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Comprehensive Long-Term Environmental Action Final Sampling and Analysis Plan for Site 18 PCB Spill Area Naval Air Station Pensacola, Florida

SOUTHNAVFACENGCOM
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Prepared for:

Comprehensive Long-Term
Environmental Action Navy (CLEAN)
Naval Support Activity
Naval Air Station
Pensamla, Florida

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Release of this document requires the prior notification of the *Commanding* Officer of the Naval *Air* Station, Pensacola, Florida.

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19. Abstract

This Sampling and Analysis Plan is for Site 18, the PCB Spill Area. The purpose of this investigation is to delineate the nature, magnitude and, to the greatest degree practicable, extent of contaminated soil and groundwater.

Physical surveys to be conducted during the site investigation include a well inventory, a contaminant source survey, and a habitat and biota survey. Field activities to be performed during the site investigation include field screening for PCBs, the completion of soil borings and monitoring wells, the collection of soil and groundwater samples, and a hydrologic and ecologic assessment. Chemical analyses will be completed by a laboratory approved by the Naval Facilities Engineering Service Center using Contract Laboratory Program protocol. Field sampling, analytical methods, and reporting will be conducted at U.S. Environmental Protection Agency Level IV protocol.

This SAP, in conjunction with the Comprehensive Sampling and Analysis Plan, will provide guidelines for sampling and analytical techniques to be used during the investigation and outline proper documentation procedures for the investigation.

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List of Acronyms

The following list contains many of the acronyms, abbreviations, and units of measure used in this report.

bls	below land surface
CG	Cleanup Goal
CLEAN	Comprehensive Long-Term Environmental Action Navy
CLP	Contract Laboratory Program
CSAP	Comprehensive Sampling and Analysis Plan
DQO	Data Quality Objective
E/A&H	EnSafe/Allen & Hoshall
FDEP	Florida Department of Environmental Protection
FSA	Full Scan of Analysis
GS	Grain Size
IAS	Initial Assessment Study
MCL	Maximum Contaminant Level
NAS Pensacola	Naval Air Station Pensacola
NEESA	Naval Energy and Environmental Support Activity
NFESC	Naval Facilities Environmental Service Center formerly NEESA
PCBs	Polychlorinated Biphenyls
ppm	parts per million
PPS	Physical Parameters, Soil
PPW	Physical Parameters, Water
PRG	Preliminary Remediation Goal
QA	Quality Assurance
QC	Quality Control
RBC	Risk-based Concentration
RI	Remedial Investigation
SAP	Sampling and Analysis Plan
SDWA	Safe Drinking Water Act
SOP/QAM	Standard Operating Procedures and Quality Assurance Manual
SOUTHNAVFACENGCOM	Southern Division, U.S. Navy, Naval Facilities Engineering Command
svocs	Semivolatile Organic Compounds
TAL	Target Analyte List
TCL	Target Compound List
TKN	Total Kjeldahl Nitrogen
USEPA	United States Environmental Protection Agency
vocs	Volatile Organic Compounds

EXECUTIVE SUMMARY

This Sampling and Analysis Plan is for Site 18, the PCB Spill Area. The purpose of this investigation is to delineate the nature, magnitude and, to the greatest degree practicable, extent of contaminated soil and groundwater.

Physical surveys to be conducted during the site investigation include a well inventory, a contaminant source survey, and a habitat and biota survey. Field activities to be performed during the site investigation include field screening for PCBs, the completion of soil borings and monitoring wells, the collection of soil and groundwater samples, and a hydrologic and ecologic assessment. Chemical analyses will be completed by a laboratory approved by the Naval Facilities Engineering Service Center using Contract Laboratory Program protocol. Field sampling, analytical methods, and reporting will be conducted at U.S. Environmental Protection Agency Level IV protocol.

This SAP, in conjunction with the Comprehensive Sampling and Analysis Plan, will provide guidelines for sampling and analytical techniques to be used during the investigation and outline proper documentation procedures for the investigation.

1.0 INTRODUCTION

As part of the **U.S.** Navy Comprehensive Long-Term Environmental Action Navy **(CLEAN)** Program, a **[site investigation]** will be completed by EnSafe/Allen & Hoshall (E/A&H) at Site 18 — the Polychlorinated Biphenyl (PCB) Spill Area, at **the** Naval Air Station Pensacola (NAS Pensacola), Pensacola, Florida. This Sampling **and** Analysis Plan ***(SAP)*** **has been** developed by E/A&H for **this** investigation, **as** tasked by the Southern Division, **U.S.** Navy, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) under Contract No. N62467-89-D-0318/071.

Primary references for **this** SAP include the ***Comprehensive Sampling and Analysis Plan for Naval Air Station Pensacola*** (CSAP) **(E/A&H** 1994), the **United** States Environmental Protection Agency (USEPA) Region IV ***Standard Operating Procedures*** *and* ***Quality Assurance Manual*** (SOP/QAM), and the ***Contamination Assessment/Remedial Activities Investigation Work Plan — Group I*** (Site 18) completed by Ecology & Environment, Inc. (E&E 1992). References to these documents are made throughout **this** plan. The investigation of Site 18 will be completed to fulfill requirements set forth in the E&E site work plan (1992) and **this** site-specific SAP. **This** investigation will be conducted in accordance with the SOP/QAM and CSAP.

The Site 18 **[site investigation]** will assess the nature of any potential contamination identified during past and proposed field investigations. **A** well inventory, contaminant source survey, and a habitat and biota survey will be conducted before field activities begin. Field activities to be performed during the **[site investigation]** include **[field screening** for **PCBs in soil],** the completion **of** soil borings and monitoring wells, the collection of **soil** and groundwater samples, and a hydrologic and Phase I ecologic assessment. Chemical analyses will be completed by a laboratory approved by the Naval Facilities Environmental Service Center (NFESC) using

[Bold items *enclosed* in brackets denote changes to the first *draft* of document.]

Contract Laboratory Program (CLP) protocol. Field sampling, analytical methods, and reporting will be conducted at USEPA Level IV protocol.

Upon completion of the investigative work and laboratory analysis, [data will be presented] will be submitted to the USEPA and Florida Department of Environmental Protection (FDEP) summarizing the activities [and] results of the investigation. [If required, the report will provide data for the completion of a baseline risk assessment. This presentation will also compare analytical results to a set of Preliminary Remediation Goals (PRGs). The detected concentrations of soil contaminants will be compared to both the risk-based concentrations (RBCs) for residential land (developed by EPA Region III) and the risk-based cleanup goals (CGs) for Florida (developed by FDEP September 29, 1995). The most recent RBC tables are used, these are January-June, 1996. Groundwater contaminants will be compared the Florida Drinking Water Standards and Guidance Concentrations, or the Safe Drinking Water Act (SDWA) Maximum Concentration Levels (MCLs). If groundwater contamination, or the potential exists for soil contaminants to leach to groundwater, site-specific soil actions levels will be developed for each contaminant. If there are no analytical results above PRGs, a Preliminary Site Characterization Report will be submitted. If contaminants are present above PRGs, additional work will be outlined in the data presentation and will be sufficient to delineate nature and extent of identified contaminants. The fiial investigative results will be submitted in either a Preliminary Site Characterization Report or, if warranted based on health or ecological risk, an RI report. If an RI report is required, a feasibility study report will be submitted to examine alternative remedies.]

[Bold items *enclosed* in brackets denote changes to the first *draft* of document.]

This SAP, in conjunction with the CSAP, will provide guidelines for sampling and analytical techniques to be used during the [site investigation] and outline proper documentation procedures for the investigation.

2.0 BACKGROUND INFORMATION

2.1 Site Description

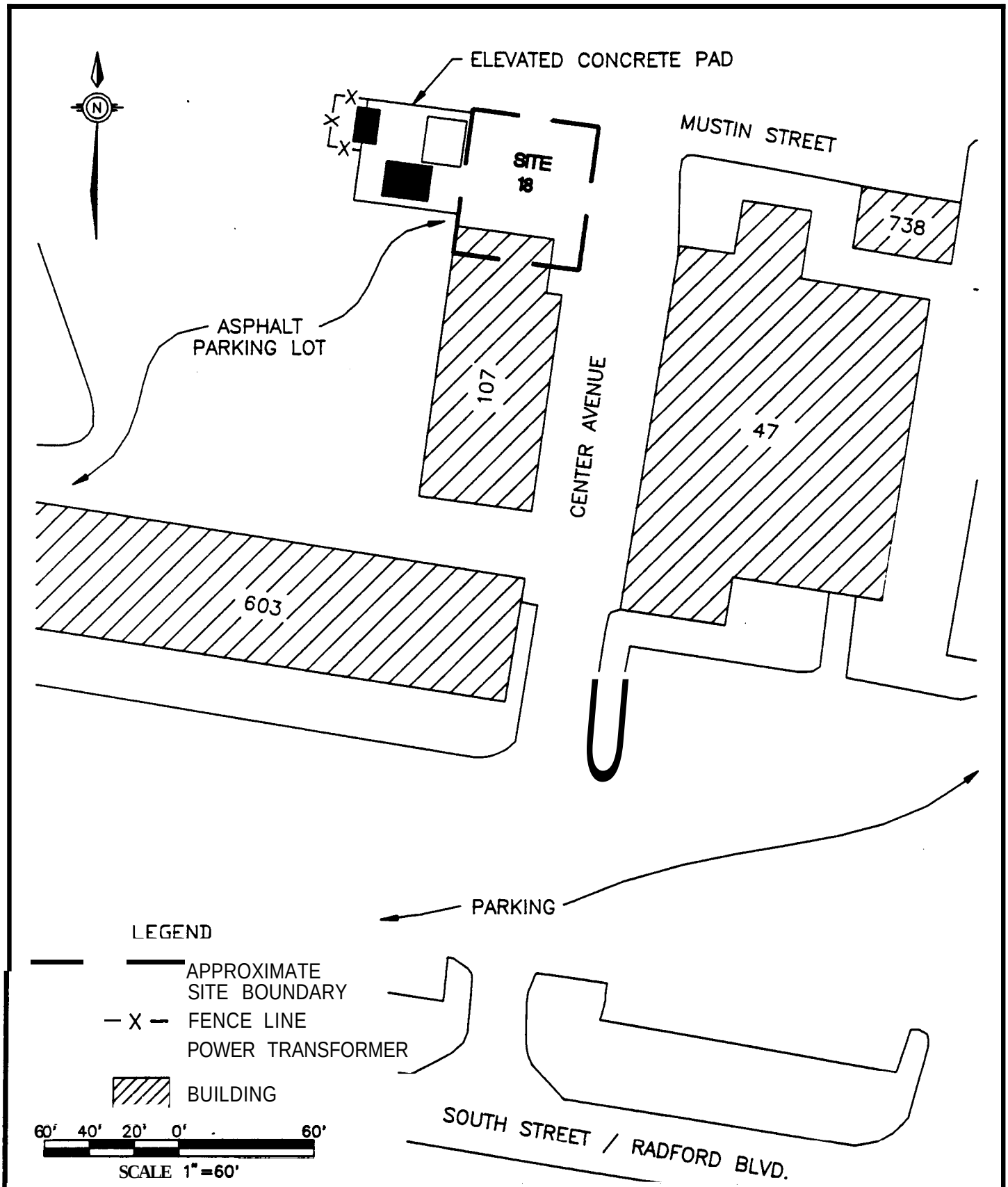
Site 18 is near the northwest comer of Building 107, the southwest comer of Mustin Street and Center Avenue, and on the east side of Substation A (see Figure 2-1). Substation A is constructed on a concrete pad approximately 4 feet aboveground. The immediate area of the spill is approximately 10 by 20 feet and covered by gravel. The area surrounding Site 18 and Substation A is covered by asphalt.

The vicinity of Site 18 is generally flat with land surface elevations averaging 5 to 10 feet above mean sea level. There are no monitoring wells located in the immediate site vicinity. Pensacola Bay is approximately 1,000 feet south of the site, and NAS Pensacola Supply Well No. 2 is approximately one mile northwest.

2.2 Site History

The reported failure of a transformer at Substation A in 1966 resulted in [a spill] of approximately 50 gallons of transformer oil containing an unknown concentration of PCBs. The spill occurred on a small gravel-covered area along the northeast side of Substation A. It is assumed that no cleanup effort was conducted (E&E 1992).

An Initial Assessment Study (IAS) was conducted at Site 18 in June 1983 by NEESA. The site was evaluated based on information from historical records, field inspections, and interviews with NAS Pensacola personnel. During the field investigations, a sample of oily residue in



SAMPLING AND ANALYSIS PLAN
NAS–PENSACOLA
PENSACOLA, FLORIDA

FIGURE 2–1
SITE MAP
SITE 18

DATE: 09/03/93 | DWG NAME: 71SIT18A

the gravel area was collected and analyzed, indicating the presence of Aroclor 1260 at a concentration of 4 parts per million (ppm), which is below hazardous levels as defined by the Toxic Substances Control Act. Based on these findings, the IAS recommended no further study of Site 18.

2.3 Physical Setting

Climatology, biological resources, physiography, and hydrogeology for Site 18 and NAS Pensacola are detailed in Sections 4 through 7 of the E&E site work plan (1992).

3.0 PHYSICAL SURVEY

Various physical surveys will be conducted at Site 18 including a well inventory, contaminant source survey, and a habitat and biota survey These surveys will be conducted before field activities begin.

Well Inventory

An inventory of existing monitoring wells will be completed in accordance with Section 3.1 of the CSAP.

Contaminant Source Survey

A contaminant source survey will be conducted to determine any potential sources and any present or past waste streams at the site. The survey will include a review of previous investigative reports, interviews with present and former NAS Pensacola personnel, aerial photograph analysis, and a utility survey.

The survey will include, to the greatest extent possible, the identification of the following:

- Location of previous and current underground and overhead piping and utilities.
- Past and present chemicals used at the site.
- Locations of known surface spills.
- Locations of known historical outfalls.
- Locations and contents of known present or former underground storage tanks.

Habitat and Biota Survey

A Phase I habitat and biota survey will be performed in accordance with Section *8* of the ***CSAP.*** Data obtained during the Site **18 [site investigation]** will **also be used** to help assess ecological risk to any onsite or surrounding terrestrial and aquatic habitats potentially affected by contaminant migration. If ecological **[terrestrial]** impacts are suspected at Site **18** after the Phase I survey, Phase II sampling will be implemented as outlined in Section *8* of the ***CSAP.***

4.0 FIELDSAMPLINGPLAN

The field sampling plan describes the sampling and field measurement procedures to be used during the **[site investigation].** The field investigation includes advancing **[immunoassay field screening for PCBs,]** soil borings, installing groundwater monitoring wells, and collecting soil and groundwater samples using various techniques. A hydrologic and ecologic assessment will also be conducted for Site **18.**

4.1 Sampling Objectives

The objectives of the field sampling effort are to:

- Identify potential sources of contamination.
- Assess the nature of identified contaminants.
- Delineate the extent of soil and groundwater contamination.

- Delineate migration pathways of the contaminants.
- Identify potential receptors of the contaminants.
- **[Assess the need for site remediation.]**

4.2 Sampling and Analytical Requirements

The sampling and analytical requirements for this investigation are summarized in Table 4-1 and discussed below. The proposed number of soil and groundwater samples is also listed in Table 4-1. The USEPA and FDEP will be apprised of any changes in the number of samples collected.

Any additional sources or previously undetected contamination will be investigated by the collection of additional samples from any given media, sampling additional media not included in this site-specific SAP, installation of additional monitoring wells to delineate the extent and depth of contaminants **[in groundwater],** and additional aquifer response tests to characterize subsurface hydrologic conditions **[where allowable].** Before additional field activities begin, a field change request will be submitted to the Navy for approval with notification to the USEPA and FDEP.

Immunoassay field screening will be conducted across the site to identify any areas of PCB contaminated soil. Field screening will be performed on the soil samples in accordance with the manufacturer's specifications. Areas with detected concentrations will be marked for further sampling.]

The USEPA CLP Target Analyte List/Target Compound List (TAL/TCL) will be used to provide a legally defensible full spectrum of contaminant analysis. Soil and groundwater will be analyzed for the full TAL/TCL list with additional non-CLP analysis also being conducted when warranted. **[Collected** samples **will not be analyzed for hexavalent chromium due to**

Table 4-1
Site 18 Sampling and Analytical Requirements

Medium	No. of Samples[a]	Analytical Parameter	DQO[b] Level
Soil[c]	[9] [10] (2) (2)	Immunoassay FSA PPS GS	II IV IV IV
Groundwater[d]	[4] (2)	FSA PPW	IV IV
TOTAL	[13] [14] (4) (2)	Immunoassay FSA PPS/PPW GS	II IV IV IV

Source: Modified from Ecology and Environment, Inc., **1992.**

Notes:

a The number of samples shown in parentheses will be analyzed for the additional parameters indicated.
b DQO = Data Quality Objective
c Total number of soil samples = [5] soil borings x 2 sample intervals = [10] samples.
d Total number of groundwater samples = [4] proposed shallow monitoring wells x 1 sample each = [4] samples.

Immunoassay Field Screening for PCBs

FSA — Full Scan of Analysis

Target Compound List (TCL) volatile organic compounds, TCL semivolatile organic compounds (SVOCs), TCL pesticides, TCL polychlorinated biphenyls (PCBs), Target Analyte List (TAL) metals (unfiltered), and TCL cyanide.

PPS — Physical Parameters, Soil

Total phosphorus, nitrate-N, total Kjeldahl nitrogen (TKN), heterotrophic plate count, total organic carbon, and cation exchange capacity.

GS — Grain Site Analysis

PPW — Physical Parameters, Water

5-day biological oxygen demand, chemical oxygen demand, hardness, total suspended solids, alkalinity, total phosphorus, nitrate-N, TKN. and heterotrophic plate count.

[Bold items enclosed in brackets denote *changes* to the first draft of document.]

the lack of previous detection during other investigations at NAS Pensacola (OU 10, Site 1, Site 39) and because **site history indicates it is not a parameter of concern.]**

Analyses proposed in **this *SAP*** have **been [reorganized since]** the **E&E** site work plan **(1992)** which were subdivided into "Suites A through E." Modifications have **also been** made to the list of remedial/physical characteristic parameters proposed in the E&E site work plan **(1992).** Changes were made to the proposed analyses to address CERCLA rather **than** RCRA requirements (i.e., the omission of Appendix IX analyses) and to acquire additional information regarding the physical characteristics of site **soil and** groundwater if a feasibility study is required. Therefore, certain parameters have **been omitted from this *SAP*** because they **are** either redundant to the comprehensive TAL/TCL analytical methods, provide **[information]** not legally defensible, or have limited **use.** Proposed analytical parameters **are** now organized into the five basic groups listed below.

New Analytical Organization

[• Immunoassay Field Screening]

- **Full Scan of Analysis (FSA) —** A full scan consists of analysis for TCL volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), TCL pesticides, TCL PCBs, TAL metals (unfiltered), and TCL cyanide.

- **Physical Parameters, Soil (PPS) —** The parameters include total phosphorus, nitrate-N, total Kjeldahl nitrogen (TKN), heterotrophic plate count, total organic **carbon,** and **cation** exchange capacity.

- **Grain Size Analysis (GS)**

- Physical Parameters, Water (PPW) — The parameters include 5-day biological oxygen demand, chemical oxygen demand, hardness, total suspended solids, alkalinity, total phosphorus, nitrate-N, TKN, and heterotrophic plate count.

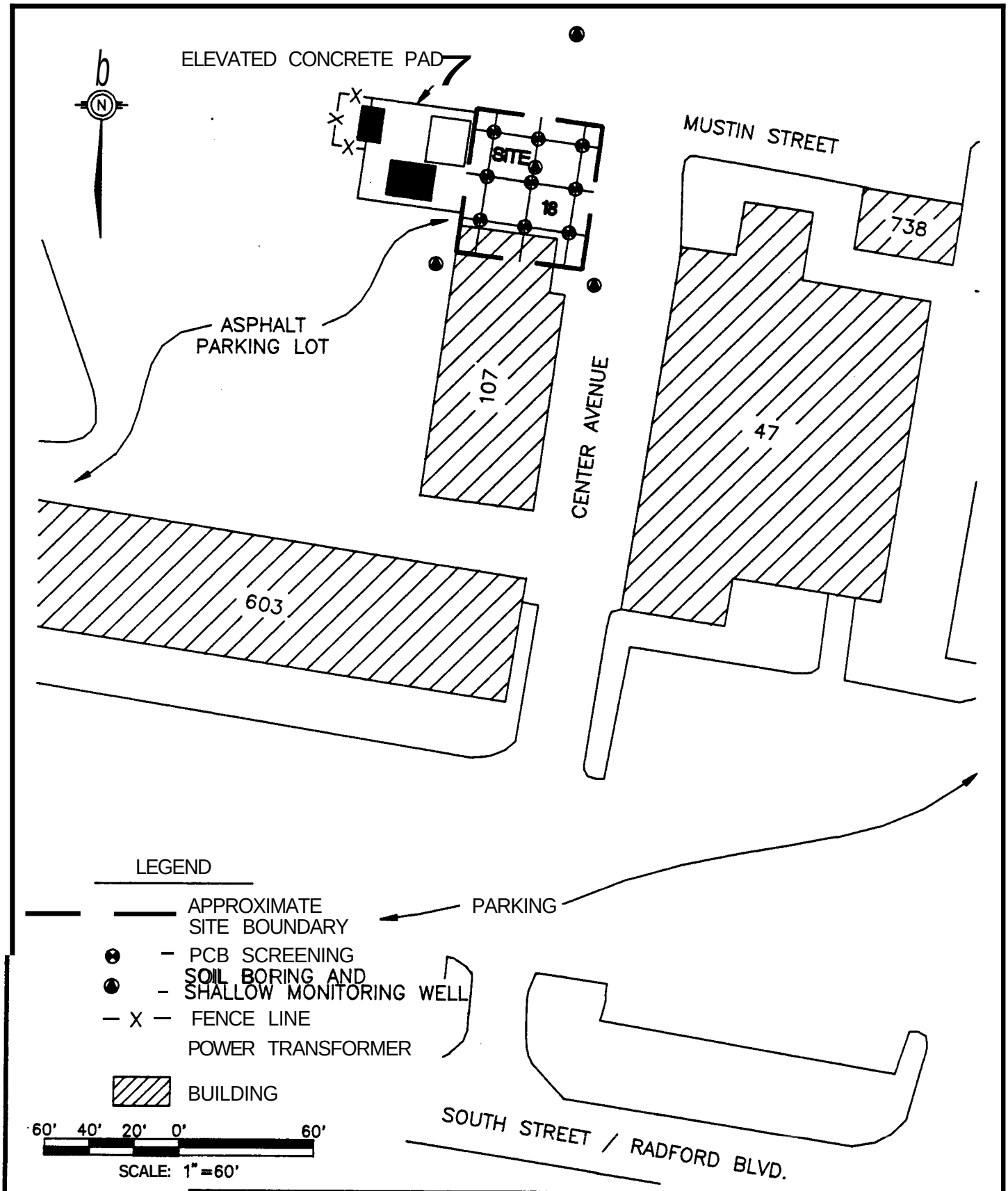
4.3 Sample Locations and Rationale

Proposed sample locations are presented on Figure 4-1. The sampling program and any proposed modifications to the E&E site work plan (1992) are described below.

Soil Samples — [For immunoassay screening for PCBs, an approximately 20-foot by 20-foot grid will be established across the site (Figure 4-1). Soil samples will be collected at each grid node locations from the 0 to 1-foot depth interval by hand auger. In addition, sampling locations will be biased toward areas identified during the contaminant source survey.] FSA will be conducted on soil samples collected from soil borings advanced at [field] screening locations identified as having PCB contamination. [Additional soil borings will be installed if the contaminants are identified above respective PRGs. Any soil samples collected from additional borings will not be analyzed for FSA, but for the contaminants positively identified above the PRGs in the initial sampling effort.

If the field screening does not identify locations with PCB contamination, five soil borings will be advanced. Soil samples will be collected from the five soil boring locations for FSA. All boring locations will be sampled at the following intervals: 0 to 1 feet below land surface (bls), 3 to 5 feet bls, etc. from the land surface to the depth of the water table, which is estimated to be 5 feet bls.]

[Bold items enclosed in brackets denote changes to the first *draft* of document.]



SAMPLING AND
ANALYSIS PLAN
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FIGURE 4–1
PROPOSED SAMPLING LOCATIONS
SITE 18

DATE: 02/21/95 | DWG NAME: 71SIT18B

PPS analyses will be conducted on two soil samples for the feasibility study. The PPS samples will be collected to represent both background and potentially contaminated conditions. GS analysis will be conducted on two soil samples representative of the screened interval of the shallow monitoring wells. Results of the GS analysis will be used to calculate recovery well specifications if a groundwater remediation program is required.

Except for GS samples, soil samples are not anticipated to be collected below the water table. If visual or olfactory evidence of contamination is observed below the water table, a sample will be collected for an FSA for characterization and delineation of potential contamination.

Groundwater Samples — **FSA** will be conducted on groundwater samples collected from **[four]** shallow monitoring wells; **[one** in **the immediate spill area, and one each upgradient, downgradient, and crossgradient from the area.]** The wells will be completed to a target depth of 15 feet bls. PPW analyses will be conducted on two groundwater samples collected for the feasibility study to represent both background and potentially contaminated conditions.

4.4 Sampling Procedures

Proposed sampling procedures are presented in Sections **4, 5,** and **6** of the ***CSAP.*** General sampling requirements will be performed in accordance with Section 2.2 of the ***CSAP*** with sample processing performed in accordance with Section **12.** Sampling and any modifications to the ***CSAP*** or E&E site work plan **(1992) are** discussed **[in the following subsections].**

4.4.1 Soil Sampling

[Soil samples collected for field screening will **be collected with a stainless-steel hand auger in accordance with Sections 4.4 and 4.5 of the CSAP.]** Soil **borings** will be advanced using either hollow-stem auger drilling techniques **[or hand augers, as appropriate].** Soil samples

[from drilled boreholes] will be collected using stainless steel **split-barrel** samplers in accordance with Section **4.6.1** of the ***CSAP.*** [Samples from hand augered boreholes will **be** collected directly from the auger bucket with stainless-steel **bowls** and **spoons].**

4.4.2 Monitoring Well Installation and Development

Monitoring well borings will be advanced using hollow-stem auger drilling ***techniques.*** The drilling methods and monitoring well installations will be **in** accordance with Sections **5.2** and **5.3** of the ***CSAP.*** In accordance with Florida Administrative Code Chapter 40A-3, neat cement grout is required in all monitoring well installations.

At least **24** hours after monitoring well installation **is** complete, the monitoring wells will be developed in accordance with Section **5.4** of the ***CSAP.*** Monitoring wells will be developed [using peristaltic pumps following an initial purging of **coarse** sediment-laden water using centrifugal pumps.] Monitoring well development will continue until the withdrawn water is **[as** free of turdibity **as** possible given the lithology of the screened interval] and **pH,** temperature and specific conductivity have stabilized. These measurements will **be** recorded in accordance with Section 10.1 of the CSAP.

4.4.3 Groundwater Sampling

Groundwater will be sampled in accordance with Section ***6*** of the CSAP. [peristaltic pumps may be used in place of bailers. Purge and sample tubing on peristaltic pumps **will be** constructed of Teflon, and sample collection **will** take place **between** the pump and the well **as** outlined in Section **F.1.3** of SOP/QAM. **To** prevent potential degassing of volatiles, samples collected for VOCs will **be** collected by **disconnecting** the tubing from the pump, and allowing the water in the tube to drain into the sample vials. Groundwater samples collected with a peristaltic pump should be collected **near** the top of the water column and

water should be as clear as possible given the subsurface geology (generally between 10 and 30 NTUs.] Field measurements to be recorded during groundwater sampling include pH, temperature, specific conductance, groundwater level, [turbidity,] and organic vapor detection, in accordance with Section 10.1 of the *CSAP*.

4.5 Hydrologic Assessment

A hydrologic assessment will be performed in accordance with Section *9.6* of the *CSAP*. *[An* initial water level assessment will be performed to determine shallow groundwater elevations, shallow groundwater flow direction(s), and hydraulic gradient(s).] Slug tests and/or specific capacity tests will be performed at selected monitoring wells sufficient for site characterization. If groundwater remediation is required, the results of the slug and/or specific capacity tests will be used to design the appropriate pumping tests [where allowable]. The Navy will accept technical responsibility for the design and implementation of these tests. The USEPA and FDEP will be kept apprised of the investigation as it progresses, and will be notified before full-scale pumping tests are conducted. Pumping tests will be performed in accordance with the procedures provided in Section *9.6.2* of the *CSAP*.

4.6 Ecologic Assessment

A Phase I habitat and biota survey will be conducted in accordance with Section 8.1 of the *CSAP*. [If additional assessment is warranted, supplemental phases will also be conducted.]

4.7 Cadastral Survey

[A geodetic survey will be performed using a global positioning system in accordance with manufacturer's specifications.]

4.8 Decontamination

Decontamination procedures will be performed in accordance with Section 11 of the ***CSAP.***

4.9 Investigation-Derived Wastes

Investigation-derived wastes will be handled in accordance with Section 13 of the ***CSAP.***

4.10 Field Quality Assurance/Quality Control

Field quality assurance/quality control (QA/QC) Samples will be collected in accordance with the frequency presented in Table 15-1 of the ***CSAP.*** QA/QC procedures will be in accordance with Section 15.2 of the ***CSAP.***

5.0 QUALITY ASSURANCE PLAN

The Quality Assurance Plan presented in Section 15 of the ***CSAP*** will be followed during the Site 18 [field investigation].

6.0 DATA MANAGEMENT PLAN

The Data Management Plan presented in Section 14 of the ***CSAP*** will be followed during the Site 18 [field investigation].

7.0 REFERENCES

Ecology and Environment, Inc. (1992). ***Contamination Assessment/Remedial Activities Investigation Work Plan — Group I, Naval Air Station Pensacola, Pensacola, Florida.*** Ecology and Environment, Inc.: Pensacola, Florida.

[Bold items enclosed in brackets denote changes to the first *draft* of document.]

EnSafe/Allen & Hoshall. (1994). *Comprehensive Sampling and Analysis Plan For Naval Air Station Pensacola, Pensacola, Florida — Final.* EnSafe/Allen & Hoshall: Memphis, Tennessee.

Naval Energy and Environmental Support Activity (NEESA). (1983). *Initial Assessment Study of Naval Air Station, Pensacola, Florida.* NEESA 13415.

U.S. Environmental Protection Agency. (1991). *Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual,* U.S. Environmental Protection Agency, Region IV: Athens, Georgia.

Appendix A
Florida Professional Geologist *Seal*

FLORIDA PROFESSIONAL GEOLOGIST **SEAL**

I have read and approve of this Sampling **and** Analysis Plan, **NAS** Pensacola Site **18, and** seal it in accordance with Chapter **492** of the Florida Statutes. In **sealing** *this* document, I **certify** the geological information contained in it is true to the best of my knowledge **and the** geological methods and procedures included herein are consistent with currently accepted geological practices.

Name:	Brian E. Caldwell
License Number:	#1330
State:	Florida
Expiration Date:	July 31, **1998**

B Caldwell

Brian E. Caldwell

10/21/98

Date