roosevelt Road Transmitter Site
Date Received 7/13/92 1430

1. Condition of shipping containers: good
2. Open shipping container by Rhonda David
3. Number of sample containers in shipping container: 40
4. Samples have labels including: sample# ✓ location ✓
   date sampled ✓ time sampled ____ sampler ✓
5. Sample lids closed tightly? Yes
6. Verify each sample ID with the Chain of Custody. ✓
7. Verify the following paperwork:
   Chain-of-Custody #: NO COC#
   Sample Log-in complete (Y/N) Y
8. Initiate Non-conformance memo of required.
9. Cooler Temperature 1.3°C
10. Preservation used

Computer W/O#: 56061 / 56067QC* Lab Due Date: 7/27

(new) Account#: Laidlaw Extraction Date: #1,2 - 7/27 7/29 #6-9 - 7/30 #3-5 10-14 7/31

Client Name: LAIDLAW Environmental Holding Time: - 14D

Ordered By: Date Due: 7/28

Via: HC Sample Received: 7/17/92 Time: 1730

Purchase Order#: - Date Collected: 7/13, 16, 16, 17 Time:

Requisition#: Address: 5500 Ming Ave.

Chem Lab Ref.# 92.3567 Bakersfield, CA 93309

Phone#: Fax#:

Send Addt'l Reports To:

Phone#: Fax#:

Paid (Ck#)___ (Cash)___

Amount $

Special Instructions:

See COC

FOLLOW US Army Corps of Engineers Specifications

Sample#	Description	Mtx	Test	Parameter	Amt
	See COC Samples #1-26	4	4003S/4000	PCB in Soil	130 ea
27	other lab Charges	5	50010	level 3	N/C

Sample Remarks EP Tox (GC) (GC PREP) H20 IC Metals Micro O/G Oils

Chain Of Custody: yes Tags: no

Custody Seals: (broken) — (intact) yes

Rec'd By: NJ

Logged By: NJ

Entered By: JR

Proofed By:

Temp. of Samples: 0.9

Sample Condition: (Good) Fair Poor

Sample Containers:

(26) 250 mL Ichem

Sample Check-in List

Project Name or ID # : _____

Date Received 7/17/92

1. Condition of shipping containers: good

2. Open shipping container Nancy Jones

3. Number of sample containers in shipping container: 26

4. Samples have labels including: sample# yes location yes
   date sampled yes time sampled yes sampler yes

5. Sample lids closed tightly? yes

6. Verify each sample ID with the Chain of Custody. yes

7. Verify the following paperwork:

   Chain-of-Custody #: _____

   Sample Log-in complete (Y/N) yes

8. Initiate Non-conformance memo of required.

9. Cooler Temperature 0.9

10. Preservation used

Computer W/O#: 56216 / 56223 QC Lab Due Date: 7/27

(new) Account#: Laidlaw
Client Name: LAIDLAW Environmental
Ordered By:
Via: HC
Purchase Order#:
Requisition#:
Chem Lab Ref.#

Extraction Date: 8/4
Holding Time: 14D
Date Due: 7/28
Sample Received: 7/21 Time: 1730
Date Collected: 7/21 Time:
Address:

92.3632

Phone#: Fax#:
Send Addt'l Reports To:

Phone#: Fax#:

Paid (Ck#)___ (Cash)___
Amount $___
Special Instructions:

RESULTS MUST BE FAXED 7/28 @ 562-1912

Sample#	Description	Mtx	Test	Parameter	
	See COC Samples #1-49	4	40055 / 40000	PCB in Soil	7
50	Other Lab Charges	5	50010	Level III	per EPA

Sample Remarks EP Tox GC GC PREP H2O IC Metals Micro O/G Oils

Chain Of Custody: yes Tags: none
Custody Seals: (broken) — (intact) yes
Rec'd By: DJ
Logged By: DJ
Entered By:
Proofed By:

Temp. of Samples: 3.4°
Sample Condition: Good Fair
Sample Containers:
(49) 250 ml Jchem

Figure 7-2
Sample Check-in List

Project Name or ID # : 92.3632

Date Received 7/21/92 1730

1. Condition of shipping containers: good

2. Open shipping container Nancy Jones

3. Number of sample containers in shipping container: 49

4. Samples have labels including: sample# yes location yes
date sampled yes time sampled on ice sampler yes

5. Sample lids closed tightly? yes

6. Verify each sample ID with the Chain of Custody. yes

7. Verify the following paperwork:

Chain-of-Custody #: _____

Sample Log-in complete (Y)/N) _____

8. Initiate Non-conformance memo of required.

9. Cooler Temperature 34°C

10. Preservation used

92.3649

Figure 7-2
Sample Check-in List

Project Name or ID # : 92.3649

Date Received 7/22/92

1. Condition of shipping containers: good

2. Open shipping container Nancy Jones

3. Number of sample containers in shipping container: _____

4. Samples have labels including: sample# yes location yes
date sampled yes time sampled yes sampler yes

5. Sample lids closed tightly? yes

6. Verify each sample ID with the Chain of Custody. yes

7. Verify the following paperwork:

Chain-of-Custody #: _____

Sample Log-in complete (Y/N) _____

8. Initiate Non-conformance memo of required.

9. Cooler Temperature 1.3

10. Preservation used

5642TQC

(new) Account#: Laidlaw
Client Name: Laidlaw ENVIRO
Ordered by: Truman Hill
Via: HC
Purchase Order#:
Requisition#:
Chem Lab Ref.#

92.3772

Extraction Date:
Holding Time:
Date Due: 8/2
Sample Received: 7/27 Time: 1617
Date Collected: Time:
Address:

Phone#: Fax#:
Send Addt'l Reports To:

Phone#: Fax#:

Paid (Ck#)___ (Cash)___
Amount $___
Special Instructions:

See COC fax results 562-1912 *

Sample#	Description	Mtx	Test	Parameter	Ar
	See COC 1-4	S	40065 40000	PCB	
				All	

Sample Remarks: Matrix = WIPE

EP Tox | GC | GC/PREP | H2O | IC | Metals | Micro | O/G | Oils

Chain Of Custody: Y
Custody Seals: (broken) N (intact) Y
Rec'd By: RD
Logged By: RD
Entered By: RD
Proofed By:

Tags: N

Temp. of Samples: 6.9°C
Sample Condition: Good Fair Po
Sample Containers:
(4) 250cc Teflon

APPENDIX III

CASE NARRATIVE

Company Name: Laidlaw Environmental Services. Inc.
Project Name: Roosevelt Road Transmitter Site
Chemlab Reference Number: 92.3422

Chemlab Sample #	Client Sample #	Analyses Requested
1	A30	EPA 8080
2	D11	EPA 8080
3	D12	EPA 8080
4	D13	EPA 8080
5	D14	EPA 8080
6	D15	EPA 8080
7	D16	EPA 8080
8	D17	EPA 8080
9	D18	EPA 8080
10	A15	EPA 8080
11	A16	EPA 8080
12	A17	EPA 8080
13	A19	EPA 8080
14	A31	EPA 8080
15	A11	EPA 8080
16	A12	EPA 8080
17	A13	EPA 8080
18	A14	EPA 8080
19	D19	EPA 8080
20	D30	EPA 8080

21	C11	EPA 8080
22	C12	EPA 8080
23	C13	EPA 8080
24	C14	EPA 8080
25	C15	EPA 8080
26	C30	EPA 8080
27	SPB02	EPA 8080
28	SPB03	EPA 8080
29	SPB04	EPA 8080
30	C300	EPA 8080
31	SPB01	EPA 8080
32	T1	EPA 8080
33	T2	EPA 8080
34	T3	EPA 8080
35	T4	EPA 8080
36	T5	EPA 8080
37	C400	EPA 8080
38	C402	EPA 8080
39	C403	EPA 8080
40	C404	EPA 8080

Comments: See attached chain of custody forms.

LABORATORY SUPERVISOR SIGNATURE
PRINTED NAME AND DATE

Stephen C. Ede 7-29-92

PREPARED BY
PRINTED NAME AND DATE

LAURA L. HOPKINS 7-29-92

CASE NARRATIVE

Company Name: Laidlaw Environmental Services, Inc.
Project Name: Roosevelt Road Transmitter Site
Chemlab Reference Number: 92.3567

Chemlab Sample #	Client Sample #	Analyses Requested
1	C501	8080 (PCB Only)
2	C504	8080 (PCB Only)
3	B210	8080 (PCB Only)
4	B230	8080 (PCB Only)
5	B234	8080 (PCB Only)
6	A50	8080 (PCB Only)
7	B50	8080 (PCB Only)
8	C50	8080 (PCB Only)
9	D50	8080 (PCB Only)
10	B410	8080 (PCB Only)
11	B420	8080 (PCB Only)
12	B430	8080 (PCB Only)
13	B440	8080 (PCB Only)
14	B444	8080 (PCB Only)
15	SPB05	8080 (PCB Only)
16	SPB06	8080 (PCB Only)
17	SPB08	8080 (PCB Only)
18	SPB09	8080 (PCB Only)
19	SPB10	8080 (PCB Only)
20	SPB11	8080 (PCB Only)
21	SPB12	8080 (PCB Only)
22	SPB13	8080 (PCB Only)
23	SPB14	8080 (PCB Only)
24	SPB15	8080 (PCB Only)
25	SPB16	8080 (PCB Only)
26	SPB17	8080 (PCB Only)

LABORATORY SUPERVISOR SIGNATURE
PRINTED NAME AND DATE

Stephen C. Eck
Stephen C. Eck 8-4-92

PREPARED BY
PRINTED NAME AND DATE

Veronica Henry
Veronica Henry 7/31/92

CASE NARRATIVE

Company Name: Laidlaw Environmental Services, Inc.
Project Name: Roosevelt Road Transmitter Site
Chemlab Reference Number: 92.3632

Chemlab Sample #	Client Sample #	Analyses Requested
1	B5001	EPA 8080
2	B5002	EPA 8080
3	B5003	EPA 8080
4	B5004	EPA 8080
5	B6004	EPA 8080
6	B5005	EPA 8080
7	B5006	EPA 8080
8	B5007	EPA 8080
9	B5008	EPA 8080
10	B11007	EPA 8080
11	B13001	EPA 8080
12	B13002	EPA 8080
13	B13003	EPA 8080
14	B13004	EPA 8080
15	B13005	EPA 8080
16	B13006	EPA 8080
17	B13007	EPA 8080
18	B13008	EPA 8080
19	B10001	EPA 8080
20	B10002	EPA 8080
21	B10003	EPA 8080
22	B10004	EPA 8080
23	B10005	EPA 8080
24	B10006	EPA 8080
25	B10007	EPA 8080
26	B10008	EPA 8080

Chemlab Sample #	Client Sample #	Analyses Requested
27	B10009	EPA 8080
28	B10010	EPA 8080
29	B13009	EPA 8080
30	B130010	EPA 8080
31	B14009	EPA 8080
32	B3301	EPA 8080
33	B3302	EPA 8080
34	B3303	EPA 8080
35	B4303	EPA 8080
36	B3304-10	EPA 8080
37	B3305-10	EPA 8080
38	B3306-10	EPA 8080
39	SPB018	EPA 8080
40	SPB019	EPA 8080
41	SPB020	EPA 8080
42	B220	EPA 8080
43	B240	EPA 8080
44	B5009	EPA 8080
45	B5010	EPA 8080
46	B1	EPA 8080
47	B2	EPA 8080
48	B3	EPA 8080
49	B4	EPA 8080

Comments: See attached chain of custody forms.

LABORATORY SUPERVISOR SIGNATURE
PRINTED NAME AND DATE

Stephen C. Ede
Stephen C. Ede 8-5-92

PREPARED BY
PRINTED NAME AND DATE

Laura L Hopkins
LAURA L HOPKINS 8/03/92

CASE NARRATIVE

Company Name: Laidlaw Environmental Services, Inc.
Project Name: Roosevelt Road Transmitter Site
Chemlab Reference Number: 92.3649

Chemlab Sample #	Client Sample #	Analyses Requested
1	B3307	EPA SW846 MOD 8080
2	B3308	EPA SW846 MOD 8080

Comments: See attached chain of custody forms.

LABORATORY SUPERVISOR SIGNATURE
PRINTED NAME AND DATE

Stephen C. Ede 8-5-92

PREPARED BY
PRINTED NAME AND DATE

Lauren L Hopkins
LAUREN L HOPKINS 8-4-92

CASE NARRATIVE

Company Name: Laidlaw Environmental Services, Inc.
Project Name: Roosevelt Road Transmitter Site
Chemlab Reference Number: 92.3772

Chemlab Sample #	Client Sample #	Analyses Requested
1	W7	EPA 8080
2	W14	EPA 8080
3	W21	EPA 8080
4	W28	EPA 8080

Comments: See attached chain of custody forms.

LABORATORY SUPERVISOR SIGNATURE
PRINTED NAME AND DATE

Stephen C. Ede
Stephen C. Ede 8-6-92

PREPARED BY
PRINTED NAME AND DATE

Laura K Hopkins
LAURA K HOPKINS 8-5-92

APPENDIX IV

LABORATORY CHRONICLE

Chem Lab Ref. # : 92.3422

PCB Extraction Date
EPA Method 3550 (Soil)
Sample Number :

	I Date	II Date
1	7/17/92	
2	7/17/92	7/24/92
3	7/17/92	7/24/92
4	7/17/92	7/24/92
5. 5 x1000	7/17/92	
6. 6x1000	7/17/92	7/24/92
7	7/17/92	7/24/92
8	7/17/92	7/24/92
9	7/17/92	7/24/92
10	7/17/92	
11	7/17/92	
12	7/17/92	
13	7/17/92	
14	7/17/92	
15	7/17/92	
16	7/16/92	
17	7/16/92	
18	7/17/92	
19	7/16/92	7/24/92
20. 20x100	7/16/92	7/24/92
21	7/16/92	
22	7/16/92	
23	7/16/92	
24	7/16/92	
25	7/16/92	
26	7/16/92	
27	7/15/92	
28	7/19/92	
29. 29x100	7/15/92	
30. 30x100	7/15/92	
31. 31x100	7/15/92	
32. 32x1000	7/16/92	
33	7/16/92	
34	7/16/92	
35	7/16/92	
36	7/16/92	
37. 37x100	7/15/92	
38	7/15/92	
39. 39x1000	7/15/92	
40. 40x100	7/15/92	

PCB Analysis Date
EPA SW846 Method 8080

Sample Number :	I Date	II Date
1	7/22/92	
2	7/22/92	7/26/92
3	7/22/92	7/27/92
4	7/22/92	7/27/92
5. 5x1000	7/22/92	
6. 6x1000	7/22/92	7/27/92
7	7/22/92	7/27/92
8	7/22/92	7/27/92
9	7/22/92	7/27/92
10	7/22/92	
11	7/22/92	
12	7/22/92	
13	7/22/92	
14	7/22/92	
15	7/23/92	
16	7/21/92	
17	7/21/92	
18	7/22/92	
19	7/21/92	7/27/92
20. 20x100	7/21/92	7/24/92
21	7/21/92	
22	7/21/92	
23	7/21/92	
24	7/21/92	
25	7/22/92	
26	7/22/92	
27	7/16/92	
28	7/21/92	
29x100	7/17/92	
29	7/16/92	
30x100	7/17/92	
30	7/16/92	
31x100	7/17/92	
31	7/16/92	
32. 32x1000	7/22/92	
33	7/22/92	
34	7/22/92	
35	7/22/92	
36	7/22/92	
37x100	7/17/92	
37	7/16/92	
38	7/16/92	
39x1000	7/20/92	
39	7/16/92	
40x100	7/17/92	
40	7/16/92	

NOTE: If fractions are re-extracted and re-analyzed because the initial endeavors failed to meet the required quality control criteria. the date of re-extraction and/or reanalysis will be entered in column 2 additionally.

Section Supervisor Review & Approval	(Signature)	Peter Robinson
	(Print Name)	Peter Robinson
	(Date)	7-29-92
Q.C. Officer Review & Approval	(Signature)	Stephen C. Edl
	(Print Name)	Stephen C. Edl
	(Date)	7-29-92

LABORATORY CHRONICLE

	I Date	II Date
Receipt/Refrigeration	7/17/92	
PCB Extraction Date		
EPA Method 3550 (Soil) 92.3567 (1-26)	7/21/92	
PCB Analysis Date		
EPA SW846 Method 8080 92.3567 (5, 6, 11, 16, 19, 21-24, 26)	7/25/92	
92.3567 (1-4, 7-10, 12-15, 17-18, 20, 25)	7/26/92	

NOTE: If fractions are re-extracted and re-analyzed because the initial endeavors failed to meet the required quality control criteria, the date of re-extraction and/or reanalysis will be entered in column 2 additionally.

Section Supervisor Review & Approval	(Signature)	Susie M. Fuller
	(Print Name)	Susie M. Fuller
	(Date)	8/1/92
Q.C. Officer Review & Approval	(Signature)	Stephen C. Eck
	(Print Name)	Stephen C. Eck
	(Date)	8-4-92

LABORATORY CHRONICLE

Chem Lab Ref. # : 92.3632

PCB Extraction Date
EPA Method 3550 (Soil)
Sample Number :

	I Date	II Date
1	7/22/92	
2. 2x100	7/22/92	
3	7/22/92	
4	7/22/92	
5	7/22/92	
6 6x100	7/22/92	
7	7/22/92	
8	7/22/92	
9	7/22/92	
10	7/22/92	
11	7/22/92	
12. 12x100	7/22/92	
13 13x1000	7/22/92	
14 14x1000	7/22/92	
15. 15x1000	7/22/92	
16	7/22/92	
17	7/22/92	
18	7/22/92	
19	7/22/92	
20. 20x100	7/22/92	
21	7/24/92	
22	7/24/92	
23. 23x100	7/24/92	
24	7/24/92	
25	7/24/92	
26	7/24/92	
27	7/24/92	
28	7/24/92	
29. 29x100	7/24/92	
30	7/24/92	
31. 31x100	7/24/92	
32. 32x100	7/24/92	
33 33x1000	7/24/92	
35 35x1000	7/23/92	
36	7/24/92	
37. 37x100	7/24/92	
38. 38x1000	7/24/92	
39	7/24/92	
40. 40x100	7/24/92	
41. 41x1000	7/23/92	
42x100	7/23/92	
43	7/23/92	
44	7/23/92	
45	7/23/92	
46	7/23/92	
47	7/23/92	
48	7/23/92	
49	7/23/92	

EPA SW846 Method 8080

Sample Number :	I Date	" Date
1	7/26/92	
2x100	7/27/92	
2	7/25/92	
3	7/26/92	
4	7/26/92	
5	7/26/92	
6x100	7/27/92	
6	7/25/92	
7	7/26/92	
8	7/26/92	
9	7/26/92	
10	7/25/92	
11	7/26/92	
12x100	7/27/92	
12	7/25/92	
13x1000	7/27/92	
13	7/26/92	
14x1000	7/27/92	
14	7/26/92	
15x1000	7/27/92	
15	7/26/92	
16	7/26/92	
17	7/26/92	
18	7/26/92	
19	7/26/92	
20x100	7/27/92	
20	7/26/92	
21	7/26/92	
22	7/26/92	
23x100	7/27/92	
23	7/26/92	
24	7/26/92	
25	7/25/92	
26	7/26/92	
27	7/26/92	
28	7/26/92	
29x100	7/26/92	
29	7/25/92	
30	7/26/92	
31 31x100	7/26/92	
32x100	7/26/92	
32	7/25/92	
33x1000	7/27/92	
33	7/25/92	
34x100	7/27/92	
34	7/26/92	
35x1000	7/27/92	
35	7/26/92	
36	7/26/92	
37x100	7/27/92	
37	7/25/92	
38x1000	7/27/92	
38	7/25/92	
39	7/26/92	
40x100	7/27/92	

PCB Analysis Date / Continued
EPA SW846 Method 8080
Sample Number :

	I Date		II Date
40	____	7/26/92	____
41x1000	____	7/27/92	____
41	____	7/26/92	____
42x100	____	7/27/92	____
43	____	7/27/92	____
44	____	7/27/92	____
45	____	7/27/92	____
46	____	7/26/92	____
47	____	7/26/92	____
48	____	7/26/92	____
49	____	7/26/92	____

NOTE: If fractions are re-extracted and re-analyzed because the initial endeavors failed to meet the required quality control criteria, the date of re-extraction and/or reanalysis will be entered in column 2 additionally.

Section Supervisor Review & Approval
(Signature) Peter Robinson
(Print Name) Peter Robinson
(Date) 8-4-92

Q.C. Officer Review & Approval
(Signature) Stephen C. Edl
(Print Name) Stephen C. Edl
(Date) 8-5-92

LABORATORY CHRONICLE

	I Date	II Date
PCB Extraction Date		
EPA Method 3550 (Soil) 92.3649 (1-2)	7/27/92	
PCB Analysis Date		
EPA SW846 Method 8080 92.3649 (1-2)	7/29/92	

NOTE: If fractions are re-extracted and re-analyzed because the initial endeavors failed to meet the required quality control criteria, the date of re-extraction and/or reanalysis will be entered in column 2 additionally.

Section Supervisor Review & Approval	(Signature)	Jané M. Fuller
	(Print Name)	Jané M. Fuller
	(Date)	8/4/92
Q.C. Officer Review & Approval	(Signature)	Stephen C. Edw
	(Print Name)	Stephen C. Edw
	(Date)	8-5-92

LABORATORY CHRONICLE

	I Date		II Date
PCB Extraction Date			
EPA Method 3550 (Soil)			
92.3772 (1-4 & 1-4 CONFIRM)	____	7/28/92	____
PCB Analysis Date			
EPA SW846 Method 8080			
92.3772 (1-2. 3 CONFIRM)	____	7/28/92	____
92.3772 (3-4, 1-2 CONFIRM)	____	7/29/92	____
92.3772-4 CONFIRM	____	7/30/92	____

NOTE: If fractions are re-extracted and re-analyzed because the initial endeavors failed to meet the required quality control criteria, the date of re-extraction and/or reanalysis will be entered in column 2 additionally.

Section Supervisor Review & Approval	(Signature)	Laura M. Fuller
	(Print Name)	Laura M. Fuller
	(Date)	8/6/92
Q.C. Officer Review & Approval	(Signature)	Stephen C. Ede
	(Print Name)	Stephen C. Ede
	(Date)	8-6-92

APPENDIX V

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.3422 (1-15 . 18)

Lab Name: Chemical & Geological Laboratory

Lab File ID: 059R0301.D

Date Analyzed: 7/21/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

Haidlaw ID #	ppm 1260		LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	External Std. Report: Last Recalib. on:
		01	BLK A	059R0301.D	7/21/92	9:52 PM	7/15/92, 3:34 pm
		02	Spk	060R0301.D	7/21/92	10:50 PM	6/10/92, 12:15 pm ←
		03	Spk Dup	061R0301.D	7/21/92	11:48 PM	6/10/92, 12:15 pm ←
		04	Aroclor 1242	003R0201.D	7/21/92	12:09 PM	7/15/92, 3:34 pm
		05	Aroclor 1254	004R0201.D	7/21/92	1:08 PM	7/15/92, 3:34 pm
		06	Aroclor 1260	002R0201.D	7/21/92	11:11 AM	7/15/92, 3:34 pm
A30	0.086	07	92.3422-1	062R0301.D	7/22/92	12:46 AM	7/15/92, 3:34pm
D11	7.84	08	92.3422-2	063R0301.D	7/22/92	1:45 AM	7/15/92, 3:34 pm
D12	1.58	09	92.3422-3	064R0301.D	7/22/92	2:43 AM	7/15/92, 3:34 pm
D13	5.01	10	92.3422-4	065R0301.D	7/22/92	3:41 AM	7/15/92, 3:34 pm
		11	92.3422-5 x1000	059R0301.D	7/22/92	9:19 PM	7/15/92, 4:59 pm
D14	429	12	92.3422-5	066R0301.D	7/22/92	4:39 AM	7/15/92, 3:34 pm
		13	92.3422-6 x1000	060R0301.D	7/22/92	10:09 PM	7/15/92, 4:59 pm
D15	144	14	92.3422-6	067R0301.D	7/22/92	5:37 AM	7/15/92, 3:34 pm
D16	5.84	15	92.3422-7	068R0301.D	7/22/92	6:35 AM	7/15/92, 3:34 pm
D17	3.29	16	92.3422-8	069R0301.D	7/22/92	7:34 AM	7/15/92, 3:34 pm
D18	4.48	17	92.3422-9	070R0301.D	7/22/92	8:33 AM	7/15/92, 3:34 pm
A15	0.457	18	92.3422-10	071R0301.D	7/22/92	9:31 AM	7/15/92, 3:34 pm
A16	1.60	19	92.3422-11	052R0301.D	7/22/92	4:29 PM	7/15/92, 3:34 pm
A17	1.44	20	92.3422-12	053R0301.D	7/22/92	5:28 PM	7/15/92, 3:34 pm
A19	0.142	21	92.3422-13	054R0301.D	7/22/92	6:26 PM	7/15/92, 3:34 pm
A31	1.60	22	92.3422-14	055R0301.D	7/22/92	7:24 PM	7/15/92, 3:34 pm
A11	ND	23	92.3422-15	067R0301.D	7/23/92	3.59 AM	7/15/92, 4:59 pm
A14	ND	24	92.3422-18	057R0301.D	7/22/92	9:21 PM	7/15/92, 3:34 pm

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.3422 (16-17, 19-26, 32-36)

Lab Name: Chemical & Geological Laboratory

Lab File ID: 019F0201.D

Date Analyzed: 7/21/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

Laidlaw ID #	ppm 1260		LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	External Std. Rpts.; Last Recalib. on:
		01	BLK A	019F0201.D	7/21/92	2:06 PM	7/15/92, 3:28 pm
		02	Spk	020F0201.D	7/21/92	3:04 PM	6/10/92, 11:32 pm
		03	Spk Dup	021F0201.D	7/21/92	4:02 PM	6/10/92, 11:32 pm
		04	Aroclor 1242	003F0101.D	7/21/92	11:11 AM	7/15/92, 5:02 pm
		05	Aroclor 1254	004F0101.D	7/21/92	12:09 PM	7/15/92, 5:28 pm
		06	Aroclor 1260	002F0101.D	7/21/92	10:12 AM	7/15/92, 5:02 pm
A12	ND	07	92.3422-16	022F0201.D	7/21/92	5:01 PM	7/15/92, 3:28 pm
A13	ND	08	92.3422-17	023F0201.D	7/21/92	5:59 PM	7/15/92, 3:28 pm
D19		09	92.3422-19	024F0201.D	7/21/92	6:57 PM	7/15/92, 3:28 pm
		10	92.3422-20 x100	007F0101.D	7/22/92	3:29 PM	
D30	1180	11	92.3422-20	025F0201.D	7/21/92	7:55 PM	7/15/92, 3:28 pm
C11	0.709	12	92.3422-21	026F0201.D	7/21/92	8:54 PM	7/15/92, 3:28 pm
C12	2.47	13	92.3422-22	027F0201.D	7/21/92	9:52 PM	7/15/92, 3:28 pm
C13	0.937	14	92.3422-23	028F0201.D	7/21/92	10:50 PM	7/15/92, 3:28 pm
C14	0.924	15	92.3422-24	029F0201.D	7/21/92	11:48 PM	7/15/92, 3:28 pm
C15	0.381	16	92.3422-25	030F0201.D	7/22/92	12:46 AM	7/15/92, 3:28 pm
C30	0.861	17	92.3422-26	031F0201.D	7/22/92	1:45 AM	7/15/92, 3:28 pm
		18	92.3422-32 x1000	014F0101.D	7/22/92	9:19 PM	
T1	187	19	92.3422-32	032F0201.D	7/22/92	2:43 AM	7/15/92, 3:28 pm
T2	4.52	20	92.3422-33	033F0201.D	7/22/92	3:41 AM	7/15/92, 3:28 pm
T3	4.72	21	92.3422-34	034F0201.D	7/22/92	4:39 AM	7/15/92, 3:28 pm
T4	13.7	22	92.3422-35	035F0201.D	7/22/92	5:37 AM	7/15/92, 3:28 pm
T5	0.542	23	92.3422-36	036F0201.D	7/22/92	6:35 AM	7/15/92, 3:28 pm

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.3422 (27, 29-31, 37-40)

Lab Name: Chemical & Geological Laboratory

Lab File ID: 006F0101.D

Date Analyzed: 7/16/92

Instrument ID: ECD #2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

Laidlaw ID #	ppm 1260		LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	External Std. Report: Last Recalib. on:
		01	BLK A	006F0101.D	7/16/92	1:08 PM	7/15/92, 5:02 pm
		02	Spk	007F0101.D	7/16/92	1:58 PM	7/6/92, 3:28 pm
		03	Spk Dup	008F0101.D	7/16/92	2:48 PM	7/6/92, 3:28 pm
		04	Aroclor 1242	003F0101.D	7/16/92	10:38 AM	7/15/92, 4:59 pm
		05	Aroclor 1254	004F0101.D	7/16/92	11:28 AM	7/15/92, 5:02 pm
		06	Aroclor 1260	002F0101.D	7/16/92	9:48 AM	7/15/92, 5:02 pm
SPB02	3.46	07	92.3422-27	009F0101.D	7/16/92	3:38 PM	7/15/92, 5:02 pm
		09	92.3422-29 x100	023F0101.D	7/17/92	7:27 AM	
SPB04	830	10	92.3422-29	011F0101.D	7/16/92	5:18 PM	7/15/92, 5:02 pm
		11	92.3422-30 x100	024F0101.D	7/17/92	8:17 AM	7/15/92, 5:02 pm
C300	76.4	12	92.3422-30	012F0101.D	7/16/92	6:08 PM	7/15/92, 5:02 pm
		13	92.3422-31 x100	025F0101.D	7/17/92	9:07 AM	7/15/92, 5:02 pm
SPB01	556	14	92.3422-31	013F0101.D	7/16/92	6:58 PM	7/15/92, 5:02 pm
		15	92.3422-37 x100	006F0101.F	7/17/92	2:36 PM	7/15/92, 5:02 pm
C400	24.3	16	92.3422-37	014F0101.D	7/16/92	7:48 PM	7/15/92, 5:02 pm
C402	4.66	17	92.3422-38	015F0101.D	7/16/92	8:38 PM	7/15/92, 5:02 pm
		18	92.3422-39 x1000	070R0301.D	7/20/92	9:07 PM	7/15/92, 4:59 pm
C403	1290	19	92.3422-39	016F0101.D	7/16/92	9:28 PM	7/15/92, 5:02 pm
		20	92.3422-40 x100	008F0101.D	7/16/92	4:16 PM	7/15/92, 5:02 pm
C404	206	21	92.3422-40	017F0101.D	7/16/92	10:18 PM	7/15/92, 5:02 pm

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.3422-28

Lab Name: Chemical & Geological Laboratory

Lab File ID: 054R0301.D

Date Analyzed: 7/21/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

Laidlaw ID #	ppm 1260		LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	External Std Epr: Last Recalib on:
		01	BLK A	054R0301.D	7/21/92	5:01 PM	7/15/92, 3:34 pm
		02	Spk	055R0301.D	7/21/92	5:59 PM	6/10/92, 12:15 pm ←
		03	Spk Dup	056R0301.D	7/21/92	6:57 PM	6/10/92, 12.15 pm ←
		04	Aroclor 1242	003R0201.D	7/21/92	12:09 PM	7/15/92, 3:34 pm
		05	Aroclor 1254	004R0201.D	7/21/92	1:08 PM	7/15/92, 3:44 pm
		06	Aroclor 1260	002R0201.D	7/21/92	11:11 AM	7/15/92, 4:59 pm
SPB03	5.45	07	92.3422-28	057R0301.D	7/21/92	7:55 PM	7/15/92, 3:34 pm

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.3422 (2R-4R, 6R-9R, 19R-20R)

Lab Name: Chemical & Geological Laboratory

Lab File ID: 012F0101.D

Date Analyzed: 7/26/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	External Std. Report: Last Recalib. on:
01	BLK A	012F0101.D	7/26/92	8:52 PM	7/15/92, 3:22 pm
02	Spk	013F0101.D	7/26/92	9:50 PM	6/10/92, 11:32 pm
03	Spk Dup	014F0101.D	7/26/92	10:48 PM	6/10/92, 11:32 pm
04	Aroclor 1242	003F0101.D	7/26/92	12:02 PM	7/15/92, 5:02 pm
05	Aroclor 1254	004F0101.D	7/26/92	1:04 PM	7/15/92, 5:20 pm
06	Aroclor 1260	002F0101.D	7/26/92	11:03 AM	7/15/92, 5:02 pm
07	92.3422-2R	015F0101.D	7/26/92	11:47 PM	NOT PROVIDED IN THIS REPORT
09	92.3422-3R	017F0101.D	7/27/92	1:43 AM	
10	92.3422-4R	016F0101.D	7/27/92	12:45 AM	
11	92.3422-6R	018F0101.D	7/27/92	2:42 AM	
12	92.3422-7R	019F0101.D	7/27/92	3:40 AM	
13	92.3422-8R	020F0101.D	7/27/92	4:38 AM	
14	92.3422-9R	021F0101.D	7/27/92	5:36 AM	
15	92.3422-19R	022F0101.D	7/27/92	6:35 AM	
16	92.3422-20R	035F0201.D	7/27/92	9:07 AM	

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY

Lab Name: Chemical & Geological Laboratory

Lab File ID: 013F0101.D Instrument ID: ECD #3

Date Analyzed: 7/23/92

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	
7/21 BLK A	013F0101.D	7/23/92	10:16 PM	
7/21 SPK A	014F0101.D	7/23/92	11:14 PM	
7/21 DUP A	015F0101.D	7/24/92	12:12 AM	
Aroclor 1242	003F0101.D	7/23/92	12:32 PM	
Aroclor 1254	004F0101.D	7/23/92	1:31 PM	
Aroclor 1260	002F0101.D	7/23/92	11:34 AM	
C501 — 92.3567-1	016F0101.D	7/24/92	1:11 AM	
92.3567-1 X1000	022F0101.D	7/26/92	3:24 AM	-314 ppm 1260
C504 — 92.3567-2	017F0101.D	7/24/92	2:09 AM	
92.3567-2 X100	023F0101.D	7/26/92	4:14 AM	-83.4 ppm 1260
B210 — 92.3567-3	018F0101.D	7/24/92	3:07 AM	
92.3567-3 X1000	024F0101.D	7/26/92	5:04 AM	-315 ppm 1260
B230 — 92.3567-4	019F0101.D	7/24/92	4:06 AM	
92.3567-4 X1000	025F0101.D	7/26/92	5:54 AM	-997 ppm 1260 } rerun
B234 — 92.3567-5	020F0101.D	7/24/92	5:04 AM	
92.3567-5 X1000	061R0301.D	7/25/92	10:24 PM	-644 ppm 1260 } rerun
A50 — 92.3567-6	017F0101.D	7/25/92	11:14 PM	ND < 0.020
B50 — 92.3567-7	018F0101.D	7/26/92	12:04 AM	ND < 0.020
C50 — 92.3567-8	019F0101.D	7/26/92	12:54 AM	ND < 0.020
D50 — 92.3567-9	020F0101.D	7/26/92	1:44 AM	0.468 ppm 1260
B410 — 92.3567-10	025F0101.D	7/26/92	9:56 AM	2.16 ppm 1260
92.3567-10	021F0101.D	7/26/92	2:34 AM	
B420 — 92.3567-11	006F0101.D	7/24/92	4:08 PM	
92.3567-11 X100	062R0301.D	7/25/92	11:14 PM	24.3 ppm 1260

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY

Lab Name: Chemical & Geological Laboratory
Lab File ID: 056R0301.D Instrument ID: ECD #3
Date Analyzed: 7/23/92

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	
	7/21 BLK B	056R0301.D	7/23/92	8:19 PM	
	7/21 SPK B	057R0301.D	7/23/92	9:18 PM	
	7/21 DUP B	058R0301.D	7/23/92	10:16 PM	
	Aroclor 1242	003R0201.D	7/23/92	1:31 PM	
	Aroclor 1254	004R0201.D	7/23/92	2:29 PM	
	Aroclor 1260	002R0201.D	7/23/92	12:32 PM	
B430 -	92.3567-12	059R0301.D	7/23/92	11:14 PM	- 53.941 ppm 1260
	92.3567-12 X100	063R0301.D	7/26/92	12:04 AM	
B440 -	92.3567-13	060R0301.D	7/24/92	12:12 AM	
	92.3567-13 X100	064R0301.D	7/26/92	12:54 AM	- 70.5 ppm 1260
B444 -	92.3567-14	061R0301.D	7/24/92	1:11 AM	} Rerun
	92.3567-14 X1000	065R0301.D	7/26/92	1:44 AM	- 617 ppm 1260
SPB05 -	92.3567-15	062R0301.D	7/24/92	2:09 AM	
	92.3567-15 X1000	066R0301.D	7/26/92	2:34 AM	- 424 ppm 1260
SPB06 -	92.3567-16	054R0301.D	7/25/92	4:33 PM	- 1.09 ppm 1260
SPB08 -	92.3567-17	064R0301.D	7/24/92	4:06 AM	
	92.3567-17 X100	067R0301.D	7/26/92	3:24 AM	- 94.0 ppm 1260
SPB09 -	92.3567-18	065R0301.D	7/24/92	5:04 AM	
	92.3567-18 X100	068R0301.D	7/26/92	4:14 AM	- 11.9 ppm 1260
SPB10 -	92.3567-19	055R0301.D	7/25/92	5:23 PM	- 1.38 ppm 1260
SPB11 -	92.3567-20	067R0301.D	7/24/92	7:00 AM	
	92.3567-20 X100	069R0301.D	7/26/92	5:04 AM	- 7.88 ppm 1260
SPB12 -	92.3567-21	056R0301.D	7/25/92	6:14 PM	- 1.28 ppm 1260
SPB13 -	92.3567-22	057R0301.D	7/25/92	7:04 PM	- 0.814 ppm 1260
SPB14 -	92.3567-23	058R0301.D	7/25/92	7:54 PM	- 3.34 ppm 1260
SPB15 -	92.3567-24	059R0301.D	7/25/92	8:44 PM	- 1.09 ppm 1260
SPB16 -	92.3567-25	053R0301.D	7/24/92	6:05 PM	
	92.3567-25 X100	070R0301.D	7/26/92	5:54 AM	- 8.41 ppm 1260
SPB17 -	92.3567-26	060R0301.D	7/25/92	9:34 PM	- 1.04 ppm 1260

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.3632 (1-20)

Lab Name: Chemical & Geological Laboratory
Lab File ID: 062R0301.D
Date Analyzed: 7/25/92
Instrument ID: ECD #3

RPT = reported

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

Laidlaw Sample No.	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	ppm 1260
01	7-22 BLK A SOIL	062R0301.D	7/25/92	2:50 AM	
02	7-22 SPK A SOIL	063R0301.D	7/25/92	3:48 AM	
03	7-22 DUP A SOIL	064R0301.D	7/25/92	4:47 AM	
04	Aroclor 1242	003R0201.D	7/25/92	1:40 PM	
05	Aroclor 1254	004R0201.D	7/25/92	2:38 PM	
06	Aroclor 1260	002R0201.D	7/25/92	12:42 PM	
B5001 — 07	92.3632-1	006F0101.D	7/26/92	2:09 PM	0.813 ppm 1260
08	92.3632-2 x100	018F0101.D	7/27/92	12:47 AM	15.2 ppm 1260 ← RPT
B5002 — 09	92.3632-2	066R0301.D	7/25/92	6:43 AM	12.5 ppm 1260
B5003 — 10	92.3632-3	009F0101.D	7/26/92	5:16 PM	0.339 ppm 1260
B5004 — 11	92.3632-4	010F0101.D	7/26/92	6:06 PM	5.23 ppm 1260
B6004 — 12	92.3632-5	011F0101.D	7/26/92	6:56 PM	0.105 ppm 1260
13	92.3632-6 x100	019F0101.D	7/27/92	1:37 AM	11.9 ppm 1260 ← RPT
B5005 — 14	92.3632-6	067R0301.D	7/25/92	7:41 AM	10.1 ppm 1260
B5006 — 15	92.3632-7	007F0101.D	7/26/92	2:59 PM	0.040 ppm 1260
B5007 — 16	92.3632-8	008F0101.D	7/26/92	3:49 PM	0.128 ppm 1260
B5008 — 17	92.3632-9	012F0101.D	7/26/92	7:46 PM	0.193 ppm 1260
B11007 — 18	92.3632-10	053R0301.D	7/25/92	5:34 PM	ND < 0.020 ppm
B13001 — 19	92.3632-11	013F0101.D	7/26/92	8:36 PM	0.450 ppm 1260
20	92.3632-12 x100	020F0101.D	7/27/92	2:27 AM	76.5 ppm 1260 ← RPT
B13002 — 21	92.3632-12	055R0301.D	7/25/92	7:30 PM	55.5 ppm 1260
22	92.3632-13 x1000	021F0101.D	7/27/92	3:17 AM	471 ppm 1260 ← RPT
B13003 — 23	92.3632-13	062R0301.D	7/26/92	2:19 AM	136 ppm 1260
24	92.3632-14 x1000	022F0101.D	7/27/92	4:07 AM	1280 ppm 1260 ← RPT
B13004 — 25	92.3632-14	063R0301.D	7/26/92	3:17 AM	170 ppm 1260
26	92.3632-15 x1000	023F0101.D	7/27/92	4:57 AM	184 ppm 1260 ← RPT
B13005 — 27	92.3632-15	064R0301.D	7/26/92	4:15 AM	90.4 ppm 1260
B13006 — 28	92.3632-16	014F0101.D	7/26/92	9:26 PM	6.03 ppm 1260
B13007 — 29	92.3632-17	015F0101.D	7/26/92	10:16 PM	1.26 ppm 1260
B13008 — 30	92.3632-18	016F0101.D	7/26/92	11:06 PM	0.884 ppm 1260
B10001 — 31	92.3632-19	017F0101.D	7/26/92	11:57 PM	0.024 ppm 1260
32	92.3632-20 x100	024F0101.D	7/27/92	5:47 AM	42.4 ppm 1260 ← RPT
B10002 — 33	92.3632-20	066R0301.D	7/26/92	6:12 AM	31.9 ppm 1260

POLYCHLORINATED BIPHENYLS

METHOD BLANK SUMMARY

92.3632 (21-34, 36-40)

Lab Name: Chemical & Geological Laboratory

Lab File ID: 011F0101.D

Date Analyzed: 7/24/92

Instrument ID: ECD #3

RPT = Reported

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

Laidlaw Sample No.	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	ppm 1260
01	7-22 BLK A SOIL	011F0101.D	7/24/92	9:00 PM	
02	7-24 SPK D SOIL	012F0101.D	7/24/92	9:59 PM	
03	7/24 DUP D SOIL	013F0101.D	7/24/92	10:57 PM	
04	Aroclor 1242	003R0201.D	7/26/92	11:36 AM	
05	Aroclor 1254	004R0201.D	7/26/92	12:26 PM	
06	Aroclor 1260	002R0201.D	7/26/92	10:45 AM	
B10003 – 07	92.3632-21	054R0101.D	7/26/92	5:16 PM	0.045 ppm 1260
B10004 – 08	92.3632-22	055R0101.D	7/26/92	6:06 PM	0.098 ppm 1260
09	92.3632-23x100	025F0101.D	7/27/92	6:37 AM	118 ppm 1260 ← RPT
B10005 – 10	92.3632-23	015F0101.D	7/26/92	12:22 AM	80.5 ppm 1260
B10006 – 11	92.3632-24	052R0301.D	7/26/92	2:09 PM	2.32 ppm 1260
B10007 – 12	92.3632-25	015F0101.D	7/25/92	12:53 AM	ND < 0.020 ppm
B10008 – 13	92.3632-26	016F0101.D	7/26/92	1:20 AM	ND < 0.020 ppm
B10009 – 14	92.3632-27	056R0101.D	7/26/92	6:56 PM	0.126 ppm 1260
B10010 – 15	92.3632-28	057R0101.D	7/26/92	7:46 PM	0.122 ppm 1260
16	92.3632-29x100	060R0101.D	7/26/92	10:16 PM	17.8 ppm 1260 ← RPT
B13009 – 17	92.3632-29	017F0101.D	7/25/92	2:50 AM	17.1 ppm 1260
B13010 – 18	92.3632-30	053R0301.D	7/26/92	2:59 PM	3.06 ppm 1260
19	92.3632-31x100	061R0101.D	7/26/92	11:06 PM	19.9 ppm 1260 ← RPT
B14009 – 20	92.3632-31	019F0101.D	7/26/92	4:15 AM	19.5 ppm 1260
21	92.3632-32x100	062R0101.D	7/26/92	11:57 PM	70.5 ppm 1260 ← RPT
B3301 – 22	92.3632-32	020F0101.D	7/25/92	5:45 AM	69.5 ppm 1260
23	92.3632-33x1000	063R0101.D	7/27/92	12:47 AM	777 ppm 1260 ← RPT
B3302 – 24	92.3632-33	021F0101.D	7/25/92	6:43 AM	197 ppm 1260
25	92.3632-34x100	064R0101.D	7/27/92	1:37 AM	42.9 ppm 1260 ← RPT
B3303 – 26	92.3632-34	020F0101.D	7/26/92	5:13 AM	42.5 ppm 1260
B3304-10 – 27	92.3632-36	058R0101.D	7/26/92	8:36 PM	0.647 ppm 1260
28	92.3632-37x100	066R0101.D	7/27/92	3:17 AM	11.3 ppm 1260 ← RPT
B3305-10 – 29	92.3632-37	022F0101.D	7/25/92	7:41 AM	10.9 ppm 1260
30	92.3632-38x1000	067R0101.D	7/27/92	4:07 AM	2300 ppm 1260 ← RPT
B3306-10 – 31	92.3632-38	023F0101.D	7/25/92	8:40 AM	220 ppm 1260
SPB018 – 32	92.3632-39	059R0101.D	7/26/92	9:26 PM	5.13 ppm 1260
33	92.3632-40x100	068R0101.D	7/27/92	4:57 AM	75.3 ppm 1260 ← RPT
SPB019 – 34	92.3632-40	023F0101.D	7/26/92	8:08 AM	69.9 ppm 1260

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.3632 (35, 41-49)

Lab Name: Chemical & Geological Laboratory

Lab File ID: 006F0101.D

Date Analyzed: 7/25/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

Laidlaw Sample No.	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	ppm 1260
01	7-23 BLK C SOIL	006F0101.D	7/25/92	3:37 PM	
02	7-23 SPK C SOIL	007F0101.D	7/25/92	4:35 PM	
03	7-23 DUP C SOIL	008F0101.D	7/25/92	5:34 PM	
04	Aroclor 1242	003R0201.D	7/26/92	11:36 AM	
05	Aroclor 1254	004R0201.D	7/26/92	12:26 PM	
06	Aroclor 1260	002R0201.D	7/26/92	10:45 AM	
07	92.3632-35x1000	0065R0101.D	7/27/92	2:27 AM	339 ppm 1260 ← RPT
B4303 — 08	92.3632-35	024F0101.D	7/26/92	9:06 AM	189 ppm 1260
09	92.3632-41x1000	069R0101.D	7/27/92	5:47 AM	203 ppm 1260 ← RPT
SPB020 — 10	92.3632-41	006F0101.D	7/26/92	3:01 PM	114 ppm 1260
B220 — 11	92.3632-42x100	070R0101.D	7/27/92	6:37 AM	41.9 ppm 1260
B040 — 12	92.3632-43	073R0101.D	7/27/92	9:07 AM	0.145 ppm 1260
B5009 — 13	92.3632-44	072R0101.D	7/27/92	8:17 AM	0.256 ppm 1260
B5010 — 14	92.3632-45	071R0101.D	7/27/92	7:27 AM	3.81 ppm 1260
B1 — 15	92.3632-46	054R0301.D	7/26/92	5:56 PM	ND < 0.020
B2 — 16	92.3632-47	055R0301.D	7/26/92	6:55 PM	ND < 0.020
B3	92.3632-48	?	?	?	— ND < 0.020
B4	92.3632-49	?	?	?	— ND < 0.020

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.3649 (1-2 & 1-2 CONFIRM)

Lab Name: Chemical & Geological Laboratory

Lab File ID: 007F0101.D

Date Analyzed: 7/27/92

RPT = Reported

Instrument ID: ECD #2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

Laidlaw Sample No.	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	ppm 1260
01	BLK 7/27	007F0101.D	7/27/92	5:54 PM	
02	SPK 7/27	008F0101.D	7/27/92	6:44 PM	
03	DUP 7/27	009F0101.D	7/27/92	7:35 PM	
04	Aroclor 1242	NA	NA	NA	
05	Aroclor 1254	004R0201.D	7/29/92	4:34 PM	
06	Aroclor 1260	002R0201.D	7/29/92	2:54 PM	
B3307 — 07	92.3649-1	063R0301.D	7/30/92	3:25 AM	2.26 ppm 1260 } ← RPT
08	92.3649-1 CONFIR	021F0101.D	7/29/92	6:20 AM	4.24 ppm 1260 }
B3308 — 09	95.3649-2	064R0301.D	7/30/92	4:15 AM	ND < 0.020 ppm 1260
10	92.3649-2 CONFIR	022F0101.D	7/29/92	7:10 AM	Not given

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.3772 (1-4 & 1-4 CONFIRM)

Lab Name: Chemical & Geological Laboratory

Lab File ID: 008F0101.D

Date Analyzed: 7/28/92 RPT= Reported

Instrument ID: ECD #2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

Laidlaw Sample No.	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	ppm 1260
01	BLK 7/28 WIPE	008F0101.D	7/28/92	9:30 PM	
02	SPK 7/28 WIPE	009F0101.D	7/28/92	8:20 PM	
03	DUP 7/28 WIPE	010F0101.D	7/28/92	9:10 PM	
04	Aroclor 1242	003F0301.D	7/28/92	12:11 PM	
05	Aroclor 1254	004F0301.D	7/28/92	1:01 PM	
06	Aroclor 1260	002F0101.D	7/28/92	10:31 AM	
W7 — 07	92.3772-1	011F0101.D	7/28/92	10:00 PM	6.02 ppm 1260 ← RPT
08	92.3772-1CONFIRM	056R0301.D	7/29/92	9:34 PM	4.06 ppm 1260
W14 — 09	92.3772-2	012F0101.D	7/28/92	10:50 PM	6.13 ppm 1260 ← RPT
10	92.3772-2CONFIRM	057R0301.D	7/29/92	10:24 PM	4.65 ppm 1260
W21 — 11	92.3772-3	058R0301.D	7/29/92	11:14 PM	4.76 ppm 1260 ← RPT
12	92.3772-3 CONFIRM	013F0101.D	7/28/92	11:40 PM	8.00 ppm 1260
W28 — 13	92.3772-4	014F0101.D	7/29/92	12:30 AM	ND < 0.020 ppm
(Blank) 14	92.3772-4 CONFIRM	059R0301.D	7/30/92	12:04 AM	ND < 0.020 ppm

APPENDIX VI

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.3422 (1-15 , 18)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK A	115%	113%
Spk	NA	126%
Spk Dup	NA	124%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK A	0.020	0.020	0.020	U

III. ANALYSIS

	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	70-130% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other		

NOT MET : 31% RPD Reported

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Peter Robinson

Printed Name and Date: Peter Robinson 7-29-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.3422 (16-17. 19-26. 32-36)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK A	147%	97%
Spk	151%	102%
Spk Dup	138%	100%

II. BLANK ANALYSIS

	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK A	0.020	0.020	0.020	U

III. ANALYSIS

	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	70-130% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other		

NOT met: 98% RPD Reported

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Peter Robinson

Printed Name and Date: Peter Robinson 7-29-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.3422 (27, 29-31, 37-40)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK A	170%	77%
Spk	178%	79%
Spk Dup	175%	82%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK A	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range. ∴ <20% RSD
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	70-130% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. } NOT MET FOR 92.3422 - 37, 39, and 40 x10 Waters: 70-130% Rec.
G. Other		

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Peter Robinson

Printed Name and Date: Peter Robinson 7-29-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.3422-28

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK A	115%	99%
Spk	NA	105%
Spk Dup	NA	103%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK A	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	70-130% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other		

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Peter Robinson

Printed Name and Date: Peter Robinson 7-29-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.3422 (2R-4R, 6R-9R, 19R-20R)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK A	132%	112%
Spk	98%	106%
Spk Dup	125%	108%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK A	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils. 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	70-130% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. — NOT MET FOR 92.3422-9R Waters: 70-130% Rec.
G. Other		

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Peter Robinson

Printed Name and Date: Peter Robinson 7-29-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.3567

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
7/21 BLK A	133%	115%
7/21 SPK A	---	113%
7/21 DUP A	119%	110%

II. BLANK ANALYSIS	Aroclor 1242	Arcolor 1254	Aroclor 1260	
7/21 BLK A	1.00	1.00	1.00	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	70-130% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other	None	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Jeri m. Fuller

Printed Name and Date: 8/1/92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.3567

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
7/21 BLK B	75%	91%
7/21 SPK B	---	98%
7/21 DUP B	81%	100%

II. BLANK ANALYSIS	Aroclor 1242	Arcolor 1254	Aroclor 1260	
7/21 BLK B	1.00	1.00	1.00	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	70-130% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other	None	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Jane M. Fuller

Printed Name and Date: 8/6/92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.3632 (1-20)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
7-22 BLK A SOIL	121%	92%
7-22 SPK A SOIL	117%	97%
7-22 DUP A SOIL	98%	98%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
7-22 BLK A SOIL	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	70-130% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec., Waters: 70-130% Rec.
G. Other	NONE	

NOT MET FOR 92.3632-2,-6

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: [signature]

Printed Name and Date: Peter Robinson 8-4-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.3632 (21-34, 36-40)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
7-22 BLK A SOIL	82%	105%
7-24 SPK D SOIL	120%	103%
7/24 DUP D SOIL	104%	104%

	Aroclor 1242	Aroclor 1254	Aroclor 1260	
7-22 BLK A SOIL	0.020	0.020	0.020	U

	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	70-130% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other	NONE	

NOT MET FOR 92.3632-38, -39

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Kathy Robinson

Printed Name and Date: Peter Robinson 8-4-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 3632 (35, 41-49)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
7-23 BLK C SOIL	112%	122%
7-23 SPK C SOIL	133%	128%
7-23 DUP C SOIL	127%	112%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
7-23 BLK C SOIL	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	70-130% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other	NONE	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Peter Robinson

Printed Name and Date: Peter Robinson 8-4-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.3649 (1-2 & 1-2 CONFIRM)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK 7/27	93%	104%
SPK 7/27	89%	121%
DUP 7/27	90%	111%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK 7/27	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	70-130% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other		

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Jerú m. Filler

Printed Name and Date: 8/4/92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.3772 (1-4 & 1-4 CONFIRM)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK 7/28 WIPE	91%	128%
SPK 7/28 WIPE	96%	124%
DUP 7/28 WIPE	97%	124%

II. BLANK ANALYSIS

	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK 7/28 WIPE	0.020	0.020	0.020	U

III. ANALYSIS

	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	70-130% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other	NONE	

NOT MET 92.3772-1 132% rec on spike dup

NOT MET FOR 92.3772-1 CONFIRM

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Jane M. Fallon

Printed Name and Date: 8/5/92

APPENDIX VII

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3422 (27.38)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/16/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D

Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #2

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	11	113%
Aroclor 1254	10	11	111%
Aroclor 1260	10	10	105%

Round off both sides

110 %

110 %

100 %

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3422 (29-31. 37. 40)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/17/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D

Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #2

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %	
				Round off both sides!
Aroclor 1242	10	13	126%	130 %
Aroclor 1254	10	12	122%	120 %
Aroclor 1260	10	12	116%	120 %

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3422-39

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/20/92 FILE NO: AROCLOR 1242 003R0201.D
AROCLOR 1254 003R0201.D
Init Cal Date: 7/15/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #2

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	12	120%
Aroclor 1254	10	10	96%
Aroclor 1260	10	8	82%

Round off Both Sides!

100%

80%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3422-28

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/21/92 FILE NO: AROCLOR 1242 003R0201.D
AROCLOR 1254 004R0201.D
Init Cal Date: 7/15/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	11	113%
Aroclor 1254	10	12	118%
Aroclor 1260	10	10	98%

Round off both sides!

113% → 110%
118% → 120%
98% → 100%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3422 (1-15. 18 : BLK. SPK. DUP)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/21/92 FILE NO: AROCLOR 1242 003R0201.D
AROCLOR 1254 004R0201.D
Init Cal Date: 7/15/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	11	113% — 110%
Aroclor 1254	10	12	118% — 120%
Aroclor 1260	10	10	98% — 100%

Round off both sides!

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3422 (16-17, 19-24)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/21/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D
Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	9	89%
Aroclor 1254	10	10	98%
Aroclor 1260	10	10	99%

Round off both sides!
90%
100%
100%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3422 (1-15 , 18)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/22/92 FILE NO: AROCLOR 1242 003R0201.D
AROCLOR 1254 004R0201.D
Init Cal Date: 7/15/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	11	113%
Aroclor 1254	10	12	118%
Aroclor 1260	10	10	100%

Round off Both sides!
110%
120%
100%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3422 (25-26 . 32-36)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/22/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D
Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	10	105%
Aroclor 1254	10	11	107%
Aroclor 1260	10	10	96%

Round off both sides?

105% → 100%
107% → 110%
96% → 100%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/23/92 File No: AROCLOR 1242 003R0201.D
AROCLOR 1254 004R0201.D

Init Cal Date: 7/15/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	11.022	110% ✓
Aroclor 1254	10	11.618	116%
Aroclor 1260	10	9.628	96% ✓

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/23/92 File No: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D

Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %	
				Round off both sides!
Aroclor 1242	10	8.959 → 9	90%	✓
Aroclor 1254	10	9.693 → 9.7	97%	✓
Aroclor 1260	10	9.994 → 10	100%	✓

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY

92.3632 (25, 29, 32-34, 37, 38, 40)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/24/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D

Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	09	091%
Aroclor 1254	10	10	101%
Aroclor 1260	10	9	95%

Round off both sides!

90%
100%
90%.

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/24/92 File No: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D
Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %	
Aroclor 1242	10	9.146	91%	✓
Aroclor 1254	10	10.121	101%	✓
Aroclor 1260	10	9.457→9.5	95%	✓

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/24/92

Init Cal Date: 7/15/92

Instrument I.D. ECD #3

File No: AROCLOR 1242 003R0201.D
AROCLOR 1254 004R0201.D
AROCLOR 1260 002R0201.D

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	11.412	114%
Aroclor 1254	10	12.145	121%
Aroclor 1260	10	9.123	91%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/25/92 File No: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D

Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	9.146 → 9.1	91%
Aroclor 1260	10	10.884 → 10.9	109%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/25/92 File No: AROCLOR 1242 003R0201.D
AROCLOR 1254 004R0201.D

Init Cal Date: 7/15/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	8.399	84%
Aroclor 1254	10	9.858	99%
Aroclor 1260	10	8.156	82%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3632 (2, 6, 10, 12-15, 20)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/25/92 FILE NO: AROCLOR 1242 003R0201.D
AROCLOR 1254 004R0201.D

Init Cal Date: 7/15/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	11	113%
Aroclor 1254	10	12	118%
Aroclor 1260	10	9	94%

Shouldn't this be 110%?
120%?
90%?

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY

92.3632 (23, 26)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/25/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D

Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	09	089%
Aroclor 1254	10	10	096%
Aroclor 1260	10	10	95%

this doesn't add up. If round up Recovery conc, then round up % recovery!

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3632 (46-49)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/26/92 FILE NO: AROCLOR 1242 003R0201.D
AROCLOR 1254 004R0201.D
Init Cal Date: 7/15/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	11	112%
Aroclor 1254	10	12	123%
Aroclor 1260	10	10	99%

Round up both sides !!

110%

120%

100%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3632 (35x1000, 41x1000, 42-45)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/26/92 FILE NO: AROCLOR 1242 003R0201.D
AROCLOR 1254 004R0201.D

Init Cal Date: 7/15/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #2

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	12	122%
Aroclor 1254	10	10	99%
Aroclor 1260	10	9	86%

Round up both sides!

122% → 120%
99% → 100%
86% → 90%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3632 (35, 41)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/26/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D

Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	09	090%
Aroclor 1254	10	10	101%
Aroclor 1260	10	10	101%

100%
100%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY

92.3632-23x100

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/26/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D

Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #2

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %	
Aroclor 1242	10	12	124%	120%
Aroclor 1254	10	12	120%	
Aroclor 1260	10	11	114%	110%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3422-20R

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/26/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D

Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #2

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	12	124% — 120%
Aroclor 1254	10	12	120%
Aroclor 1260	10	11	114% — 110%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY

92.3632 (1, 2x100, 3-5, 6x100, 1-9,11, 12x100, 13x1000-15x1000,16-19, 20x100)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/26/92 FILE NO: AROCLOR 1242 00F0101.D
AROCLOR 1254 004F0101.D
Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %	
Aroclor 1242	10	12	124%	120 %
Aroclor 1254	10	12	120%	120 %
Aroclor 1260	10	11	114%	110 %

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3422 (2R-4R, 6R-9R, 19R)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/26/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D
Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	09	090%
Aroclor 1254	10	10	101% → 100%
Aroclor 1260	10	10	101% → 100%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY

92.3632 (21, 22, 24, 27, 28, 30, 36, 39)
92.3632 (29x100, 31x100, 32x100, 33x1000, 34x100, 37x100, 38x1000, 40x1000)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/26/92 FILE NO: AROCLOR 1242 003R0201.D
AROCLOR 1254 004R0201.D
Init Cal Date: 7/15/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #2

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	12	122%
Aroclor 1254	10	10	099%
Aroclor 1260	10	9	86%

120%
100%
90%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3772 (1-2 CONFIRM 3, 4 CONFIRM)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/28/92 FILE NO: AROCLOR 1242 003R0501.D
AROCLOR 1254 004R0501.D
Init Cal Date: 7/15/92 AROCLOR 1260 002R0301.D

Instrument I.D. ECD #2

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %	
Aroclor 1242	10	11	112% ✓	110 %
Aroclor 1254	10	9	91% ✓	90 %
Aroclor 1260	10	7	70%	70 %

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3772 (1-2. 3-CONFIRM. 4)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/28/92 FILE NO: AROCLOR 1242 003F0301.D
AROCLOR 1254 004F0301.D
Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #2

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	13	130%
Aroclor 1254	10	13	131%
Aroclor 1260	10	12	121%

Round Both Sides!

130%

120%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3649 (1-2 CONFIRM)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/28/92 FILE NO: AROCLOR 1242 033F0301.D

AROCLOR 1254 NA

Init Cal Date: 7/15/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #2

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	10	13	130%
Aroclor 1254	NA	NA	NA
Aroclor 1260	10	12	121%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.3649 (1-2)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 7/29/92 FILE NO: AROCLOR 1242 NA
AROCLOR 1254 004R0201.D
Init Cal Date: 7/15/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #2

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %
Aroclor 1242	NA	NA	NA
Aroclor 1254	10	10	99%
Aroclor 1260	10	8	81%

Round Both Sides!

100%

80%

APPENDIX VIII

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.3422 (27. 29-31. 37-40)

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 007F0101.D

Matrix Spike Dup. File No.: 008F0101.D

Instrument ID: ECD #2

Date Analyzed: 7/16/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	1.00	0.00	1.02	102%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	1.05	105%	3%

Column to be used to flag recovery and RPD

*Values outside of QC limits

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.3422-28

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 055R0301.D

Matrix Spike Dup. File No.: 056R0301.D

Instrument ID: ECD #3

Date Analyzed: 7/21/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	1.00	0.00	0.90	90%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	1.07	107%	17%

Column to be used to flag recovery and RPD

*Values outside of QC limits

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.3422 (1-15 , 18)

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 060R0301.D

Matrix Spike Dup. File No.: 061R0301.D

Instrument ID: ECD #3

Date Analyzed: 7/21/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	1.00	0.00	0.73	73%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	0.99	99%	31%

Column to be used to flag recovery and RPD

Acceptance Criteria is ± 30%

*Values outside of QC limits

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.3422 (16-17, 19-26, 32-36)

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 020F0201.D

Matrix Spike Dup. File No.: 021F0201.D

Instrument ID: ECD #3

Date Analyzed: 7/21/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	2.00	0.00	2.32	116%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	0.79	79%	98%

Column to be used to flag recovery and RPD

* Values outside of QC limits

This is not a spike dup because 2 ppm was added to the first spike and not to the second How can this be a duplicate if a different concentration is used to spike? Can a comparison of results really be made?

Is this number even correct??

Acceptance criteria is ± 30%!

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 014F0101.D

Matrix Spike Dup. File No.: 015F0101.D

Instrument ID: ECD #3

Date Analyzed: 7/23/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	1.00	0.00	1.08	108%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	1.07	107%	0%

Column to be used to flag recovery and RPD

*Values outside of QC limits

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 057R0301.D

Matrix Spike Dup. File No.: 058R0301.D

Instrument ID: ECD #3

Date Analyzed: 7/23/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	1.00	0.00	1.08	108% ✓

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	1.27	127% ✓	16% ✓

Column to be used to flag recovery and RPD

*Values outside of QC limits

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.3632 (21-40)

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 012F0101.D

Matrix Spike Dup. File No.: 013F0101.D

Instrument ID: ECD #3

Date Analyzed: 7/24/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	0.90	0.00	0.87	97% ✓

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	0.90	0.00	0.92	102% ✓	5% ✓

% Column to be used to flag recovery and RPD

*Values outside of QC limits

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.3632 (1-20)

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 063R0301.D

Matrix Spike Dup. File No.: 064R0301.D

Instrument ID: ECD #3

Date Analyzed: 7/25/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	0.90	0.00	1.08	120% ✓

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	0.90	0.00	0.88	97% ✓	21% ✓

% Column to be used to flag recovery and RPD

*Values outside of QC limits

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.3632 (35. 41-49)

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 007F0101.D

Matrix Spike Dup. File No.: 008F0101.D

Instrument ID: ECD #3

Date Analyzed: 7/25/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	0.90	0.00	0.86	95% ✓

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	0.90	0.00	0.77	85% ✓	11% ✓

% Column to be used to flag recovery and RPD

*Values outside of QC limits

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.3422 (2R-4R, 6R-9R, 19R-20R)

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 013F0101.D

Matrix Spike Dup. File No.: 014F0101.D

Instrument ID: ECD #3

Date Analyzed: 7/26/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	1.00	0.00	0.76	76%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	0.73	73%	4%

Column to be used to flag recovery and RPD

*Values outside of QC limits

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.3649 (1-2 & 1-2 CONFIRM)

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 008F0101.D

Matrix Spike Dup. File No.: 009F0101.D

Instrument ID: ECD #2

Date Analyzed: 7/27/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	0.90	0.00	1.13	126% ✓

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	0.90	0.00	1.08	120% ✓	5% ✓

% Column to be used to flag recovery and RPD

*Values outside of QC limits

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.3772 (1-4 & 1-4 CONFIRM)

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 009F0101.D

Matrix Spike Dup. File No.: 010F0101.D

Instrument ID: ECD #2

Date Analyzed: 7/28/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	0.90	0.00	1.11	124% ✓

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	0.90	0.00	1.18	132%	6%

% Column to be used to flag recovery and RPD

*Values outside of QC limits

APPENDIX IX

Glossary of Result Qualifiers

1. Q Qualifiers:

U - Reported value is the practical quantification limit.

C - This Flag applies to pesticide results where the identification has been confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as in the sample.

E - This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

A - This flag indicates that a TIC is a suspected aldol-condensation product.

X - Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such descriptions attached to the Sample Data Summary Package and the Case Narrative.

M - Duplicate injection precision not met.

N - Spiked sample recovery is outside quality assurance goals.

S - The reported value was determined by the Method of Standard Additions(MSA).

W - Post-digestion spike for Furnace AA analysis is outside quali assurance goals, while sample absorbance is less than 50% of spike absorbance.

+ - Correlation Coefficient for MSA is less than 0.995.

2. M (Method) Flags:

P - for ICP
A - for Flame AA
F - for Furnace AA
CV - for Manual Cold Vapor AA
AV - for Automated Cold Vapor AA
AS - for Semi-Automated Spectrophotometer
C - for Manual Spectrophotometer
T - for Titrimetric Analysis

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3422 (2R-4R, 6R-9R, 19R-20R)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 72692 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK A	132%	112%	7/26/92	
02	Spk	98%	106%	7/26/92	
03	Spk Dup	125%	108%	7/26/92	
04	Aroclor 1242	NA	NA	7/26/92	
05	Aroclor 1254	NA	NA	7/26/92	
06	Aroclor 1260	NA	NA	7/26/92	
D11(RPT) — 07	92.3422-2R	81%	91%	7/26/92	
D12(RPT) — 09	92.3422-3R	80%	93%	7/27/92	
D13 (RPT) — 10	92.3422-4R	65%	80%	7/27/92	
D15 (RPT) — 11	92.3422-6R	59%	70%	7/27/92	
D16 (RPT) — 12	92.3422-7R	69%	78%	7/27/92	
D17 (RPT) — 13	92.3422-8R	42%	49%	7/27/92	
D18 (RPT) — 14	92.3422-9R	85%	93%	7/27/92	
D19 (RPT) — 15	92.3422-19R	74%	93%	7/27/92	
D20 (RPT) — 16	92.3422-20R	------	------	7/27/92	D

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3422-28

Lab Name: Chemical & Geological Laboratory

Sequence Name: 72192 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK A	115%	99%	7/21/92	
02	Spk	NA	105%	7/21/92	
03	Spk Dup	NA	103%	7/21/92	
04	Aroclor 1242	NA	NA	7/21/92	
05	Aroclor 1254	NA	NA	7/21/92	
06	Aroclor 1260	NA	NA	7/21/92	
SPB03 07	92.3422-28	78%	213%	7/21/92	

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3422 (27, 29-31, 37-40)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 171692 Instrument ID: ECD #2

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q	
01	BLK A	170%	77%	7/16/92		
02	Spk	178%	79%	7/16/92		
03	Spk Dup	175%	82%	7/16/92		
04	Aroclor 1242	NA	NA	7/16/92		
05	Aroclor 1254	NA	NA	7/16/92		
06	Aroclor 1260	NA	NA	7/16/92		
SPB02—07	92.3422-27	120%	71%	7/16/92		
SPB04—09	92.3422-29 x100	1%	----	7/17/92	D	
SPB04—10	92.3422-29	113%	170%	7/16/92	E	
C300 —11	92.3422-30 x100	1%	----	7/17/92	D	
C300 —12	92.3422-30	136%	83%	7/16/92	E	
SPB01 —13	92.3422-31 x100	1%	----	7/17/92	D	
SPB01 —14	92.3422-31	131%	114%	7/16/92	E	
C400 —15	92.3422-37 x100	2%	----	7/17/92	D	
C400 — 16	92.3422-37	172%	147%	7/16/92	E	←
C402—17	92.3422-38	163%	83%	7/16/92		
C403 —18	92.3422-39 x1000	0%	----	7/20/92	D	
C403 —19	92.3422-39	165%	219%	7/16/92	E	←
C404 — 20	92.3422-40 x100	2%	1%	7/16/92		←
C404 —21	92.3422-40	135%	122%	7/16/92	E	

S1- Decachlorobiphenyl

S2- Tetrachlorometaxylene

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3422 (16-17, 19-26, 32-36)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 72192 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q	
01	BLK A	147%	97%	7/21/92		
02	Spk	151%	102%	7/21/92		
03	Spk Dup	138%	100%	7/21/92		
04	Aroclor 1242	NA	NA	7/21/92		
05	Aroclor 1254	NA	NA	7/21/92		
06	Aroclor 1260	NA	NA	7/21/92		
A12 — 07	92.3422-16	119%	100%	7/21/92		
A13 — 08	92.3422-17	121%	101%	7/21/92		
D19 — 09	92.3422-19	89%	84%	7/21/92		
D30 — 10	92.3422-20 x100	0%	0%	7/22/92		D?
D30 — 11	92.3422-20	96%	214%	7/21/92	E	
C11 — 12	92.3422-21	91%	83%	7/21/92		
C12 — 13	92.3422-22	99%	89%	7/21/92		
C13 — 14	92.3422-23	103%	92%	7/21/92		
C14 — 15	92.3422-24	98%	88%	7/21/92		
C15 — 16	92.3422-25	111%	101%	7/22/92		
C30 — 17	92.3422-26	99%	88%	7/22/92		
T1 — 18	92.3422-32 x1000	0%	0%	7/22/92		D?
T1 — 19	92.3422-32	102%	168%	7/22/92	E	
T2 — 20	92.3422-33	100%	95%	7/22/92		
T3 — 21	92.3422-34	97%	91%	7/22/92		
T4 — 22	92.3422-35	NA	88%	7/22/92		
T5 — 23	92.3422-36	129%	97%	7/22/92		

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3422 (1-15 . 18)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 72192 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK A	115%	113%	7/21/92	
02	Spk	NA	126%	7/21/92	
03	Spk Dup	NA	124%	7/21/92	
04	Aroclor 1242	NA	NA	7/21/92	
05	Aroclor 1254	NA	NA	7/21/92	
06	Aroclor 1260	NA	NA	7/21/92	
07	92.3422-1	81%	160%	7/22/92	
08	92.3422-2	78%	162%	7/22/92	
09	92.3422-3	78%	153%	7/22/92	
10	92.3422-4	83%	93%	7/22/92	
11	92.3422-5 x1000	0%	0%	7/22/92	D?
12	92.3422-5	186%	105%	7/22/92	E
13	92.3422-6 x1000	0%	0%	7/22/92	D?
14	92.3422-6	63%	74%	7/22/92	E
15	92.3422-7	83%	101%	7/22/92	
16	92.3422-8	65%	74%	7/22/92	
17	92.3422-9	67%	97%	7/22/92	
18	92.3422-10	81%	120%	7/22/92	
19	92.3422-11	77%	229%	7/22/92	
20	92.3422-12	84%	112%	7/22/92	
21	92.3422-13	84%	132%	7/22/92	
22	92.3422-14	82%	116%	7/22/92	
23	92.3422-15	83%	82%	7/23/92	
24	92.3422-18	67%	96%	7/22/92	

Laidlaw ID
A30 — 07
D11 — 08
D12 — 09
D13 — 10
D14 — 11
D14 — 12
D15 — 13
D15 — 14
D16 — 15
D17 — 16
D18 — 17
A15 — 18
A16 — 19
A17 — 20
A19 — 21
A31 — 22
A11 — 23
A14 — 24

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

Note: EPA 8080 (see attached) states that only one surrogate "need be evaluated for recovery." I have circled surrogates that are w/i Chem-Geo's range of acceptability (70-130%), however, arrows denote out-of-spec QC data which was not corrected.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY

Lab Name: Chemical & Geological Laboratory

Sequence Name: 072392 Instrument ID: ECD #3

SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
7/21 BLK A	133%	115%	7/23/92	
7/21 SPK A	---	113%	7/23/92	
7/21 DUP A	119%	110%	7/24/92	
92.3567-1	127%	109%	7/24/92	
92.3567-1 X1000	---	---	7/26/92	D
92.3567-2	86%	71%	7/24/92	
92.3567-2 X100	---	---	7/26/92	D
92.3567-3	107%	121%	7/24/92	
92.3567-3 X1000	---	---	7/26/92	D
92.3567-4	100%	152%	7/24/92	
92.3567-4 X1000	---	---	7/26/92	D
92.3567-5	125%	143%	7/24/92	
92.3567-5 X1000	---	---	7/25/92	D
92.3567-6	68%	92%	7/25/92	
92.3567-7	77%	107%	7/26/92	
92.3567-8	75%	109%	7/26/92	
92.3567-9	76%	104%	7/26/92	
92.3567-10	74%	84%	7/26/92	
92.3567-10	---	---	7/26/92	D
92.3567-11	85%	96%	7/24/92	
92.3567-11 X100	---	---	7/25/92	D

S1- Decachlorobiphenyl S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY

Lab Name: Chemical & Geological Laboratory

Sequence Name: 072392 Instrument ID: ECD #3

SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
7/21 BLK B	75%	91%	7/23/92	
7/21 SPK B	-	98%	7/23/92	
7/21 DUP B	81%	100%	7/23/92	
92.3567-12	72%	79%	7/23/92	
92.3567-12 X100	-	-	7/26/92	D
92.3567-13	86%	95%	7/24/92	
92.3567-13 X100	-	-	7/26/92	D
92.3567-14	139%	121%	7/24/92	
92.3567-14 X1000	-	-	7/26/92	D
92.3567-15	121%	108%	7/24/92	
92.3567-15 X1000	-	-	7/26/92	D
92.3567-16	93%	90%	7/25/92	
92.3567-17	98%	104%	7/24/92	
92.3567-17 X100	-	-	7/26/92	D
92.3567-18	85%	96%	7/24/92	
92.3567-18 X100	-	-	7/26/92	D
92.3567-19	103%	94%	7/25/92	
92.3567-20	82%	96%	7/24/92	
92.3567-20 X100	-	-	7/26/92	D
92.3567-21	84%	81%	7/25/92	
92.3567-22	90%	86%	7/25/92	
92.3567-23	77%	74%	7/25/92	
92.3567-24	92%	83%	7/25/92	
92.3567-25	76%	86%	7/24/92	
92.3567-25 X100	-	-	7/26/92	D
92.3567-26	90%	82%	7/25/92	

S1- Decachlorobiphenyl S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3632 (1-20)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 72492 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	7-22 BLK A SOIL	121%	92%	7/25/92	
02	7-22 SPK A SOIL	117%	97%	7/25/92	
03	7-22 DUP A SOIL	98%	98%	7/25/92	
04	Aroclor 1242	NA	NA	7/25/92	
05	Aroclor 1254	NA	NA	7/25/92	
06	Aroclor 1260	NA	NA	7/25/92	
07	92.3632-1	63%	96%	7/26/92	
08	92.3632-2 x100	----	----	7/27/92	D
09	92.3632-2	442%	41%	7/25/92	
10	92.3632-3	120%	91%	7/26/92	
11	92.3632-4	79%	116%	7/26/92	
12	92.3632-5	66%	97%	7/26/92	
13	92.3632-6 x100	----	----	7/27/92	D
14	92.3632-6	54%	55%	7/25/92	
15	92.3632-7	49%	71%	7/26/92	
16	92.3632-8	734%	103%	7/26/92	
17	92.3632-9	77%	97%	7/26/92	
18	92.3632-10	78%	87%	7/25/92	
19	92.3632-11	64%	91%	7/26/92	
20	92.3632-12 x100	----	----	7/27/92	D
21	92.3632-12	78%	79%	7/25/92	
22	92.3632-13 x1000	----	----	7/27/92	D
23	92.3632-13	117%	98%	7/26/92	
24	92.3632-14 x1000	----	----	7/27/92	D
25	92.3632-14	177%	119%	7/26/92	
26	92.3632-15 x1000	----	----	7/27/92	D
27	92.3632-15	86%	82%	7/26/92	
28	92.3632-16	74%	106%	7/26/92	
29	92.3632-17	64%	94%	7/26/92	
30	92.3632-18	72%	102%	7/26/92	
31	92.3632-19	71%	35%	7/26/92	
32	92.3632-20 x100	----	----	7/27/92	D
33	92.3632-20	83%	91%	7/26/92	

S1- Decachlorobiphenyl

S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3632 (21-34, 36-40)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 72492 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	7-22 BLK A SOIL	82%	105%	7/24/92	
02	7-24 SPK D SOIL	120%	103%	7/24/92	
03	7/24 DUP D SOIL	104%	104%	7/24/92	
04	Aroclor 1242	NA	NA	7/26/92	
05	Aroclor 1254	NA	NA	7/26/92	
06	Aroclor 1260	NA	NA	7/26/92	
07	92.3632-21	98%	98%	7/26/92	
08	92.3632-22	91%	92%	7/26/92	
09	92.3632-23x100	------	------	7/27/92	D
10	92.3632-23	92%	110%	7/26/92	
11	92.3632-24	100%	96%	7/26/92	
12	92.3632-25	87%	98%	7/25/92	
13	92.3632-26	81%	94%	7/26/92	D
14	92.3632-27	100%	93%	7/26/92	
15	92.3632-28	98%	95%	7/26/92	
16	92.3632-29x100	------	------	7/26/92	D
17	92.3632-29	93%	112%	7/25/92	
18	92.3632-30	93%	91%	7/26/92	
19	92.3632-31x100	------	------	7/26/92	D
20	92.3632-31	94%	105%	7/26/92	
21	92.3632-32x100	------	------	7/26/92	D
22	92.3632-32	100%	104%	7/25/92	
23	92.3632-33x1000	------	------	7/27/92	D
24	92.3632-33	126%	221%	7/25/92	
25	92.3632-34x100	------	------	7/27/92	D
26	92.3632-34	90%	117%	7/26/92	
27	92.3632-36	99%	96%	7/26/92	
28	92.3632-37x100	------	------	7/27/92	D
29	92.3632-37	88%	97%	7/25/92	
30	92.3632-38x1000	------	------	7/27/92	D
31	92.3632-38	171%	454%	7/25/92	
32	92.3632-39	------	------	7/27/92	
33	92.3632-40x100	------	------	7/27/92	D
34	92.3632-40	96%	105%	7/26/92	

S1- Decachlorobiphenyl

S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3632 (35. 41-49)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 72492 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	7-23 BLK C SOIL	112%	122%	7/25/92	
02	7-23 SPK C SOIL	133%	128%	7/25/92	
03	7-23 DUP C SOIL	127%	112%	7/25/92	
04	Aroclor 1242	NA	NA	7/26/92	
05	Aroclor 1254	NA	NA	7/26/92	
06	Aroclor 1260	NA	NA	7/26/92	
07	92.3632-35x1000	------	------	7/27/92	D
08	92.3632-35	103%	129%	7/26/92	
09	92.3632-41x1000	------	------	7/27/92	D
10	92.3632-41	116%	120%	7/26/92	
11	92.3632-42x100	------	------	7/27/92	D
12	92.3632-43	94%	88%	7/27/92	
13	92.3632-44	92%	90%	7/27/92	
14	92.3632-45	96%	97%	7/27/92	
15	92.3632-46	75%	79%	7/26/92	
16	92.3632-47	75%	84%	7/26/92	
17	92.3632-48	65%	75%	7/26/92	
18	92.3632-49	70%	81%	7/26/92	

S1- Decachlorobiphenyl

S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3649 (1-2 & 1-2 CONFIRM)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 72792 Instrument ID: ECD #2

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK 7/27	93%	104%	7/27/92	
02	SPK 7/27	89%	121%	7/27/92	
03	DUP 7/27	90%	111%	7/27/92	
04	Aroclor 1242	NA	NA	NA	
05	Aroclor 1254	NA	NA	7/29/92	
06	Aroclor 1260	NA	NA	7/29/92	
07	92.3649-1	80%	63%	7/30/92	
08	92.3649-1 CONFIRI	64%	81%	7/29/92	
09	95.3649-2	87%	66%	7/30/92	
10	92.3649-2 CONFIRI	69%	88%	7/29/92	

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3772 (1-4 & 1-4 CONFIRM)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 072892A Instrument ID: ECD #2

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK 7/28 WIPE	91%	128%	7/28/92	
02	SPK 7/28 WIPE	96%	124%	7/28/92	
03	DUP 7/28 WIPE	97%	124%	7/28/92	
04	Aroclor 1242	NA	NA	7/28/92	
05	Aroclor 1254	NA	NA	7/28/92	
06	Aroclor 1260	NA	NA	7/28/92	
07	92.3772-1	56%	80%	7/28/92	
08	92.3772-1CONFIRM	69%	58%	7/29/92	
09	92.3772-2	66%	95%	7/28/92	
10	92.3772-2CONFIRM	65%	69%	7/29/92	
11	92.3772-3	98%	91%	7/29/92	
12	92.3772-3 CONFIRM	80%	117%	7/28/92	
13	92.3772-4	85%	116%	7/29/92	
14	92.3772-4 CONFIRM	114%	85%	7/30/92	

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

APPENDIX X

August 12, 1992

Stephen C. Ede
Chemical & Geological Laboratory
5633 B Street
Suite 210
Anchorage, Alaska 99517 USA

Laidlaw Environmental Service, Inc.
5500 Ming Ave. STE 130
Bakersfield CA, 93309

Dear Ms. Campbell:

Our QAQC plan is program specific (SW 846 One-2) and outlined by an existing SOP referencing SW 846.

Regarding your question about our calibration limits, SW 846 Method 8000 8.8.3. references the determinative method which has an appropriate table for the calibration and QC acceptance criteria. Method 8080 8.2.2. indicates this criteria to be in table 3,see enclosed copy.

Regarding samples 92.3422 (16,17), (19-26), and (32-36), the calculated RPD, for the matrix spike and spike dup, is 38%. Corrective action has been documented and the samples will be re-extracted and re-run.

Regarding samples 92.3422-8R, an adequate surrogate recovery was obtained on the first extraction. The second extraction was strictly a confirmatory analysis, while the two values were in agreement the second was not reported.

Regarding samples 92.3422 (37,39),(5,6,29,30,31,32,37,39,40) and 92.3632 (2,6), SW 846 Chapter 1, 1.2.2.1.4 does not require surrogates to be calculated on diluted samples. Samples 92.3422 (37,39) have surrogates which are biased high from over-ranging the analytical system with PCB.

Regarding samples 92.3567 (4,5) and (13,14), we have found nothing apparently wrong with the data. They are being re-extracted and re-analyzed as requested.

Regarding samples 92.3632 (12,13,14,15,33,40), the non-diluted runs are outside of the linear calibration range. The appropriate dilutions were made to bring the values into the linear calibration range. The over-ranged values will not conform to method accuracy or precision and therefore should not be compared as a quantitative confirmation. But may still be useful for qualitative identification.

Regarding sample 92.3632-38, the correct result at the appropriate dilution is 2300 ppm of Aroclor 1260.

Regarding samples 92.3632 (38,39), the sample chromatograms, runs #067R0101.D and #059R0101.D, when compared to the 1242 calibration verification standard run #003R0201.D from 07-26-92, do not reflect the presence of Aroclor 1242.

Enclosed are corrected copies of QAQC package summary sheets. Regarding samples 92.3422 (1-15,18) the correct RPD is 30% and not the 31% caused by a computer rounding error. The surrogate recoveries for the diluted samples in all three work orders have been lined through since they are not reported.

Sincerely,

Stephen C. Ede
Laboratory Supervisor

1.2.2.1 Spikes, Blanks and Duplicates

General Requirements

These procedures shall be performed at least once with each analytical batch with a minimum of once per twenty samples.

1.2.2.1.1 Matrix Spiked Samples

A matrix spiked sample shall be analyzed with every analytical batch or every 20 samples, whichever is more frequent. The sample shall be spiked with the analyte(s) of interest (see the appropriate method). The sample to be spiked should be typical or representative of the batch. Ideally, it should be an intermediate between the cleanest and the most contaminated samples based on the best information available. It is recommended that the spike be made in a replicate of one of the field duplicate samples. This procedure is applicable to all organic or inorganic chemical analytes.

1.2.2.1.2 Field Duplicate Samples

Field duplicate samples shall be analyzd with every analytical batch or every 20 samples, whichever is greater. This procedure is applicable to all organic or inorganic chemical analytes.

1.2.2.1.3 Blanks

Each batch shall be accompanied by a reagent blank. The reagent blank shall be carried through the entire analytical procedure.

1.2.2.1.4 Surrogate Compounds

Every blank, standard, and environmental sample (including duplicates, QC reference samples, and check standards) shall be spiked with surrogate compounds prior to purging or extraction. Surrogates shall be spiked into samples according to the appropriate analytical methods. Surrogate spike recoveries shall fall within the control limits set by the laboratory (in accordance with procedures specified in the method or within ± 20%) for samples falling within the quantification limits without dilution. Dilution of samples to bring the analyte concentration into the linear range of calibration may dilute the surrogates below the quantification limit; evaluation of analytical quality then will rely on the quality control embodied in the check, spiked and duplicate spiked samples. This is applicable to organic analyses only.

1.2.2.1.5 Quality of Control Reference Sample

A quality control reference sample is a sample prepared from an independent standard at a concentration other than that used for calibration, but within the calibration range. An independent standard is defined as a standard composed of the analytes of interest from a different source than that used in the preparation of

8.8.1 Preparation of the QC check sample - For volatile organics, add 10 uL of the QC check sample concentrate (Step 8.6.1 or 8.7.2) to 5 mL of water. For semivolatile organics, add 1.0 mL of the QC check sample concentrate (Step 8.6.1 or 8.7.2) to 1 L of water. The QC check sample needs only to contain the analytes that failed criteria in the test in Step 8.7. Prepare the QC check sample for analysis following the guidelines given in Method 3500 (e.g. purge-and-trap, extraction, etc.).

8.8.2 Analyzed the QC check sample to determine the concentration measured (A) of each analyte. Calculate each percent recovery (p_s) as 100 (A/T)%, where T is the true value of the standard concentration.

8.8.3 Compare the percent recovery (p_s) for each analyte with the corresponding QC acceptance criteria found in the appropriate Table in each of the methods. Only analytes that failed the test in Step 8.7 need to be compared with these criteria. If the recovery of any such analyte falls outside the designated range, the laboratory performance for that analyte is judged to be out of control, and the problem must be immediately identified and corrected. The result for that analyte in the unspiked sample is suspect and may not be reported for regulatory compliance purposes.

8.9 As part of the QC program for the laboratory, method accuracy for each matrix studied must be assessed and records must be maintained. After the analysis of five spiked samples (of the same matrix type) as in Step 8.7, calculate the average percent recovery (p) and the standard deviation of the percent recovery (s_p). Express the accuracy assessment as a percent recovery interval from $p - 2s_p$ to $p + 2s_p$. If $p = 90\%$ and $s_p = 10\%$, for example, the accuracy interval is expressed as 70-110%. Update the accuracy assessment for each analyte on a regular basis (e.g. after each five to ten new accuracy measurements).

8.10 To determine acceptable accuracy and precision limits for surrogate standards the following procedure should be performed.

8.10.1 For each sample analyzed, calculate the percent recovery of each surrogate in the sample.

8.10.2 Once a minimum of thirty samples of the same matrix have been analyzed, calculate the average percent recovery (p) and standard deviation of the percent recovery (s) for each of the surrogates.

8.10.3 For a given matrix, calculate the upper and lower control limit for method performance for each surrogate standard. This should be done as follows:

$$\text{Upper Control Limit (UCL)} = p + 3s$$
$$\text{Lower Control Limit (LCL)} = p - 3s$$

8.10.4 For aqueous and soil matrices, these laboratory established surrogate control limits should, if applicable, be compared with the control limits listed in Tables A and B of Methods 8240 and 8270,

8.2.1 The quality control check sample concentrate (Method 8000, Section 8.6) should contain each single-component parameter of interest at the following concentrations in acetone: 4,4'-DDD, 10 ug/mL; 4,4'-DDT, 10 ug/mL; endosulfan II, 10 ug/mL; endosulfan sulfate, 10 ug/mL; endrin, 10ug/mL; and any other single-component pesticide, 2 ug/mL. If this method is only to be used to analyze for PCBs, chlordane, or toxaphene, the QC check sample concentrate should contain the most representative multi-component parameter at a concentration of 50 ug/mL in acetone.

8.2.2 Table 3 indicates the calibration and QC acceptance criteria for this method. Table 4 gives method accuracy and precision as functions of concentration for the analytes of interest. The contents of both Tables should be used to evaluate a laboratory's ability to perform and generate acceptable data by this method.

8.3 Calculate surrogate standard recovery on all samples, blanks, and spikes. Determine if the recovery is within limits (limits established by performing QC procedures outlined in Method 8000, Section 8.10).

8.3.1 If recovery is not within limits, the following is required.

- Check to be sure there are no errors in calculations, surrogate solutions and internal standards. Also, check instrument performance.
- Recalculate the data and/or reanalyze the extract if any of the above checks reveal a problem.
- Reextract and reanalyze the sample if none of the above are a problem or flag the data as "estimated concentration."

8.4 GC/MS confirmation: Any compounds confirmed by two columns may also be confirmed by GC/MS if the concentration is sufficient for detection by GC/MS as determined by the laboratory generated detection limits.

8.4.1 The GC/MS would normally require a minimum concentration of 10 ng/uL in the final extract, for each single-component compound.

8.4.2 The pesticide extract and associated blank should be analyzed by GC/MS as per Section 7.0 of Method 8270.

8.4.3 The confirmation may be from the GC/MS analysis of the base/neutral-acid extractables extracts (sample and blank). However, if the compounds are not detected in the base/neutral-acid extract even though the concentration is high enough, a GC/MS analysis of the pesticide extract should be performed.

8.4.4 A reference standard of the compound must also be analyzed by GC/MS. The concentration of the reference standard must be at a level that would demonstrate the ability to confirm the pesticides/PCBs identified by GC/ECD.

TABLE 3. QC ACCEPTANCE CRITERIA[a]

Parameter	Test conc. (ug/L)	Limit for s (ug/L)	Range for $\bar{X}$ (ug/L)	Range P, P_s (%)
Aldrin	2.0	0.42	1.08-2.24	42-122
α-BHC	2.0	0.48	.98-2.44	37-134
β-BHC	2.0	0.64	0.78-2.60	17-147
δ-BHC	2.0	0.72	1.01-2.37	19-140
γ-BHC	2.0	0.46	0.86-2.32	32-127
Chlordane	50	10.0	27.6-54.3	45-119
4,4'-DDD	10	2.8	4.8-12.6	31-141
4,4'-DDE	2.0	0.55	1.08-2.60	30-145
4,4'-DDT	10	3.6	4.6-13.7	25-160
Dieldrin	2.0	0.76	1.15-2.49	36-146
Endosulfan I	2.0	0.49	1.14-2.82	45-153
Endosulfan II	10	6.1	2.2-17.1	D-202
Endosulfan Sulfate	10	2.7	3.8-13.2	26-144
Endrin	10	3.7	5.1-12.6	30-147
Heptachlor	2.0	0.40	0.86-2.00	34-111
Heptachlor epoxide	2.0	0.41	1.13-2.63	37-142
Toxaphene	50	12.7	27.8-55.6	41-126
PCB-1016	50	10.0	30.5-51.5	50-114
PCB-1221	50	24.4	22.1-75.2	15-178
PCB-1232	50	17.9	14.0-98.5	10-215
PCB-1242	50	12.2	24.8-69.6	39-150
PCB-1248	50	15.9	29.0-70.2	38-158
PCB-1254	50	13.8	22.2-57.9	29-131
PCB-1260	50	10.4	18.7-54.9	8-127

s = Standard deviation of four recovery measurements, in ug/L.

$\bar{X}$ = Average recovery for four recovery measurements, in ug/L.

P, P_s = Percent recovery measured.

D = Detected; result must be greater than zero.

[a]Criteria from 40 CFR Part 136 for Method 608. These criteria are based directly upon the method performance data in Table 4. Where necessary, the limits for recovery have been broadened to assure applicability of the limits to concentrations below those used to develop Table 4.

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

CORRECTIVE ACTION
For Errors and Omissions

Chem Lab Ref#: 92-3422

Date: 08-11-92

Instrument(s): 5890 ECD #2

5890 ECD #3

Method(s): SW 846 8080 (PCB ONLY)

Give brief explanations of the following

Describe Problem:

RPD FOR MATRIX SPIKE AND SPIKE DUP WERE OUT OF BOUNDS AT 38% (70-130) LIMITS

How was the problem detected?

CLIENT REQUESTED CLARIFICATION OF RESULTS.

What was the nature of the problem?

PRECISION OF METHOD'S EXTRACTION AND ANALYSIS.

What corrective action was taken?

SAMPLES WERE RE-EXTRACTED AND RERUN.

What **recomendations** do you have to avoid similar problems in the future?

IF A SAMPLE IS SPIKED WITH DIFFERENT AMOUNTS RE-EXTRACT AND REPEAT

What **steps** were taken to avoid similar problems?

AUTOMATED FLAGGING OF DATA WAS BUILT INTO THE QUALITY CONTROL PACKAGE TEMPLATES.

Supervisor [signature] Date 8-12-92

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.3422 (1-15 , 18)

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 060R0301.D

Matrix Spike Dup. File No.: 061R0301.D

Instrument ID: ECD #3

Date Analyzed: 7/21/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	1.00	0.00	0.73	73%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	0.99	99%	30%

Column to be used to flag recovery and RPD

*Values outside of QC limits

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3422 (1-15 , 18)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 72192 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK A	115%	113%	7/21/92	
02	Spk	NA	126%	7/21/92	
03	Spk Dup	NA	124%	7/21/92	
04	Aroclor 1242	NA	NA	7/21/92	
05	Aroclor 1254	NA	NA	7/21/92	
06	Aroclor 1260	NA	NA	7/21/92	
07	92.3422-1	81%	160%	7/22/92	
08	92.3422-2	78%	162%	7/22/92	
09	92.3422-3	78%	153%	7/22/92	
10	92.3422-4	83%	93%	7/22/92	
11	92.3422-5 x1000	-	-	7/22/92	D
12	92.3422-5	186%	105%	7/22/92	E
13	92.3422-6 x1000	-	-	7/22/92	D
14	92.3422-6	63%	74%	7/22/92	E
15	92.3422-7	83%	101%	7/22/92	
16	92.3422-8	65%	74%	7/22/92	
17	92.3422-9	67%	97%	7/22/92	
18	92.3422-10	81%	120%	7/22/92	
19	92.3422-11	77%	229%	7/22/92	
20	92.3422-12	84%	112%	7/22/92	
21	92.3422-13	84%	132%	7/22/92	
22	92.3422-14	82%	116%	7/22/92	
23	92.3422-15	83%	82%	7/23/92	
24	92.3422-18	67%	96%	7/22/92	

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3422 (16-17, 19-28, 32-36)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 72192 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK A	147%	97%	7/21/92	
02	Spk	151%	102%	7/21/92	
03	Spk Dup	138%	100%	7/21/92	
04	Aroclor 1242	NA	NA	7/21/92	
05	Aroclor 1254	NA	NA	7/21/92	
06	Aroclor 1260	NA	NA	7/21/92	
07	92.3422-16	119%	100%	7/21/92	
08	92.3422-17	121%	101%	7/21/92	
09	92.3422-19	89%	84%	7/21/92	
10	92.3422-20 x100	-	-	7/22/92	D
11	92.3422-20	96%	214%	7/21/92	E
12	92.3422-21	91%	83%	7/21/92	
13	92.3422-22	99%	89%	7/21/92	
14	92.3422-23	103%	92%	7/21/92	
15	92.3422-24	98%	88%	7/21/92	
16	92.3422-25	111%	101%	7/22/92	
17	92.3422-26	99%	88%	7/22/92	
18	92.3422-32 x1000	-	-	7/22/92	D
19	92.3422-32	102%	168%	7/22/92	E
20	92.3422-33	100%	95%	7/22/92	
21	92.3422-34	97%	91%	7/22/92	
22	92.3422-35	NA	88%	7/22/92	
23	92.3422-36	129%	97%	7/22/92	

S1 - Decachlorobiphenyl
S2 - Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3422 (27, 29-31, 37-40)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 171692 Instrument ID: ECD #2

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK A	170%	77%	7/16/92	
02	Spk	178%	79%	7/16/92	
03	Spk Dup	175%	82%	7/16/92	
04	Aroclor 1242	NA	NA	7/16/92	
05	Aroclor 1254	NA	NA	7/16/92	
06	Aroclor 1260	NA	NA	7/16/92	
07	92.3422-27	120%	71%	7/16/92	
08	92.3422-29x100	------	------	7/17/92	D
09	92.3422-29	113%	170%	7/16/92	E
10	92.3422-30x100	------	------	7/17/92	D
11	92.3422-30	136%	83%	7/16/92	E
12	92.3422-31x100	------	------	7/17/92	D
13	92.3422-31	131%	114%	7/16/92	E
14	92.3422-37x100	------	------	7/17/92	D
15	92.3422-37	172%	147%	7/16/92	E
16	92.3422-38	163%	83%	7/16/92	
17	92.3422-39x100	------	------	7/20/92	D
18	92.3422-39	165%	219%	7/16/92	E
19	92.3422-40x100	------	------	7/16/92	D
20	92.3422-40	135%	122%	7/16/92	E

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3422 (2R-4R, 6R-9R, 19R-20R)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 72692 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK A	132%	112%	7/26/92	
02	Spk	98%	106%	7/26/92	
03	Spk Dup	125%	108%	7/26/92	
04	Aroclor 1242	NA	NA	7/26/92	
05	Aroclor 1254	NA	NA	7/26/92	
06	Aroclor 1260	NA	NA	7/26/92	
07	92.3422-2R	81%	91%	7/26/92	
09	92.3422-3R	80%	93%	7/27/92	
10	92.3422-4R	65%	80%	7/27/92	
11	92.3422-6R	59%	70%	7/27/92	
12	92.3422-7R	69%	78%	7/27/92	
13	92.3422-8R	42%	49%	7/27/92	
14	92.3422-9R	85%	93%	7/27/92	
15	92.3422-19R	74%	93%	7/27/92	
16	92.3422-20R X100	------	------	7/27/92	D

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY

Lab Name: Chemical & Geological Laboratory

Sequence Name: 072392 Instrument ID: ECD #3

SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
7/21 BLK A	133%	115%	7/23/92	
7/21 SPK A	-	113%	7/23/92	
7/21 DUP A	119%	110%	7/24/92	
92.3567-1	127%	109%	7/24/92	E
92.3567-1 X1000	-	-	7/26/92	D
92.3567-2	86%	71%	7/24/92	E
92.3567-2 X100	-	-	7/26/92	D
92.3567-3	107%	121%	7/24/92	E
92.3567-3 X1000	-	-	7/26/92	D
92.3567-4	100%	152%	7/24/92	E
92.3567-4 X1000	-	-	7/26/92	D
92.3567-5	125%	143%	7/24/92	E
92.3567-5 X1000	-	-	7/25/92	D
92.3567-6	68%	92%	7/25/92	
92.3567-7	77%	107%	7/26/92	
92.3567-8	75%	109%	7/26/92	
92.3567-9	76%	104%	7/26/92	
92.3567-10	74%	84%	7/26/92	
92.3567-11	85%	96%	7/24/92	E
92.3567-11 X100	-	-	7/25/92	D

S1- Decachlorobiphenyl S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY

Lab Name: Chemical & Geological Laboratory

Sequence Name: 072392 Instrument ID: ECD #3

SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
7/21 BLK B	75%	91%	7/23/92	
7/21 SPK B	-	98%	7/23/92	
7/21 DUP B	81%	100%	7/23/92	
92.3567-12	72%	79%	7/23/92	E
92.3567-12 X100	-	-	7/26/92	D
92.3567-13	86%	95%	7/24/92	E
92.3567-13 X100	-	-	7/26/92	D
92.3567-14	139%	121%	7/24/92	E
92.3567-14 X1000	-	-	7/26/92	D
92.3567-15	121%	108%	7/24/92	E
92.3567-15 X1000	-	-	7/26/92	D
92.3567-16	93%	90%	7/25/92	
92.3567-17	98%	104%	7/24/92	E
92.3567-17 X100	-	-	7/26/92	D
92.3567-18	85%	96%	7/24/92	E
92.3567-18 X100	-	-	7/26/92	D
92.3567-19	103%	94%	7/25/92	
92.3567-20	82%	96%	7/24/92	E
92.3567-20 X100	-	-	7/26/92	D
92.3567-21	84%	81%	7/25/92	
92.3567-22	90%	86%	7/25/92	
92.3567-23	77%	74%	7/25/92	
92.3567-24	92%	83%	7/25/92	
92.3567-25	76%	86%	7/24/92	E
92.3567-25 X100	-	-	7/26/92	D
92.3567-26	90%	82%	7/25/92	

S1- Decachlorobiphenyl S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3632 (1-20)

Lab Name: Chemical & Geological Laboratory
Sequence Name: 72492 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	7-22 BLK A SOIL	121%	92%	7/25/92	
02	7-22 SPK A SOIL	117%	97%	7/25/92	
03	7-22 DUP A SOIL	98%	98%	7/25/92	
04	Aroclor 1242	NA	NA	7/25/92	
05	Aroclor 1254	NA	NA	7/25/92	
06	Aroclor 1260	NA	NA	7/25/92	
07	92.3632-1	63%	96%	7/26/92	
08	92.3632-2 x100	------	------	7/27/92	D
09	92.3632-2	442%	41%	7/25/92	E
10	92.3632-3	120%	91%	7/26/92	
11	92.3632-4	79%	116%	7/26/92	
12	92.3632-5	66%	97%	7/26/92	
13	92.3632-5 x100	------	------	7/27/92	D
14	92.3632-6	54%	55%	7/25/92	E
15	92.3632-7	49%	71%	7/26/92	
16	92.3632-8	734%	103%	7/26/92	
17	92.3632-9	77%	97%	7/26/92	
18	92.3632-10	78%	87%	7/25/92	
19	92.3632-11	64%	91%	7/26/92	
20	92.3632-12 x100	------	------	7/27/92	D
21	92.3632-12	78%	79%	7/25/92	E
22	92.3632-13 x1000	------	------	7/27/92	D
23	92.3632-13	117%	98%	7/26/92	E
24	92.3632-14 x1000	------	------	7/27/92	D
25	92.3632-14	177%	119%	7/26/92	E
26	92.3632-15 x1000	------	------	7/27/92	D
27	92.3632-15	86%	82%	7/26/92	E
28	92.3632-16	74%	106%	7/26/92	
29	92.3632-17	64%	94%	7/26/92	
30	92.3632-18	72%	102%	7/26/92	
31	92.3632-19	71%	35%	7/26/92	
32	92.3632-20 x100	------	------	7/27/92	D
33	92.3632-20	83%	91%	7/26/92	E

S1- Decachlorobiphenyl

S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3632 (21-34, 36-40)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 72492 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	7-22 BLK A SOIL	82%	105%	7/24/92	
02	7-24 SPK D SOIL	120%	103%	7/24/92	
03	7/24 DUP D SOIL	104%	104%	7/24/92	
04	Aroclor 1242	NA	NA	7/26/92	
05	Aroclor 1254	NA	NA	7/26/92	
06	Aroclor 1260	NA	NA	7/26/92	
07	92.3632-21	98%	98%	7/26/92	
08	92.3632-22	91%	92%	7/26/92	
09	92.3632-23x100	----	----	7/27/92	D
10	92.3632-23	92%	110%	7/26/92	E
11	92.3632-24	100%	96%	7/26/92	
12	92.3632-25	87%	98%	7/25/92	
13	92.3632-26	81%	94%	7/26/92	
14	92.3632-27	100%	93%	7/26/92	
15	92.3632-28	98%	95%	7/26/92	
16	92.3632-29x100	----	----	7/26/92	D
17	92.3632-29	93%	112%	7/25/92	E
18	92.3632-30	93%	91%	7/26/92	
19	92.3632-31x100	----	----	7/26/92	D
20	92.3632-31	94%	105%	7/26/92	E
21	92.3632-32x100	----	----	7/26/92	D
22	92.3632-32	100%	104%	7/25/92	E
23	92.3632-33x1000	----	----	7/27/92	D
24	92.3632-33	126%	221%	7/25/92	E
25	92.3632-34x100	----	----	7/27/92	D
26	92.3632-34	90%	117%	7/26/92	E
27	92.3632-36	99%	96%	7/26/92	
28	92.3632-37x100	----	----	7/27/92	D
29	92.3632-37	88%	97%	7/25/92	E
30	92.3632-38x1000	----	----	7/27/92	D
31	92.3632-38	171%	454%	7/25/92	E
32	92.3632-39	----	----	7/27/92	
33	92.3632-40x100	----	----	7/27/92	D
34	92.3632-40	96%	105%	7/26/92	E

S1- Decachlorobiphenyl

S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.3632 (35, 41-49)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 72492 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	7-23 BLK C SOIL	112%	122%	7/25/92	
02	7-23 SPK C SOIL	133%	128%	7/25/92	
03	7-23 DUP C SOIL	127%	112%	7/25/92	
04	Aroclor 1242	NA	NA	7/26/92	
05	Aroclor 1254	NA	NA	7/26/92	
06	Aroclor 1260	NA	NA	7/26/92	
07	92.3632-35x1000	-----	-----	7/27/92	D
08	92.3632-35	103%	129%	7/26/92	E
09	92.3632-41x1000	-----	-----	7/27/92	D
10	92.3632-41	116%	120%	7/26/92	E
11	92.3632-42x100	-----	-----	7/27/92	D
12	92.3632-43	94%	88%	7/27/92	
13	92.3632-44	92%	90%	7/27/92	
14	92.3632-45	96%	97%	7/27/92	
15	92.3632-46	75%	79%	7/26/92	
16	92.3632-47	75%	84%	7/26/92	
17	92.3632-48	65%	75%	7/26/92	
18	92.3632-49	70%	81%	7/26/92	

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene
D - Surrogate recovery cannot be determined due to dilution of sample.

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-6301

ANALYSIS RESULTS for INVOICE # 56216

Chemlab Ref.# 92.3632 Sample # 38 Matrix: SOIL

Client Sample ID : B3306-10 FROM WALLS OF 33' EXCAVATION
PWSID : UA
Collected : JUL 21 92 @ 14:50 hrs.
Received : JUL 21 92 @ 17:30 hrs.
Preserved with : AS REQUIRED

Client Name :LAIDLAW ENVIRONMENTAL SERVICES, INC
Client Acct :LAIDLAW
BPO# : POH :NONE RECEIVED
Req# :
Ordered By :TRUMAN HILL

Analysis Completed : JUL 27 92
Laboratory Supervisor : STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)LAIDLAW ENVIRONMENTAL SERVICES, INC
2)

Parameter	Results	Units	Method	Allowable Limits
PCBs IN SOIL	2300	ppm	EPA 8080	
------AROCLOR	1260			

Sample Remarks: SAMPLE COLLECTED BY: DEBORAH CAMPBELL, WITNESSED BY RICHARD KRENTZ. TEMP 3.4 DEGREES C. CUSTODY SEALS INTACT. ROOSEVELT ROAD TRANSMITTER SITE.
CORRECTION: PCB RESULT.

2 Tests Performed * See Special Instructions Above UA-Unavailable
ND= None Detected ** See Sample Remarks Above
NA= Not Analyzed LT-Less Than, GT-Greater Than

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.3422 (16-17, 19-26, 32-36)

Lab Name: Chemical and Geological Laboratory

Matrix Spike File No.: 020F0201.D

Matrix Spike Dup. File No.: 021F0201.D

Instrument ID: ECD #3

Date Analyzed: 7/21/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	2.00	0.00	2.32	116%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	0.79	79%	* 38%

Column to be used to flag recovery and RPD

* Error in the spiking level, the level was normalized to get a RPD of 38%.

Note: We are currently re-running these samples.

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.3422 (16-17, 19-26, 32-36)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK A	147%	97%
Spk	151%	102%
Spk Dup	138%	100%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK A	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	70-130% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other	The RPD for the matrix spike and spike dup is out of bounds. Samples 92.3422 (16,17, 19-26, 32-36) will be re-extracted and re-analyzed.	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Peter J. Robinson

Printed Name and Date: Pete Robinson 8-13-92