N00216.AR.000331
NAS CORPUS CHRISTI
5090.3a

SITE ASSESSMENT SAMPLING AND ANALYSIS REPORT FOR BUILDING 8 CCAD NAS CORPUS CHRISTI TX

3/17/1992

ENSAFE

00044

SITE ASSESSMENT
SAMPLING AND ANALYSIS REPORT
FOR
BUILDING 8, CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

Prepared for:
The Naval Facilities Engineering Command

Prepared by

EnSafe/Allen & Hoshall
5720 Summer Trees Drive, Suite 8
Memphis, Tennessee 38134

March 17, 1992

SITE ASSESSMENT
SAMPLING AND ANALYSIS REPORT
FOR
BUILDING 8, CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

Prepared for:
The Naval Facilities Engineering Command

Prepared by:
EnSafe/Allen & Hoshall
5724 Summer Trees Drive
Memphis, Tennessee 38134
(901) 372-7962

March 17, 1992

TABLE OF CONTENTS

PAGE

LIST OF TABLES

PAGE

LIST OF FIGURES

1.0 INTRODUCTION

The Naval Facilities Engineering Command retained EnSafe/Allen & Hoshall to provide consulting services in conjunction with the Naval Air Station (NAS), Corpus Christi, Texas. These services include the preparation of a Site Assessment Work Plan (including a Sampling Plan, Quality Assurance Plan, and Health and Safety Plan) and performance of field activities. This investigation included the collection and analysis of seven groundwater samples in the vicinity of Building 8 and a pre-sampling visit to verify sampling locations. All plans for EnSafe's field investigations were approved by Naval Facilities Engineering Command before field activities began.

1.1 Site Description

The Naval Air Station is located in South Texas on the Gulf of Mexico near the city of Corpus Christi, Texas. The facility is located on a peninsula surrounded by Laguna Madre to the east, Corpus Christi Bay to the north, and Cayo del Oso Bay to the west. The air station was commissioned in 1941 and is primarily used for Naval air training operations. Building 8 at NAS Corpus Christi is leased by the Corpus Christi Army Depot (CCAD) which serves under the U.S. Army Materiel Development and Readiness Command. CCAD's primary operations include performing depot level maintenance of Army aircraft and aeronautical equipment, training military personnel in depot level maintenance, and preparing aircraft for overseas shipment. Various industrial activities are conducted within the Building 8 complex, including plating operations, parts cleaning and degreasing, bulk fuel storage, and painting.

1.2 Objective

The purpose of this assessment is to investigate the presence of possible groundwater contamination at the site and to make appropriate recommendations based on those findings.

2.0 GROUNDWATER SAMPLING

On November 20, 1991, EnSafe/Allen & Hoshall personnel arrived at the site to perform all field sampling activities as outlined in the work plan. After attempting to collect groundwater samples from two locations at the site, it was determined that seven groundwater samples would be taken instead of the original 15, due to the lack of sufficient recharge of the first water-bearing unit. A hydraulically actuated hydroprobe was used to collect five of these samples and two samples were collected from existing groundwater monitoring wells. One of the hydroprobe samples was collected in an area presumed to be free of contamination. This sample represented background concentrations for comparison with samples collected near Building 8. The location for the background sample is shown on Figure 1. The background sample was collected first to prevent possible cross contamination from other samples or sampling equipment. The remaining six samples were collected around the periphery of Building 8 at the locations shown in Figure 2 and described in the following pages.

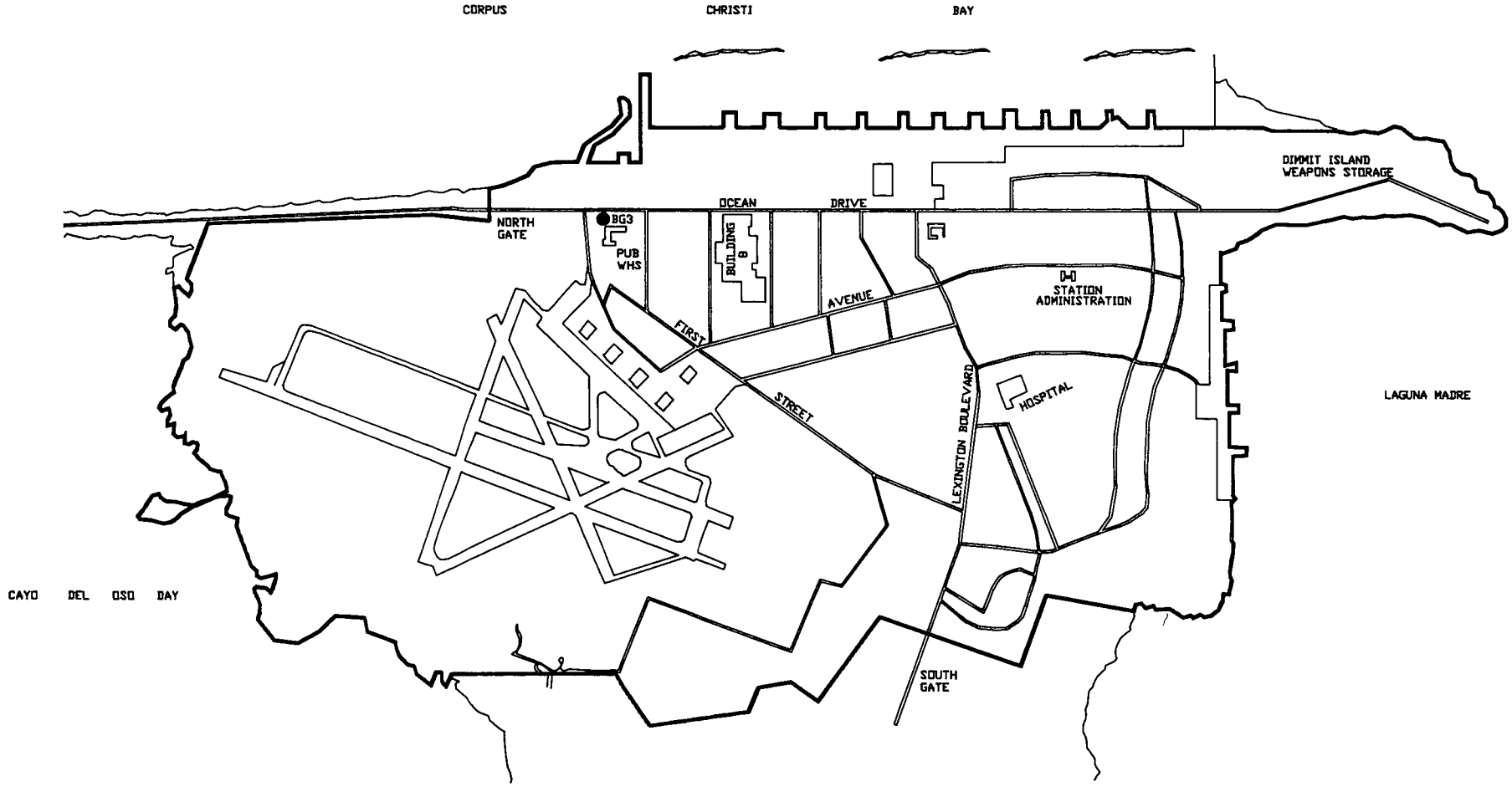
The sampling points are located:

HP2	approximately 15 feet south of the fenced storage area, near Bldg. 270
HP3	adjacent to the east side of the Pretreatment Plant
HP6	west of the walk, approximately 20 feet south of the northeast corner of Bldg. 8
MW10	at one of the monitoring wells at Bldg. 1804 next to the ASRS Facility
HP12	6 feet west of the fence adjacent to the "TWC Site 21" sign
MW13	at the monitoring well next to Fuel Farm 2164
BG3	background sample collected in front of the Public Works Building adjacent to the parking lot

Due to the lack of sufficient groundwater at locations HP6 and BG3 only one parameter was analyzed from each location. Sample HP6 was only analyzed for volatiles because only 120 ml. of groundwater was collected at this location. The background sample (BG3) was only analyzed for metals due to the small volume of sample collected at this site. EnSafe/Allen & Hoshall chose to analyze this sample for metals instead of volatiles because it was more important to establish a baseline concentration for the naturally occurring metals rather than the volatile compounds.

2.1 Hydroprobe Methodology

One method of collecting groundwater samples was by using a hydroprobe, essentially a 2-inch diameter stainless steel tube that is hydraulically forced through soil to the water table. The probe was submerged about 12 feet into the soil, then immediately removed. The remaining



LEGEND

● BACKGROUND SAMPLE LOCATIONS

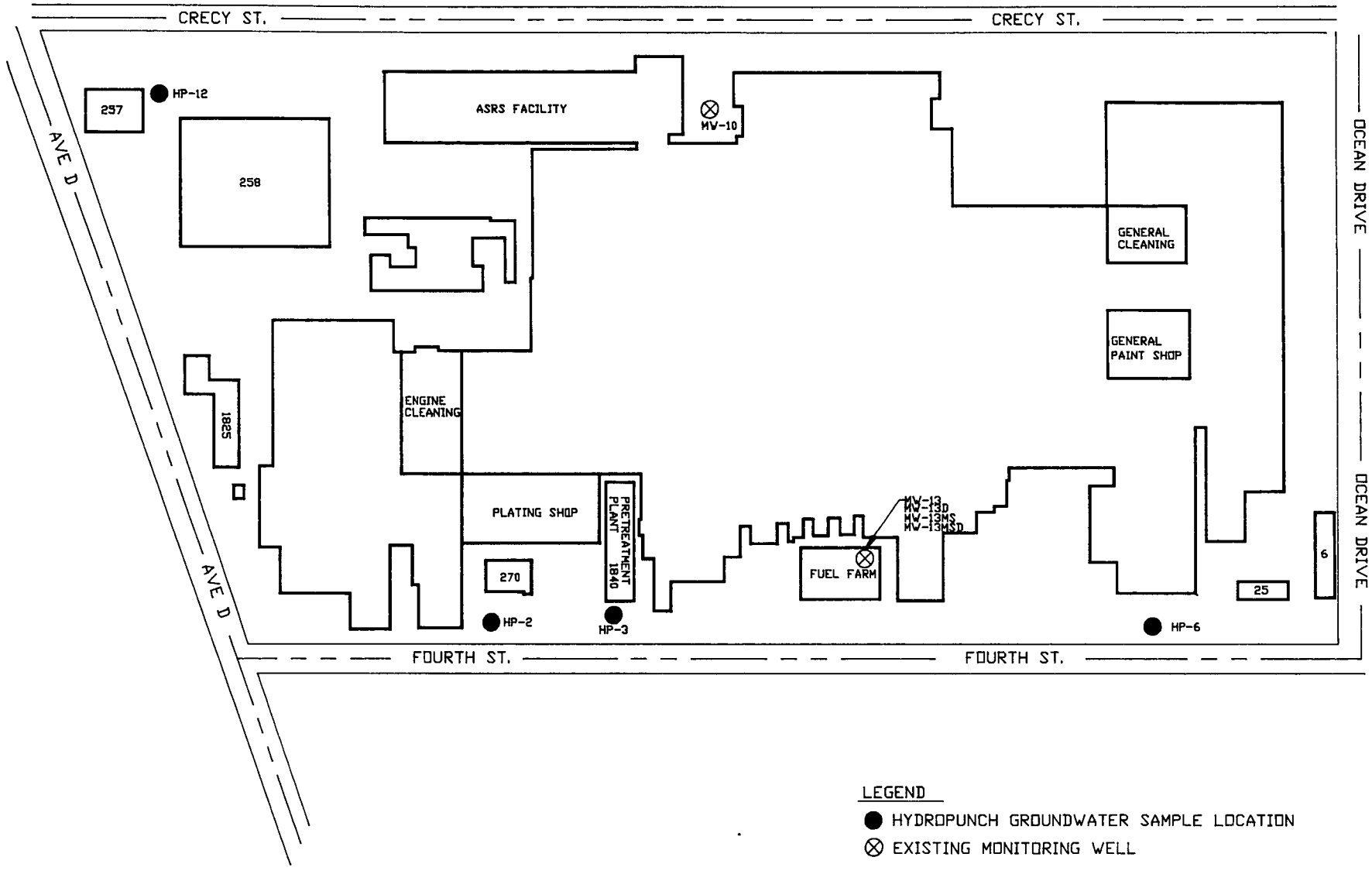
NOT TO SCALE

PRELIMINARY INVESTIGATION
BUILDING 8 - CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

FIGURE 1
BACKGROUND SAMPLE LOCATION
CORPUS CHRISTI, TEXAS

DATE: 03/10/92

DWG NAME: CLNBSL1



LEGEND

- ● HYDROPUNCH GROUNDWATER SAMPLE LOCATION
- ⊗ EXISTING MONITORING WELL

NOT TO SCALE

PRELIMINARY INVESTIGATION
BUILDING 8 - CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

FIGURE 2
BUILDING 8, CCAD
GROUNDWATER SAMPLING LOCATIONS
CORPUS CHRISTI, TEXAS

DATE: 03/10/92 | DWG NAME: SDSCC

hole was covered with plastic and left overnight. The next day the probe was placed back in the hole. A small vacuum pump was attached to the probe and the groundwater was pumped into the proper sampling containers. Because of the low recharge to the aquifer, very little groundwater was obtained. In many cases the sample contained considerable amounts of solids (silts, sands, etc.).

2.2 Monitoring Well Sampling

Groundwater samples were also collected by sampling existing monitoring wells. EnSafe/Allen & Hoshall begins well sampling at sites with either upgradient (clean) wells or wells which are known or believed to be clean. Sampling then proceeds to increasingly contaminated wells and ends with the most contaminated well. This procedure helps to minimize the potential for cross contamination of wells, especially false positives in clean wells due to insufficient decontamination of field sampling equipment.

2.2.1 Purging Methodology

Before sampling the monitoring wells, a minimum of three casing volumes of water was removed. Removing three casing volumes eliminated any stagnant water and ensured that the water being sampled was representative of the aquifer immediately surrounding the well.

Groundwater level and total well depth were measured with an electronic water level indicator to determine the evacuation volume. The depth-to-water measurement subtracted from the total well depth equals the thickness of the water column in the well. This value multiplied by a conversion factor (0.174 gallons/ft. for a 2-inch well) established the volume of water within the casing. Three times the casing volume served as the minimum evacuation required for sampling.

2.2.2 Sample Collection

After purging the appropriate volumes of water, the groundwater samples from the monitoring wells were collected with a clean Teflon bailer attached to clean nylon rope. Groundwater was transferred into the appropriate pre-cleaned containers immediately after being removed from the well. Two 40-ml Volatile Organic Analysis (VOA) vials were used to contain samples for Volatile Organic Compounds (VOC) analysis and one 500-ml vial was used to contain samples for the metals analysis at each well. No samples were collected for VOC analysis at MW-10 due to the vapors in that area from a roofing operation. These same procedures were also used to transfer groundwater samples from the hydroprobe to the appropriate containers. The samples were handled, preserved, and shipped in the manner described in the following section.

2.3 Sample Preservation, Handling, and Shipping

Immediately after collection, all samples were appropriately preserved. Samples collected for VOC analysis were preserved by adding hydrochloric acid until the pH of the sample was less than 2.0. The samples collected for the metals analysis were preserved by adding nitric acid until the pH of the samples was less than 2.0. After the appropriate preservation, the samples were than placed in a 4°C cooler filled with packaged ice.

Samples were handled as infrequently as possible and care was taken to ensure that the samples were not contaminated. All samples were shipped to the PACE Incorporated laboratory in Novato, California the day of collection via an overnight express air courier.

To assure that the samples were maintained in a safe and reliable manner, a strict chain-of-custody (COC) procedure was followed. This procedure was implemented in the field and carried out during the entire analytical process. All parties handling the samples signed the COC form which became a part of the permanent records. Sample security seals were used either for individual sample bottles or shipping containers. Completed COC forms became part of the laboratory reporting package for data validation. A copy of the COC form is shown in Appendix B.

2.4 Analytical Parameters and Specifications

All samples were analyzed for volatiles and the metals listed in Appendix IX of 40 CFR Part 264. The metals in Appendix IX include antimony, arsenic, barium, beryllium, cadmium, chromium (total), cobalt, copper, lead, mercury, nickel, selenium, silver, thallium, vanadium, and zinc. Table 1 lists these parameters and associated collection and preservation methods.

TABLE 1
BUILDING 8, CCAD
ANALYTICAL PARAMETERS AND SPECIFICATIONS

Parameter	Method	Container	Volume	Preservative	Holding Time
Volatiles	CLP	(3) VOA vials amber glass	40 *mL* each	4°C pH<2 (HCl)	7 days
Metals	EPA 6010 &/or 7000 Series	(1) Plastic	500 *mL*	4°C pH<2 (HNO3)	6 months
Mercury	EPA 7470	(1) Plastic	250 *mL*	4°C pH<2 (HNO3)	28 days

2.5 Decontamination

All equipment that came in contact with soil was steam cleaned before being used and after each sample was collected. This process minimized potential cross contamination between samples. Decontamination consisted of the following steps:

1. High pressure, hot tap water and Alconox wash
2. Tap water rinse
3. Two rinses with isopropyl alcohol
4. Two rinses with deionized water

Additional scrubbing was sometimes required to remove encrusted materials.

3.0 QUALITY ASSURANCE AND SAFETY

The following measures were taken or planned to assure that the quality of data obtained in this sampling program matches the intended or required end use of the data.

3.1 Field Team Organization

All field work was completed under the direct supervision of an EnSafe geologist. Personnel who collected samples were fully trained in proper sampling protocol and were briefed about the plans prepared for this project.

3.1.1 Sampling Protocol

- Following the procedures outlined in Section 2.5, all sampling equipment was decontaminated before each sample was collected.
- Samplers donned a clean pair of surgical gloves before each sample was collected.
- Descriptions of hydroprobe and monitoring well sampling methodology are presented in Sections 2.1 and 2.2, respectively.
- When the full hydropunch or bailer was extracted, samples were collected in the appropriate pre-cleaned containers mentioned in Table 1.
- Samples were immediately preserved with the chemicals outlined in Table 1 and placed in coolers at 4°C.

3.2 Document and Sample Control

Field personnel used bound logbooks for the maintenance of all field records pertaining to all field activities. These records were maintained in the EnSafe/Allen & Hoshall project file and documented all visual observations, calculations and equipment adjustments. Every entry was dated, and the time for each entry was noted. The logbooks are accountable documents that will be properly maintained and retained as part of the project files.

3.3 Custody Procedures

To assure that the samples are maintained in a safe and reliable manner, a strict COC procedure was followed. This procedure was implemented in the field and carried out during the entire analytical process. All parties handling the samples signed the COC form and it became a part of the permanent records. Completed COC forms became a part of the laboratory reporting package and part of the data validation criteria. A copy of the COC form used for the samples is presented in Appendix B.

To assess analytical precision, a field duplicate was obtained at monitoring well 13, near Building 8. This duplicate was handled and analyzed along with all other samples. Further evaluation of precision and accuracy was obtained by analyzing matrix spike samples from the same location. An extra volume of sample was collected for volatile matrix spike/matrix spike duplicate analysis. Six extra VOA vials were filled for volatiles analysis.

To evaluate the adequacy of decontamination procedures, one rinsate blank was collected during the investigation. The rinsate blank was obtained by passing organic free water through the hydroprobe mechanism and collecting the water. The sample was analyzed with the other samples. To ensure that extraneous sources had not contaminated the samples, one trip blank was handled and shipped with those being collected. The trip blank consisted of a 40-mL VOA sample container filled with organic-free water by the laboratory. The trip blank was analyzed for volatile organics only and was handled and shipped in the same manner as the other samples.

One field blank was collected during this assessment to check for contamination imparted to the samples by the sample containers or other extraneous sources. The field blank was obtained by filling sample jars from the deionized water source used for decontamination. This blank was handled, shipped, and analyzed with the rest of the samples.

3.4 Health and Safety

A formal plan for the protection of sampling team and third party health and safety was included in the work plan for this project. All field personnel have reviewed the Health and Safety Plan and followed it while in the field.

4.0 ANALYTICAL RESULTS

Laboratory data packages for all samples collected are provided in Appendix A. Figures 3 through 11 summarize all positive results (above method detection limits).

4.1 Data Validation

Volatile organic contaminants detected on site include 1,1-dichloroethane with samples MW-13 and MW-13D and 1,1-dichloroethene with sample HP-3. Sample MW-13D is a duplicate sample of MW-13, which confirms the relative quantification of 1,1-dichloroethane in the groundwater sample to be 0.05 mg/L. Samples MW-13MS (Matrix Spike) and MW-13MSD (Matrix Spike Duplicate) are also duplicate samples of MW-13 which were spiked with known concentrations of various compounds to test the laboratory's recovery of these compounds from the groundwater samples collected at the site. These samples also revealed 1,1-dichloroethane concentrations of 0.05 mg/L. The organic contaminant (1,1-dichloroethene), identified with sample HP-3 exceeds the maximum contaminant level for 1,1-dichloroethene as found in the Federal Safe Drinking Water Act (40 CFR Parts 141-149). A maximum contaminant level (MCL) for 1,1-dichloroethane is not available.

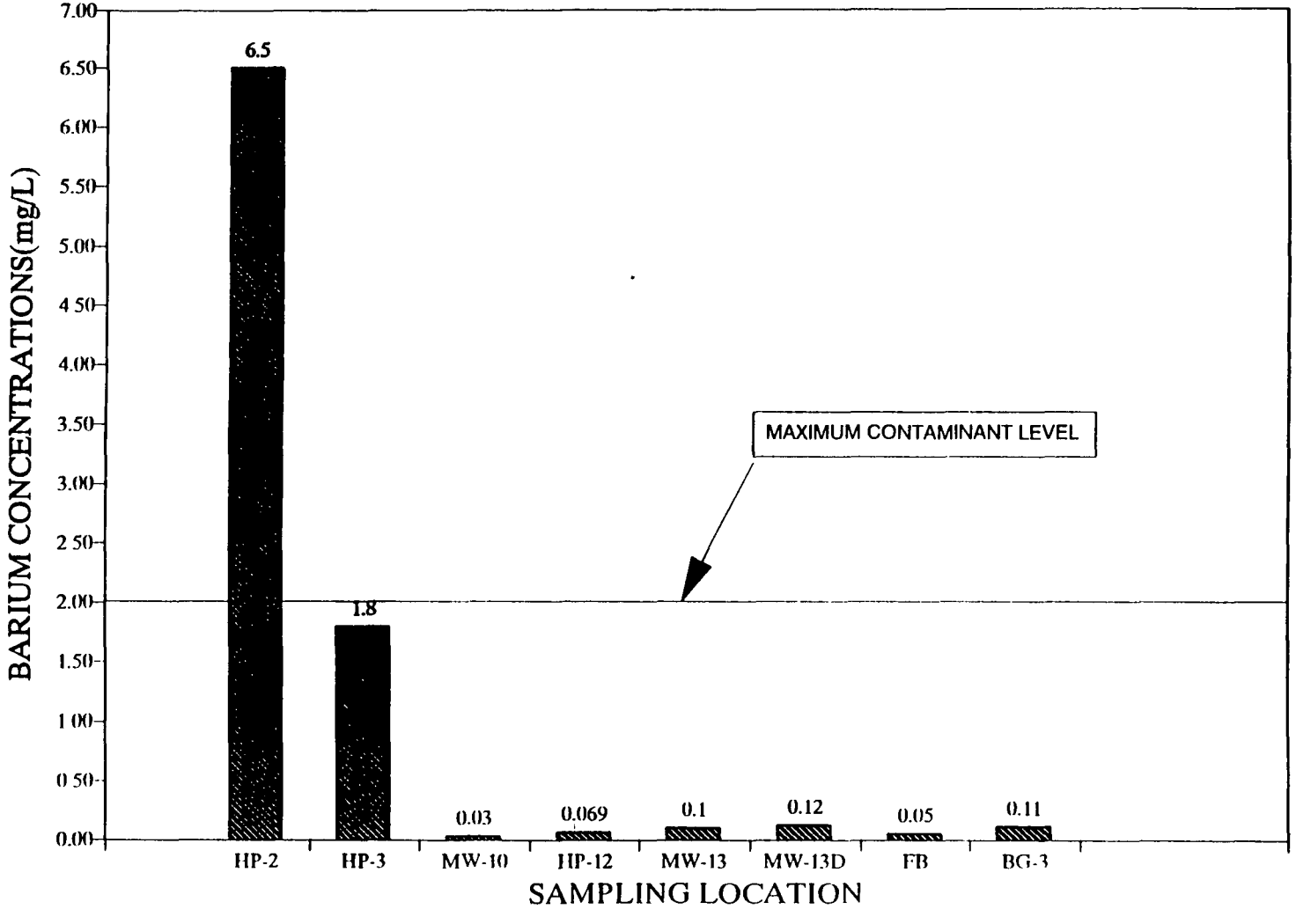
Barium concentrations exceeding the maximum contaminant level were found in sample HP-2. Beryllium, chromium and lead concentrations exceeding the MCL were found in sample HP-3. Lead and beryllium concentrations exceeding the MCL were also found in sample HP-12.

All samples were extracted and analyzed within the required EPA Contract Laboratory Program (CLP) holding times for all volatile organic analysis and within the method specified holding times for all inorganic analysis. All volatile matrix spike/matrix spike duplicates, duplicate recoveries and relative percent differences were within CLP criteria. Also the method blank recoveries were within the QC limits. Therefore, all analytical data has been accepted as usable in accordance with the data quality objectives for this project.

The field blanks (FB) and rinsate blanks (RB) also detected low levels of inorganic contaminants above the method detection limits. Although contaminants were detected, the levels of contaminants do not sufficiently interfere with the sample results and therefore are considered to be too low to warrant further investigation.

Figures 3 through 11 include graphs for each of the contaminants detected in concentrations near and above the MCL for the groundwater samples collected at NAS Corpus Christi. The maximum contaminant level, where applicable, has also been included in the graphs.

FIG.3-LEVELS OF CONTAMINATION IN LOCATIONS CONTAINING BARIUM

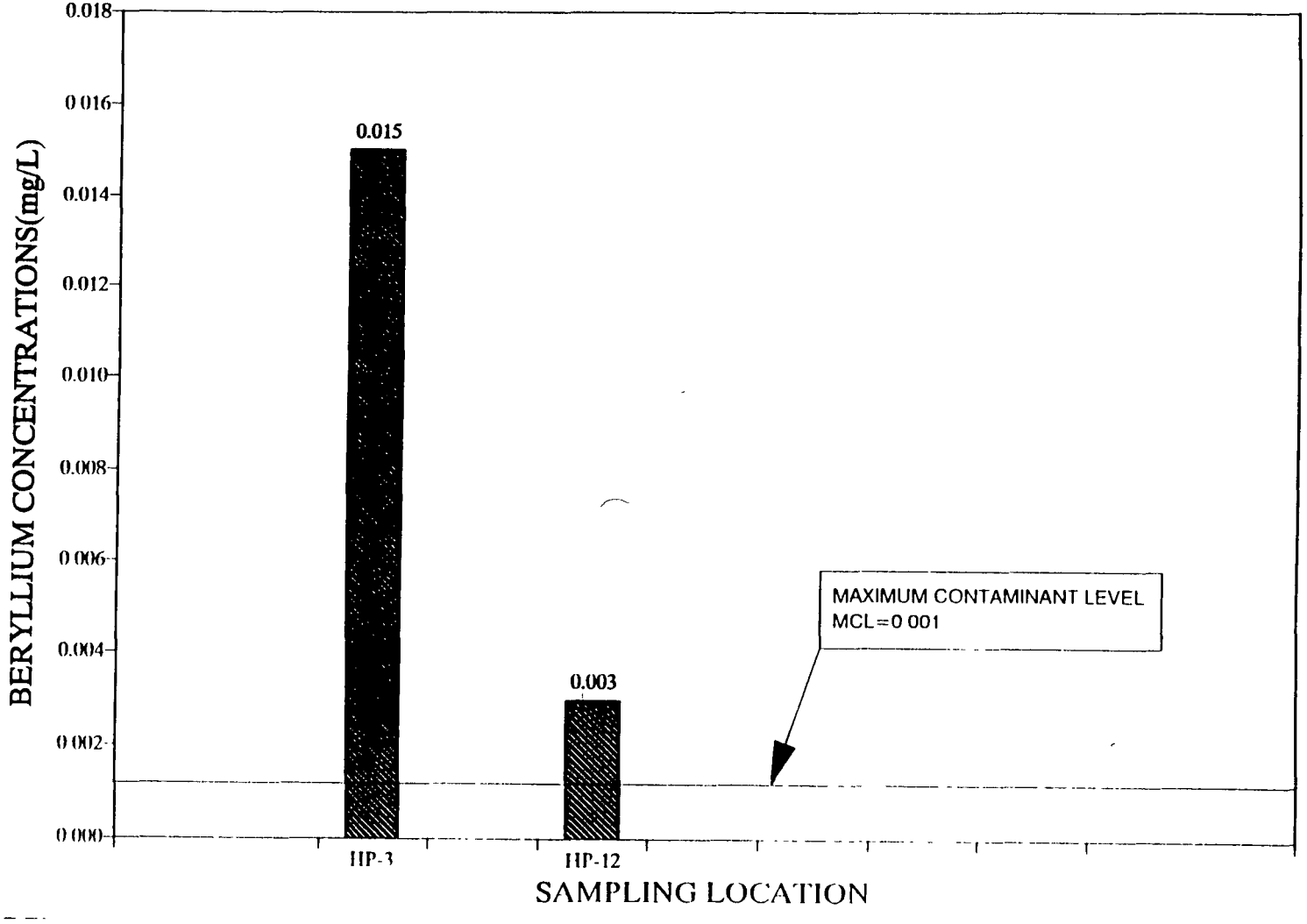


PRELIMINARY INVESTIGATION
BUILDING 8 - CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

FIGURE 3
BARIUM CONCENTRATIONS
BUILDING 8, CCAD
CORPUS CHRISTI, TEXAS

DATE: 03/16/92 | DWG NAME: CTBC3

FIG.4-LEVELS OF CONTAMINATION IN LOCATIONS CONTAINING BERYLLIUM

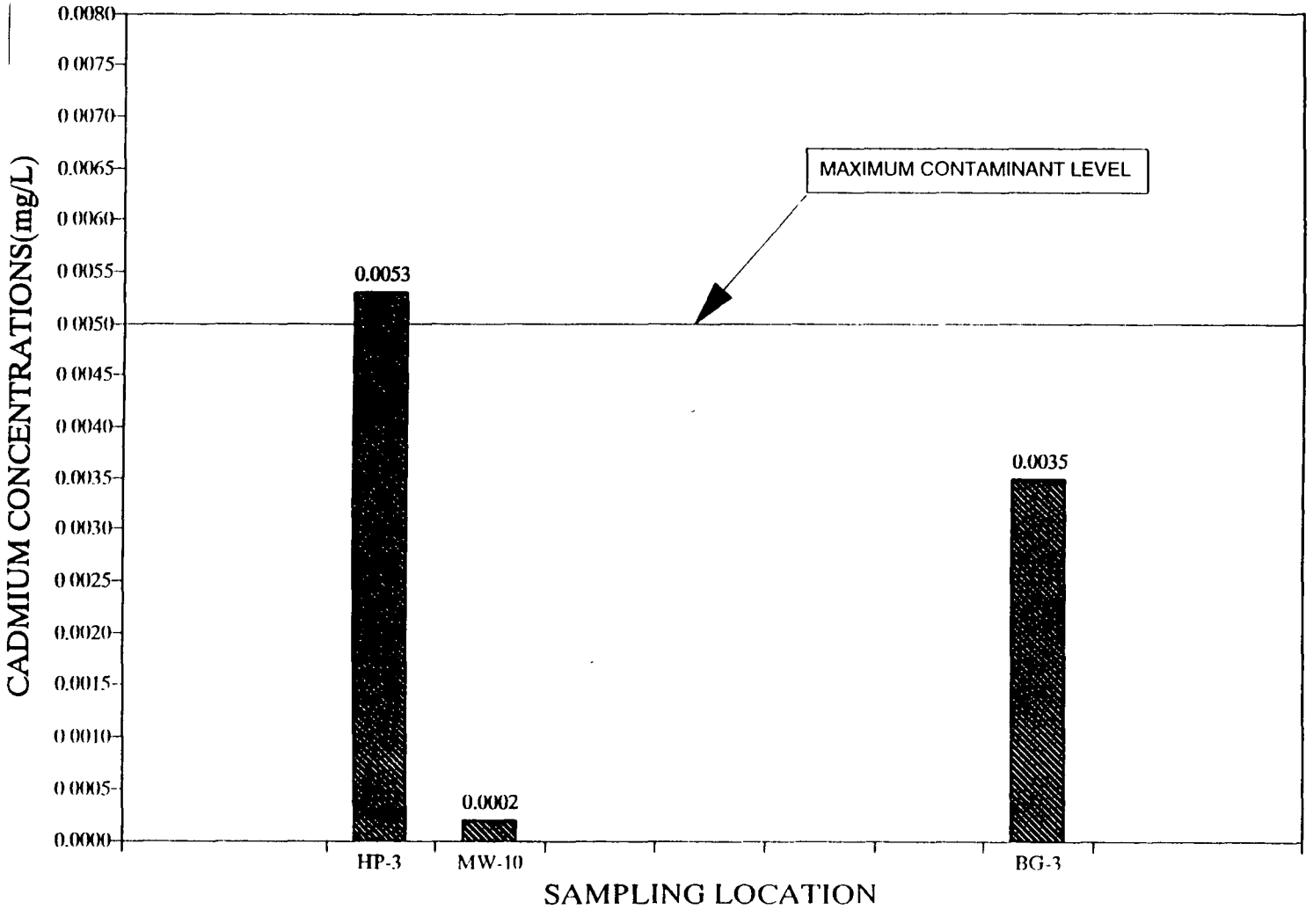


PRELIMINARY INVESTIGATION
BUILDING 8 - CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

FIGURE 4
BERYLLIUM CONCENTRATIONS
BUILDING 8, CCAD
CORPUS CHRISTI, TEXAS

DATE: 03/16/92 | DWG NAME: CTBC3

FIG.5-LEVELS OF CONTAMINATION IN LOCATIONS CONTAINING CADMIUM

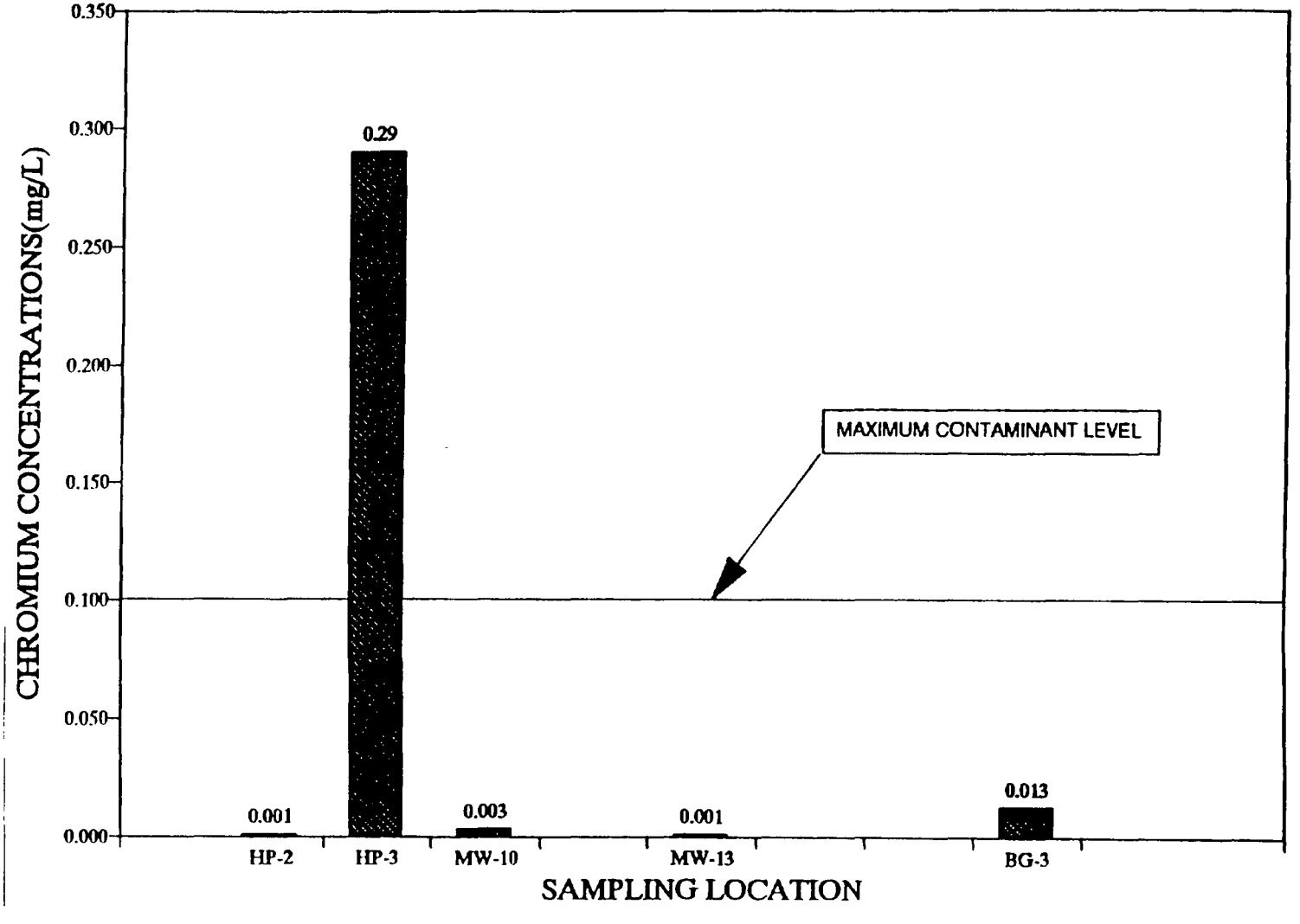


PRELIMINARY INVESTIGATION
BUILDING 8 - CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

FIGURE 5
CADMIUM CONCENTRATIONS
BUILDING 8, CCAD
CORPUS CHRISTI, TEXAS

DATE: 03/16/92 | DWG NAME: CTBC3

FIG.6-LEVELS OF CONTAMINATION IN LOCATIONS CONTAINING CHROMIUM

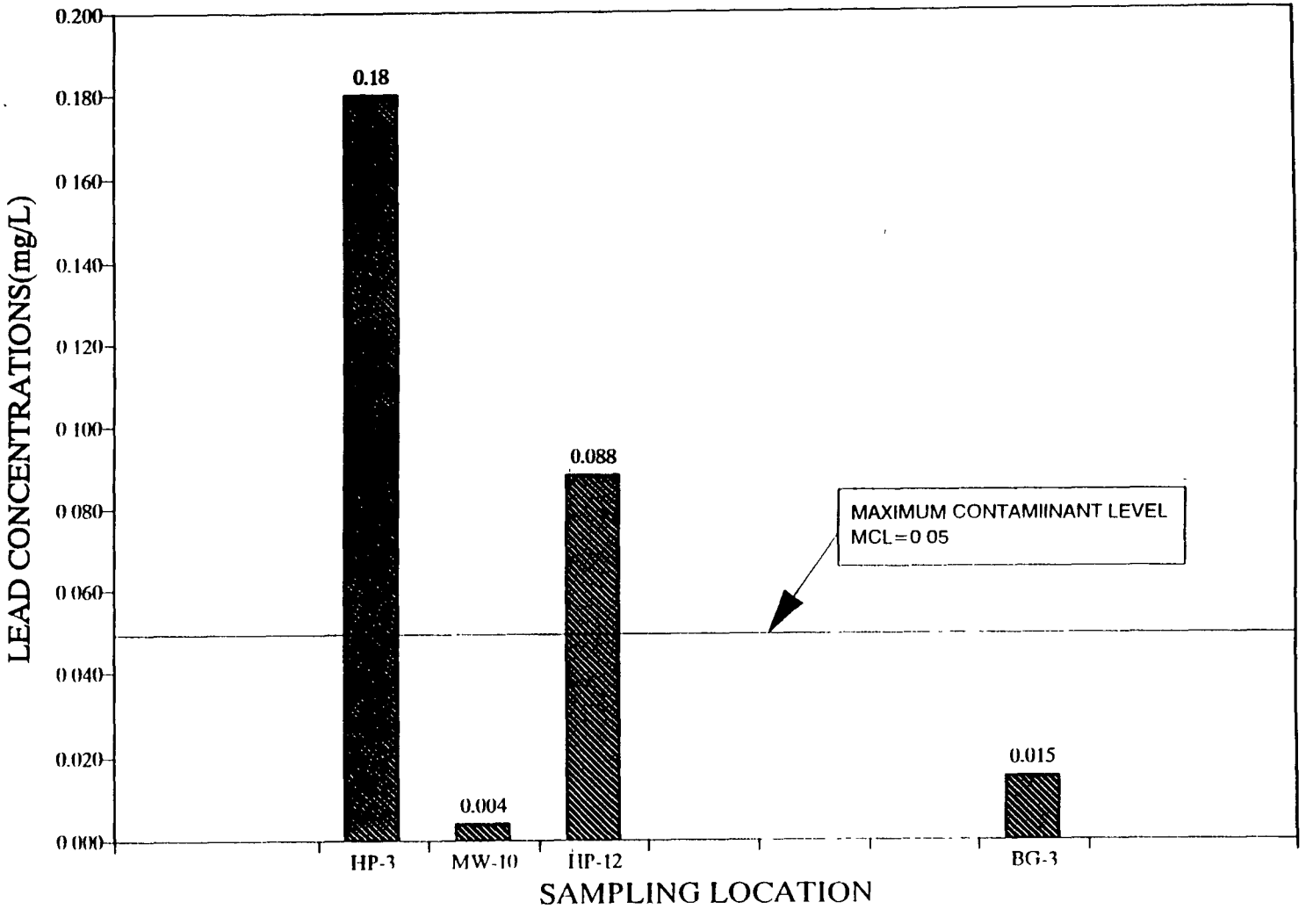


PRELIMINARY INVESTIGATION
BUILDING 8 - CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

FIGURE 6
CHROMIUM CONCENTRATIONS
BUILDING 8, CCAD
CORPUS CHRISTI, TEXAS

DATE 03/16/92 | DWG NAME: CTBC3

FIG.7-LEVELS OF CONTAMINATION IN LOCATIONS CONTAINING LEAD

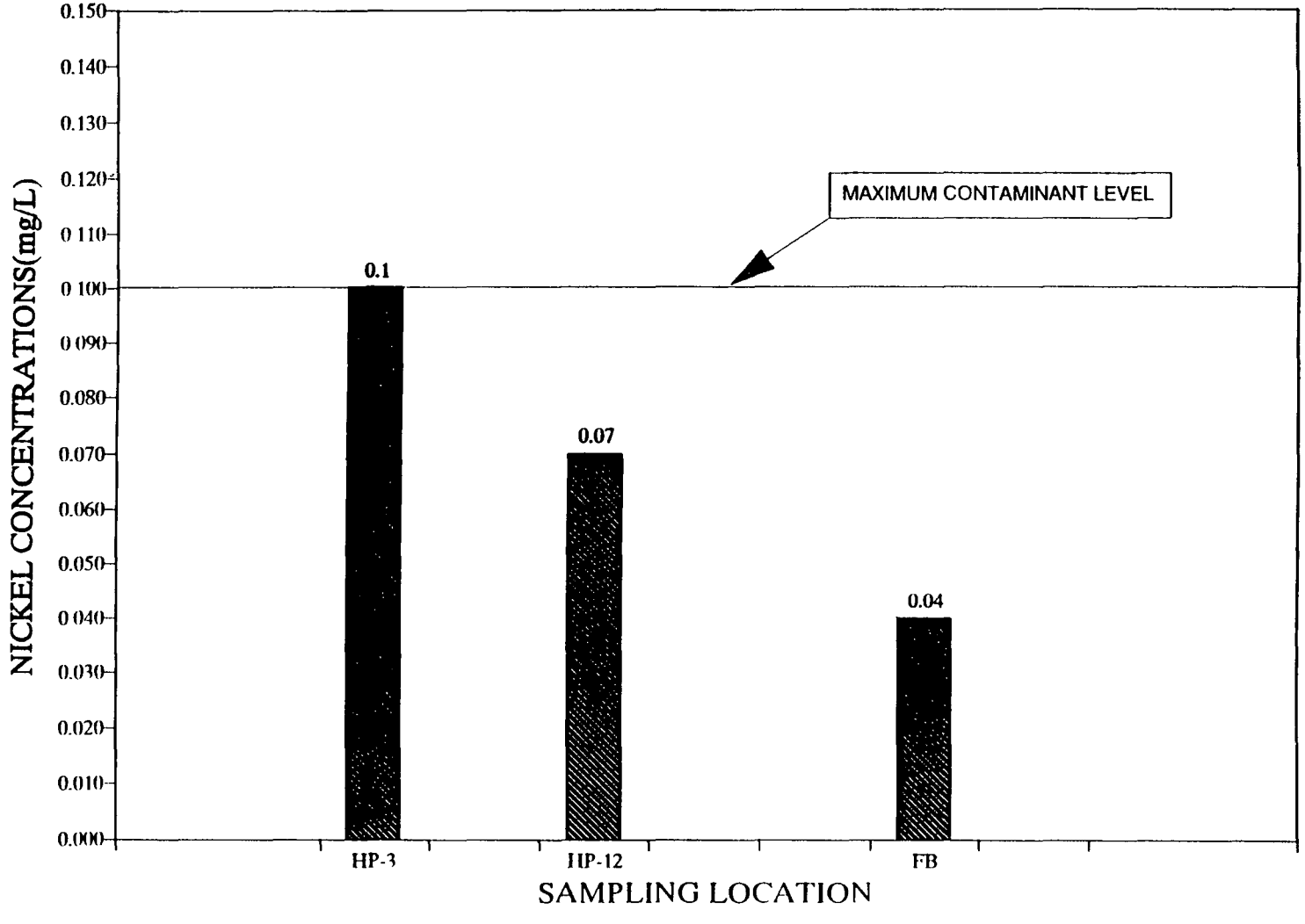


PRELIMINARY INVESTIGATION
BUILDING 8 - CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

FIGURE 7
LEAD CONCENTRATIONS
BUILDING 8, CCAD
CORPUS CHRISTI, TEXAS

DATE 03/16/92 | DWG NAME: CTBC3

FIG.8-LEVELS OF CONTAMINATION IN LOCATIONS CONTAINING NICKEL

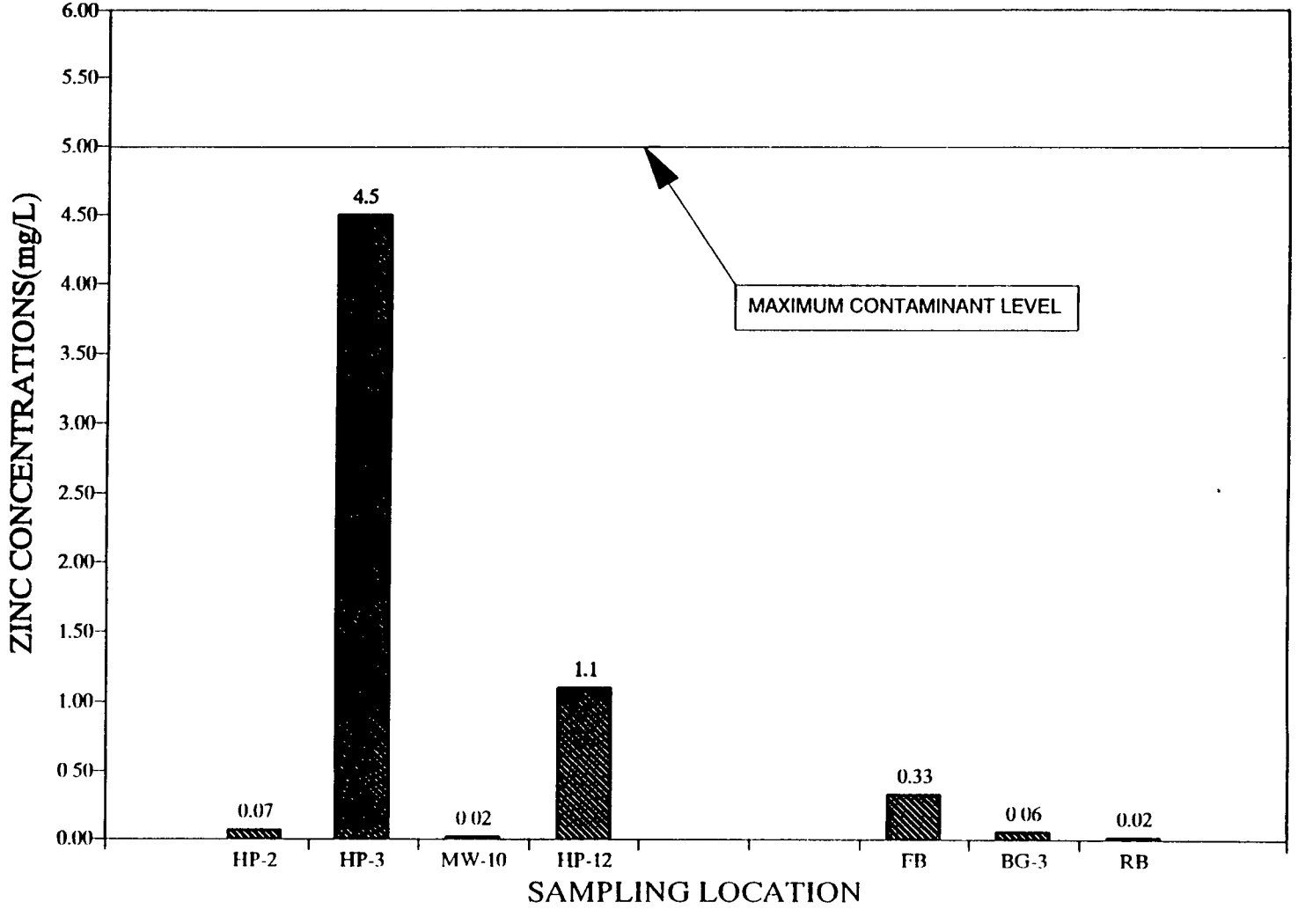


PRELIMINARY INVESTIGATION
BUILDING 8 -- CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

FIGURE 8
NICKEL CONCENTRATIONS
BUILDING 8, CCAD
CORPUS CHRISTI, TEXAS

DATE: 03/16/92 | DWG NAME: CTBC3

FIG.9-LEVELS OF CONTAMINATION IN LOCATIONS CONTAINING ZINC

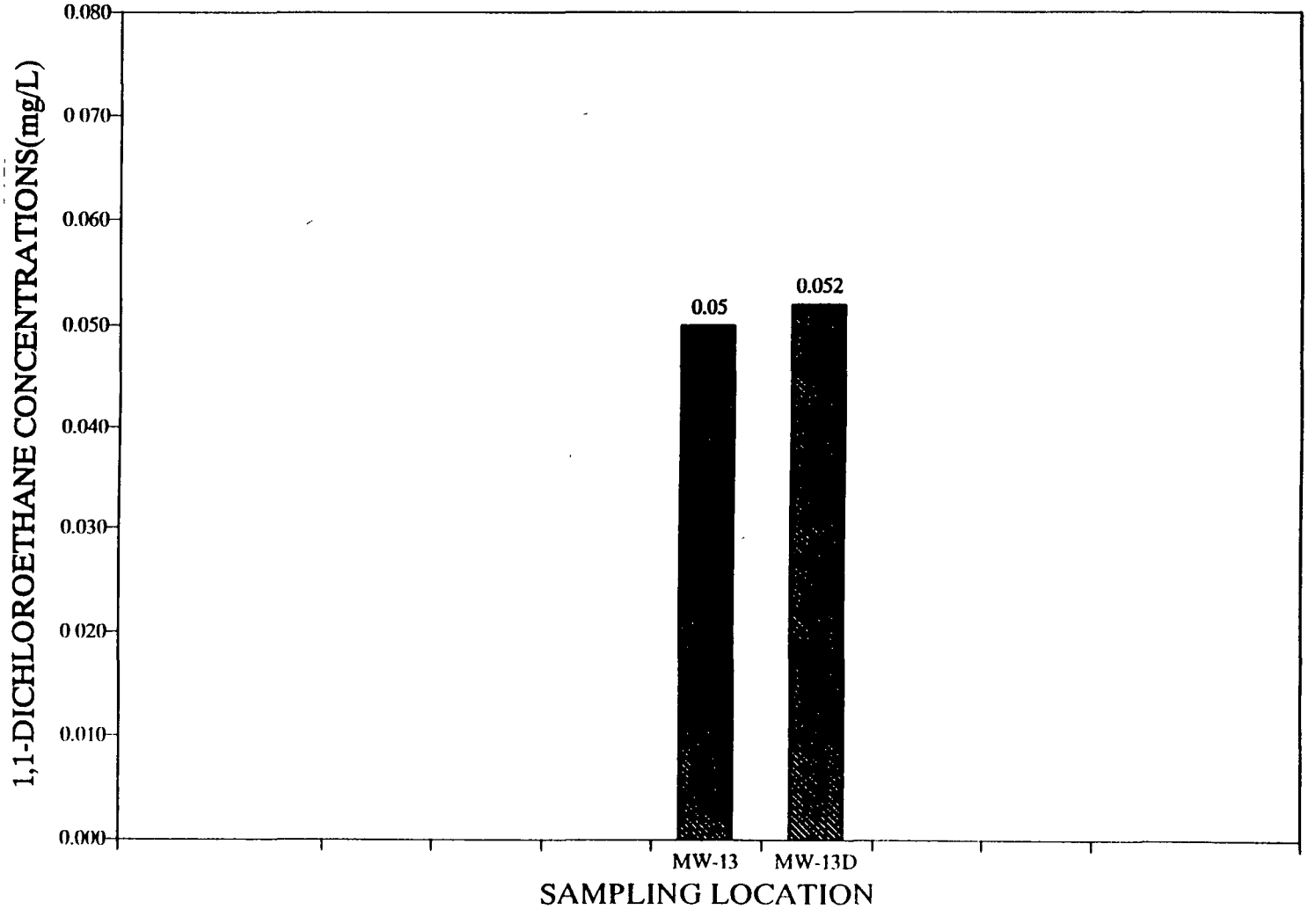


PRELIMINARY INVESTIGATION
BUILDING 8 - CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

FIGURE 9
ZINC CONCENTRATIONS
BUILDING 8, CCAD
CORPUS CHRISTI, TEXAS

DATE: 03/16/92 | DWG NAME: CTBC3

FIG.10-LEVELS OF CONTAMINATION IN LOCATIONS CONTAINING 1,1-DICHLOROETHANE

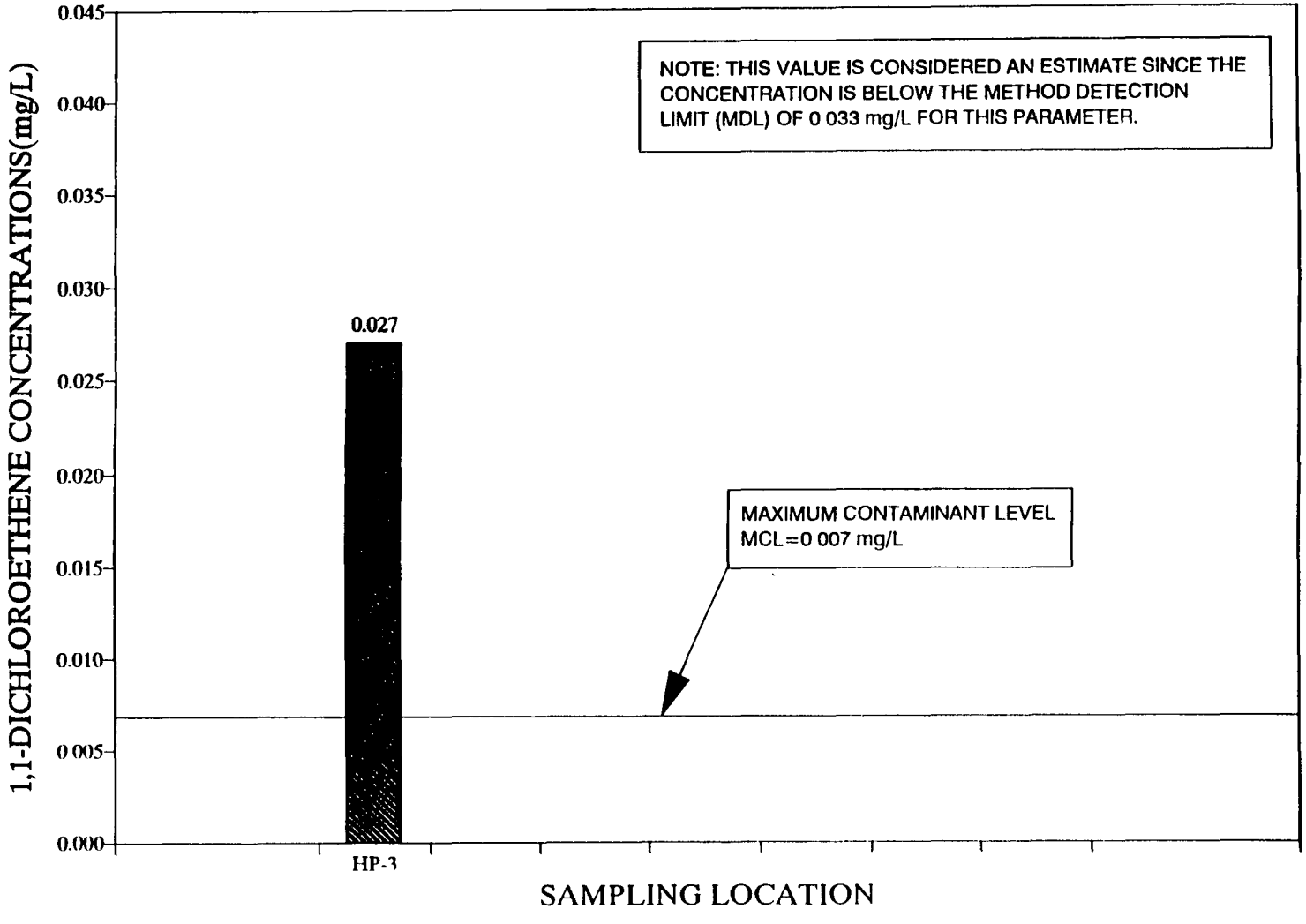


PRELIMINARY INVESTIGATION
BUILDING 8 - CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

FIGURE 10
1,1 - DICHLORDETHENE
CONCENTRATIONS
BUILDING 8, CCAD
CORPUS CHRISTI, TEXAS

DATE 03/16/92 | DWG NAME: CTBC3

FIG.11-LEVELS OF CONTAMINATION IN LOCATIONS CONTAINING 1,1-DICHLOROETHENE



PRELIMINARY INVESTIGATION
BUILDING 8 - CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

FIGURE 11
1,1 - DICHLOROETHENE
CONCENTRATIONS
BUILDING 8, CCAD
CORPUS CHRISTI, TEXAS

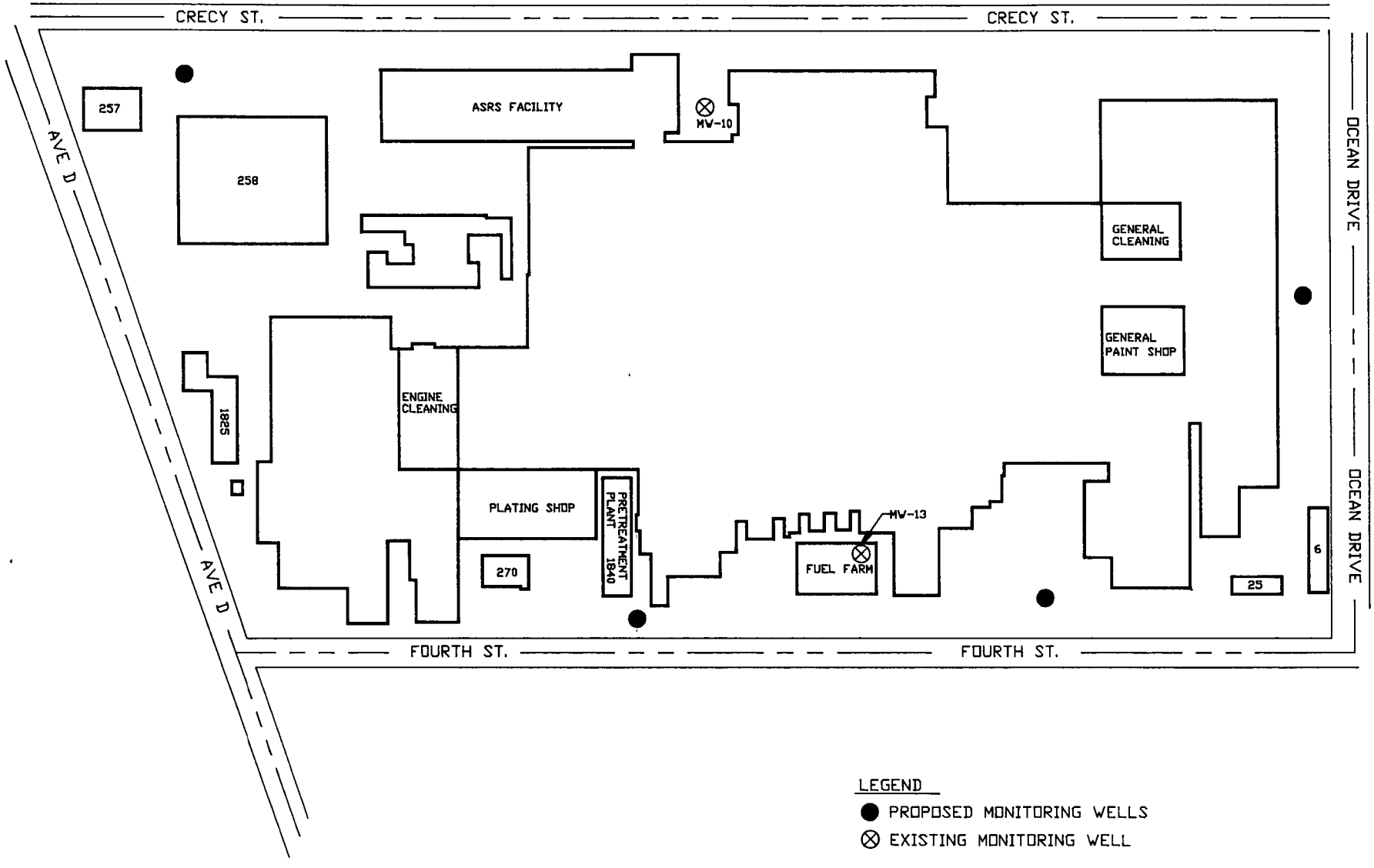
DATE 03/16/92 | DWG NAME: CTBC3

5.0 CONCLUSIONS AND RECOMMENDATIONS

The background sample and the QC samples do not exceed the MCL for any contaminants. Samples which do contain contaminants exceeding specific MCL for metals are found in HP-2, HP-3, HP-12 and in MW-13, as shown in Figures 3 through 9.

Organic parameters in general were detected in concentrations well below the MCL, with the exception of sample HP-3. Sample HP-3 contained 1,1-dichloroethene at 0.027 mg/L which is above the MCL for this compound. Analytical data also indicates that samples collected from MW-13 contain 1,1-dichloroethane at 0.05 ppm. There is, however, no MCL available for 1,1-dichloroethane.

Based on the information available to date, EnSafe/Allen & Hoshall recommends that further investigations be performed in the vicinity of Building 8. Also, special consideration should be given to the fact that samples collected by the hydroprobe method contained solid materials (silts, sands, etc.), which can interfere with the true level of contaminants in groundwater, especially concentrations of metals. E/A&H recommends that at least four monitoring wells be installed at the locations identified in Figure 12 as part of the additional investigation to obtain groundwater samples more indicative of the true aquifer conditions. Groundwater samples collected from these wells and the two existing wells should be analyzed for Volatile Organic Compounds, Semi-Volatile Organic Compounds and Appendix IX Metals.



NOT TO SCALE

PRELIMINARY INVESTIGATION
BUILDING 8 - CCAD
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

FIGURE 12
BUILDING 8, CCAD
PROPOSED MONITORING WELL LOCATIONS
CORPUS CHRISTI, TEXAS

DATE: 03/10/92 | DWG NAME: SDSCC

APPENDIX A

LABORATORY ANALYTICAL DATA

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

'nSafe
5720 Summer Trees Drive Suite 8
Memphis, TN 38134

December 24, 1991
PACE Project Number: 411121508

Attn: Mr. Jeff Bennett

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122643	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			HP-6	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Chloromethane	ug/L	10	ND	11/25/91
Bromomethane	ug/L	10	ND	11/25/91
Vinyl Cloride	ug/L	10	ND	11/25/91
Chloroethane	ug/L	10	ND	11/25/91
Methylene Chloride	ug/L	10	ND	11/25/91
Acetone	ug/L	10	ND	11/25/91
Carbon Disulfide	ug/L	10	ND	11/25/91
',1-Dichloroethene	ug/L	10	ND	11/25/91
,1-Dichloroethane	ug/L	10	ND	11/25/91
1,1-Dichloroethene (total)	ug/L	10	ND	11/25/91
Chloroform	ug/L	10	ND	11/25/91
1,2-Dichloroethane	ug/L	10	ND	11/25/91
2-Butanone	ug/L	10	ND	11/25/91
1,1,1-Trichlorethane	ug/L	10	ND	11/25/91
Carbon Tetrachloride	ug/L	10	ND	11/25/91
Bromodichloromethane	ug/L	10	ND	11/25/91
1,2-Dichloropropane	ug/L	10	ND	11/25/91
cis-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Trichloroethene	ug/L	10	ND	11/25/91
Dibromochloromethane	ug/L	10	ND	11/25/91
1,1,2-Trichloroethane	ug/L	10	ND	11/25/91
Benzene	ug/L	10	ND	11/25/91
trans-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Bromoform	ug/L	10	ND	11/25/91
4-Methyl-2-Pentanone	ug/L	10	ND	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

.r. Jeff Bennett
Page 2

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122643	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			HP-6	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
2-Hexanone	ug/L	10	ND	11/25/91
Tetrachloroethene	ug/L	10	ND	11/25/91
1,1,2,2-Tetrachloroethane	ug/L	10	ND	11/25/91
Toluene	ug/L	10	ND	11/25/91
Chlorobenzene	ug/L	10	ND	11/25/91
Ethylbenzene	ug/L	10	ND	11/25/91
Styrene	ug/L	10	ND	11/25/91
Xylene (total)	ug/L	10	ND	11/25/91
1,2-Dichloroethane-d4			103%	11/25/91
Toluene-d8			99%	11/25/91
-Bromofluorobenzene			98%	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

Mr. Jeff Bennett
Page 3

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122651	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			HP-12	
Parameter	Units	MDL		DATE ANALYZED
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Antimony (EPA Method 7041, Furnace AAS)	mg/L	0.005	ND	12/10/91
Arsenic (EPA Method 7060, Furnace AAS)	mg/L	0.005	ND	12/04/91
Barium (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.069	12/12/91
Beryllium (EPA 7091)	mg/L	0.002	0.003	12/16/91
Cadmium (EPA Method 7131, Furnace AAS)	mg/L	0.0001	ND	12/06/91
Chromium (EPA Method 7191, Furnace AAS)	mg/L	0.001	ND	12/06/91
Cobalt (EPA 7201)	mg/L	0.005	0.03	12/13/91
Copper (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.03	12/12/91
Lead (EPA Method 7421, Graphite Furnace)	mg/L	0.003	0.088	12/05/91
Mercury (EPA Method 7470, Cold Vapor AA)	mg/L	0.0002	ND	12/12/91
Nickel (EPA Method 6010/200.7, ICP)	mg/L	0.02	0.07	12/12/91
Selenium (EPA Method 7740, Furnace AAS)	mg/L	0.005	ND	12/04/91
Silver (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Thallium (EPA Method 7841, Furnace AAS)	mg/L	0.005	ND	12/05/91
Tin (EPA 6010)	mg/L	5	ND	12/20/91
Vanadium (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.07	12/24/91
Zinc (EPA Method 6010/200.7, ICP)	mg/L	0.01	1.1	12/12/91
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Chloromethane	ug/L	10	ND	11/25/91
Bromomethane	ug/L	10	ND	11/25/91
Vinyl Cloride	ug/L	10	ND	11/25/91
Chloroethane	ug/L	10	ND	11/25/91
Methylene Chloride	ug/L	10	ND	11/25/91
Acetone	ug/L	10	ND	11/25/91
Carbon Disulfide	ug/L	10	ND	11/25/91
1,1-Dichloroethene	ug/L	10	ND	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

REPORT OF LABORATORY ANALYSIS

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122651	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			HP-12	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
1,1-Dichloroethane	ug/L	10	ND	11/25/91
1,1-Dichloroethene (total)	ug/L	10	ND	11/25/91
Chloroform	ug/L	10	ND	11/25/91
1,2-Dichloroethane	ug/L	10	ND	11/25/91
2-Butanone	ug/L	10	ND	11/25/91
1,1,1-Trichlorethane	ug/L	10	ND	11/25/91
Carbon Tetrachloride	ug/L	10	ND	11/25/91
Bromodichloromethane	ug/L	10	ND	11/25/91
1,2-Dichloropropane	ug/L	10	ND	11/25/91
cis-1,3-Dichloropropene	ug/L	10	ND	11/25/91
richloroethene	ug/L	10	ND	11/25/91
Dibromochloromethane	ug/L	10	ND	11/25/91
1,1,2-Trichloroethane	ug/L	10	ND	11/25/91
Benzene	ug/L	10	ND	11/25/91
trans-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Bromoform	ug/L	10	ND	11/25/91
4-Methyl-2-Pentanone	ug/L	10	ND	11/25/91
2-Hexanone	ug/L	10	ND	11/25/91
Tetrachloroethene	ug/L	10	ND	11/25/91
1,1,2,2-Tetrachloroethane	ug/L	10	ND	11/25/91
Toluene	ug/L	10	ND	11/25/91
Chlorobenzene	ug/L	10	ND	11/25/91
Ethylbenzene	ug/L	10	ND	11/25/91
Styrene	ug/L	10	ND	11/25/91
Xylene (total)	ug/L	10	ND	11/25/91
1,2-Dichloroethane-d4			98%	11/25/91
Toluene-d8			99%	11/25/91
4-Bromofluorobenzene			100%	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

REPORT OF LABORATORY ANALYSIS

Mr. Jeff Bennett
Page 5

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122660	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			MW-13	
Parameter	Units	MDL		DATE ANALYZED
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Antimony (EPA Method 7041, Furnace AAS)	mg/L	0.005	ND	12/10/91
Arsenic (EPA Method 7060, Furnace AAS)	mg/L	0.005	ND	12/04/91
Barium (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.10	12/12/91
Beryllium (EPA 7091)	mg/L	0.002	ND	12/16/91
Cadmium (EPA Method 7131, Furnace AAS)	mg/L	0.0001	ND	12/06/91
Chromium (EPA Method 7191, Furnace AAS)	mg/L	0.001	0.001	12/06/91
Cobalt (EPA 7201)	mg/L	0.005	ND	12/13/91
Copper (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Lead (EPA Method 7421, Graphite Furnace)	mg/L	0.003	ND	12/05/91
Mercury (EPA Method 7470, Cold Vapor AA)	mg/L	0.0002	ND	12/12/91
Nickel (EPA Method 6010/200.7, ICP)	mg/L	0.02	ND	12/12/91
Selenium (EPA Method 7740, Furnace AAS)	mg/L	0.005	ND	12/04/91
Silver (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Thallium (EPA Method 7841, Furnace AAS)	mg/L	0.005	ND	12/05/91
Tin (EPA 6010)	mg/L	5	ND	12/20/91
Vanadium (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.01	12/24/91
Zinc (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Chloromethane	ug/L	10	ND	11/25/91
Bromomethane	ug/L	10	ND	11/25/91
Vinyl Cloride	ug/L	10	ND	11/25/91
Chloroethane	ug/L	10	ND	11/25/91
Methylene Chloride	ug/L	10	ND	11/25/91
Acetone	ug/L	10	ND	11/25/91
Carbon Disulfide	ug/L	10	ND	11/25/91
1,1-Dichloroethene	ug/L	10	ND	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

Mr. Jeff Bennett
Page 6

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122660	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			MW-13	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
1,1-Dichloroethane	ug/L	10	50	11/25/91
1,1-Dichloroethene (total)	ug/L	10	ND	11/25/91
Chloroform	ug/L	10	ND	11/25/91
1,2-Dichloroethane	ug/L	10	ND	11/25/91
2-Butanone	ug/L	10	ND	11/25/91
1,1,1-Trichlorethane	ug/L	10	ND	11/25/91
Carbon Tetrachloride	ug/L	10	ND	11/25/91
Bromodichloromethane	ug/L	10	ND	11/25/91
1,2-Dichloropropane	ug/L	10	ND	11/25/91
cis-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Trichloroethene	ug/L	10	ND	11/25/91
Dibromochloromethane	ug/L	10	ND	11/25/91
1,1,2-Trichloroethane	ug/L	10	ND	11/25/91
Benzene	ug/L	10	ND	11/25/91
trans-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Bromoform	ug/L	10	ND	11/25/91
4-Methyl-2-Pentanone	ug/L	10	ND	11/25/91
2-Hexanone	ug/L	10	ND	11/25/91
Tetrachloroethene	ug/L	10	ND	11/25/91
1,1,2,2-Tetrachloroethane	ug/L	10	ND	11/25/91
Toluene	ug/L	10	ND	11/25/91
Chlorobenzene	ug/L	10	ND	11/25/91
Ethylbenzene	ug/L	10	ND	11/25/91
Styrene	ug/L	10	ND	11/25/91
Xylene (total)	ug/L	10	ND	11/25/91
1,2-Dichloroethane-d4			98%	11/25/91
Toluene-d8			99%	11/25/91
4-Bromofluorobenzene			100%	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

Mr. Jeff Bennett
Page 7

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122678	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			MW-13D	
Parameter	Units	MDL		DATE ANALYZED
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Antimony (EPA Method 7041, Furnace AAS)	mg/L	0.005	ND	12/10/91
Arsenic (EPA Method 7060, Furnace AAS)	mg/L	0.005	ND	12/04/91
Barium (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.12	12/12/91
Beryllium (EPA 7091)	mg/L	0.002	ND	12/16/91
Cadmium (EPA Method 7131, Furnace AAS)	mg/L	0.0001	ND	12/06/91
Chromium (EPA Method 7191, Furnace AAS)	mg/L	0.001	ND	12/06/91
Cobalt (EPA 7201)	mg/L	0.005	ND	12/13/91
Copper (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Lead (EPA Method 7421, Graphite Furnace)	mg/L	0.003	ND	12/05/91
Mercury (EPA Method 7470, Cold Vapor AA)	mg/L	0.0002	ND	12/12/91
Nickel (EPA Method 6010/200.7, ICP)	mg/L	0.02	ND	12/12/91
Selenium (EPA Method 7740, Furnace AAS)	mg/L	0.005	ND	12/04/91
Silver (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Thallium (EPA Method 7841, Furnace AAS)	mg/L	0.005	ND	12/05/91
Tin (EPA 6010)	mg/L	5	ND	12/20/91
Vanadium (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.01	12/24/91
Zinc (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Chloromethane	ug/L	10	ND	11/25/91
Bromomethane	ug/L	10	ND	11/25/91
Vinyl Cloride	ug/L	10	ND	11/25/91
Chloroethane	ug/L	10	ND	11/25/91
Methylene Chloride	ug/L	10	ND	11/25/91
Acetone	ug/L	10	ND	11/25/91
Carbon Disulfide	ug/L	10	ND	11/25/91
1,1-Dichloroethene	ug/L	10	ND	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

REPORT OF LABORATORY ANALYSIS

December 24, 1991
PACE Project Number: 41112150E

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122678	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			MW-13D	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
1,1-Dichloroethane	ug/L	10	52	11/25/91
1,1-Dichloroethene (total)	ug/L	10	ND	11/25/91
Chloroform	ug/L	10	ND	11/25/91
1,2-Dichloroethane	ug/L	10	ND	11/25/91
2-Butanone	ug/L	10	ND	11/25/91
1,1,1-Trichlorethane	ug/L	10	ND	11/25/91
Carbon Tetrachloride	ug/L	10	ND	11/25/91
Bromodichloromethane	ug/L	10	ND	11/25/91
1,2-Dichloropropane	ug/L	10	ND	11/25/91
cis-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Trichloroethene	ug/L	10	ND	11/25/91
Dibromochloromethane	ug/L	10	ND	11/25/91
1,1,2-Trichloroethane	ug/L	10	ND	11/25/91
Benzene	ug/L	10	ND	11/25/91
trans-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Bromoform	ug/L	10	ND	11/25/91
4-Methyl-2-Pentanone	ug/L	10	ND	11/25/91
2-Hexanone	ug/L	10	ND	11/25/91
Tetrachloroethene	ug/L	10	ND	11/25/91
1,1,2,2-Tetrachloroethane	ug/L	10	ND	11/25/91
Toluene	ug/L	10	ND	11/25/91
Chlorobenzene	ug/L	10	ND	11/25/91
Ethylbenzene	ug/L	10	ND	11/25/91
Styrene	ug/L	10	ND	11/25/91
Xylene (total)	ug/L	10	ND	11/25/91
1,2-Dichloroethane-d4			104%	11/25/91
Toluene-d8			100%	11/25/91
4-Bromofluorobenzene			101%	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

Mr. Jeff Bennett
Page 9

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122686	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			MW-13MS	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Chloromethane	ug/L	10	ND	11/25/91
Bromomethane	ug/L	10	ND	11/25/91
Vinyl Cloride	ug/L	10	ND	11/25/91
Chloroethane	ug/L	10	ND	11/25/91
Methylene Chloride	ug/L	10	ND	11/25/91
Acetone	ug/L	10	ND	11/25/91
Carbon Disulfide	ug/L	10	ND	11/25/91
1,1-Dichloroethene	ug/L	10	42 M	11/25/91
1,1-Dichloroethane	ug/L	10	52	11/25/91
1,1-Dichloroethene (total)	ug/L	10	ND	11/25/91
Chloroform	ug/L	10	ND	11/25/91
1,2-Dichloroethane	ug/L	10	ND	11/25/91
2-Butanone	ug/L	10	ND	11/25/91
1,1,1-Trichlorethane	ug/L	10	ND	11/25/91
Carbon Tetrachloride	ug/L	10	ND	11/25/91
Bromodichloromethane	ug/L	10	ND	11/25/91
1,2-Dichloropropane	ug/L	10	ND	11/25/91
cis-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Trichloroethene	ug/L	10	48 M	11/25/91
Dibromochloromethane	ug/L	10	ND	11/25/91
1,1,2-Trichloroethane	ug/L	10	ND	11/25/91
Benzene	ug/L	10	47 M	11/25/91
trans-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Bromoform	ug/L	10	ND	11/25/91
4-Methyl-2-Pentanone	ug/L	10	ND	11/25/91
2-Hexanone	ug/L	10	ND	11/25/91
Tetrachloroethene	ug/L	10	ND	11/25/91
1,1,2,2-Tetrachloroethane	ug/L	10	ND	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.
'M) Compound spiked into sample at 50 ug/L.

REPORT OF LABORATORY ANALYSIS

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122686	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			MW-13MS	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Toluene	ug/L	10	49 M	11/25/91
Chlorobenzene	ug/L	10	52 M	11/25/91
Ethylbenzene	ug/L	10	ND	11/25/91
Styrene	ug/L	10	ND	11/25/91
Xylene (total)	ug/L	10	ND	11/25/91
1,2-Dichloroethane-d4			102%	11/25/91
Toluene-d8			97%	11/25/91
4-Bromofluorobenzene			101%	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.
(M) Compound spiked into sample at 50 ug/L.

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

Mr. Jeff Bennett
Page 11

December 24, 1991
PACE Project Number: 41112150E

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122694	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			MW-13MSD	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Chloromethane	ug/L	10	ND	11/25/91
Bromomethane	ug/L	10	ND	11/25/91
Vinyl Cloride	ug/L	10	ND	11/25/91
Chloroethane	ug/L	10	ND	11/25/91
Methylene Chloride	ug/L	10	ND	11/25/91
Acetone	ug/L	10	ND	11/25/91
Carbon Disulfide	ug/L	10	ND	11/25/91
1,1-Dichloroethene	ug/L	10	42 M	11/25/91
1,1-Dichloroethane	ug/L	10	51	11/25/91
1,1-Dichloroethene (total)	ug/L	10	ND	11/25/91
Chloroform	ug/L	10	ND	11/25/91
1,2-Dichloroethane	ug/L	10	ND	11/25/91
2-Butanone	ug/L	10	ND	11/25/91
1,1,1-Trichlorethane	ug/L	10	ND	11/25/91
Carbon Tetrachloride	ug/L	10	ND	11/25/91
Bromodichloromethane	ug/L	10	ND	11/25/91
1,2-Dichloropropane	ug/L	10	ND	11/25/91
cis-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Trichloroethene	ug/L	10	49 M	11/25/91
Dibromochloromethane	ug/L	10	ND	11/25/91
1,1,2-Trichloroethane	ug/L	10	ND	11/25/91
Benzene	ug/L	10	47 M	11/25/91
trans-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Bromoform	ug/L	10	ND	11/25/91
4-Methyl-2-Pentanone	ug/L	10	ND	11/25/91
2-Hexanone	ug/L	10	ND	11/25/91
Tetrachloroethene	ug/L	10	ND	11/25/91
1,1,2,2-Tetrachloroethane	ug/L	10	ND	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.
(M) Compound spiked into sample at 50 ug/L.

Mr. Jeff Bennett
Page 12

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122694	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			MW-13MSD	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Toluene	ug/L	10	50 M	11/25/91
Chlorobenzene	ug/L	10	53 M	11/25/91
Ethylbenzene	ug/L	10	ND	11/25/91
Styrene	ug/L	10	ND	11/25/91
Xylene (total)	ug/L	10	ND	11/25/91
1,2-Dichloroethane-d4			99%	11/25/91
Toluene-d8			101%	11/25/91
4-Bromofluorobenzene			99%	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.
(M) Compound spiked into sample at 50 ug/L.

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

Mr. Jeff Bennett
Page 13

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122708	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			HP-3	
Parameter	Units	MDL		DATE ANALYZED
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Antimony (EPA Method 7041, Furnace AAS)	mg/L	0.005	ND	12/10/91
Arsenic (EPA Method 7060, Furnace AAS)	mg/L	0.005	0.014	12/04/91
Barium (EPA Method 6010/200.7, ICP)	mg/L	0.01	1.8	12/12/91
Beryllium (EPA 7091)	mg/L	0.002	0.015	12/16/91
Cadmium (EPA Method 7131, Furnace AAS)	mg/L	0.0001	0.0053	12/06/91
Chromium (EPA Method 7191, Furnace AAS)	mg/L	0.001	0.29	12/06/91
Cobalt (EPA 7201)	mg/L	0.005	0.059	12/13/91
Copper (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.08	12/12/91
Lead (EPA Method 7421, Graphite Furnace)	mg/L	0.003	0.180	12/05/91
Mercury (EPA Method 7470, Cold Vapor AA)	mg/L	0.0002	ND	12/12/91
Nickel (EPA Method 6010/200.7, ICP)	mg/L	0.02	0.10	12/12/91
Selenium (EPA Method 7740, Furnace AAS)	mg/L	0.005	ND	12/04/91
Silver (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Thallium (EPA Method 7841, Furnace AAS)	mg/L	0.005	ND	12/05/91
Tin (EPA 6010)	mg/L	5	ND	12/20/91
Vanadium (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/24/91
Zinc (EPA Method 6010/200.7, ICP)	mg/L	0.01	4.5	12/12/91
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Chloromethane	ug/L	33	ND	11/27/91
Bromomethane	ug/L	33	ND	11/27/91
Vinyl Cloride	ug/L	33	ND	11/27/91
Chloroethane	ug/L	33	ND	11/27/91
Methylene Chloride	ug/L	33	ND	11/27/91
Acetone	ug/L	33	ND	11/27/91
Carbon Disulfide	ug/L	33	ND	11/27/91
1,1-Dichloroethene	ug/L	33	ND	11/27/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

r. Jeff Bennett
Page 14

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122708	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			HP-3	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
1,1-Dichloroethane	ug/L	33	ND	11/27/91
1,1-Dichloroethene (total)	ug/L	33	27	11/27/91
Chloroform	ug/L	33	ND	11/27/91
1,2-Dichloroethane	ug/L	33	ND	11/27/91
2-Butanone	ug/L	33	ND	11/27/91
1,1,1-Trichlorethane	ug/L	33	ND	11/27/91
Carbon Tetrachloride	ug/L	33	ND	11/27/91
Bromodichloromethane	ug/L	33	ND	11/27/91
1,2-Dichloropropane	ug/L	33	ND	11/27/91
cis-1,3-Dichloropropene	ug/L	33	ND	11/27/91
richloroethene	ug/L	33	ND	11/27/91
ibromochloromethane	ug/L	33	ND	11/27/91
1,1,2-Trichloroethane	ug/L	33	ND	11/27/91
Benzene	ug/L	33	ND	11/27/91
trans-1,3-Dichloropropene	ug/L	33	ND	11/27/91
Bromoform	ug/L	33	ND	11/27/91
4-Methyl-2-Pentanone	ug/L	33	ND	11/27/91
2-Hexanone	ug/L	33	ND	11/27/91
Tetrachloroethene	ug/L	33	ND	11/27/91
1,1,2,2-Tetrachloroethane	ug/L	33	ND	11/27/91
Toluene	ug/L	33	ND	11/27/91
Chlorobenzene	ug/L	33	ND	11/27/91
Ethylbenzene	ug/L	33	ND	11/27/91
Styrene	ug/L	33	ND	11/27/91
Xylene (total)	ug/L	33	ND	11/27/91
1,2-Dichloroethane-d4			99%	11/27/91
Toluene-d8			102%	11/27/91
4-Bromofluorobenzene			99%	11/27/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

REPORT OF LABORATORY ANALYSIS

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122716	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			MW-10	
Parameter	Units	MDL		DATE ANALYZED
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Antimony (EPA Method 7041, Furnace AAS)	mg/L	0.005	ND	12/10/91
Arsenic (EPA Method 7060, Furnace AAS)	mg/L	0.005	ND	12/04/91
Barium (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.03	12/12/91
Beryllium (EPA 7091)	mg/L	0.002	ND	12/16/91
Cadmium (EPA Method 7131, Furnace AAS)	mg/L	0.0001	0.0002	12/06/91
Chromium (EPA Method 7191, Furnace AAS)	mg/L	0.001	0.003	12/06/91
Cobalt (EPA 7201)	mg/L	0.005	ND	12/13/91
Copper (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Lead (EPA Method 7421, Graphite Furnace)	mg/L	0.003	0.004	12/05/91
Mercury (EPA Method 7470, Cold Vapor AA)	mg/L	0.0002	ND	12/12/91
Nickel (EPA Method 6010/200.7, ICP)	mg/L	0.02	ND	12/12/91
Selenium (EPA Method 7740, Furnace AAS)	mg/L	0.005	ND	12/04/91
Silver (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Thallium (EPA Method 7841, Furnace AAS)	mg/L	0.005	ND	12/05/91
Tin (EPA 6010)	mg/L	5	ND	12/20/91
Vanadium (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.01	12/24/91
Zinc (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.02	12/12/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

Mr. Jeff Bennett
Page 16

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122724	
Date Collected:			11/19/91	
Date Received:			11/21/91	
Client Sample ID:			HP-2	
Parameter	Units	MDL		DATE ANALYZED
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Antimony (EPA Method 7041, Furnace AAS)	mg/L	0.005	ND	12/10/91
Arsenic (EPA Method 7060, Furnace AAS)	mg/L	0.005	ND	12/04/91
Barium (EPA Method 6010/200.7, ICP)	mg/L	0.01	6.5	12/12/91
Beryllium (EPA 7091)	mg/L	0.002	ND	12/16/91
Cadmium (EPA Method 7131, Furnace AAS)	mg/L	0.0001	ND	12/06/91
Chromium (EPA Method 7191, Furnace AAS)	mg/L	0.001	0.001	12/06/91
Cobalt (EPA 7201)	mg/L	0.005	0.007	12/13/91
Copper (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Lead (EPA Method 7421, Graphite Furnace)	mg/L	0.003	ND	12/05/91
Mercury (EPA Method 7470, Cold Vapor AA)	mg/L	0.0002	ND	12/12/91
'ickel (EPA Method 6010/200.7, ICP)	mg/L	0.02	ND	12/12/91
Selenium (EPA Method 7740, Furnace AAS)	mg/L	0.005	ND	12/04/91
Silver (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Thallium (EPA Method 7841, Furnace AAS)	mg/L	0.005	ND	12/05/91
Tin (EPA 6010)	mg/L	5	ND	12/20/91
Vanadium (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/24/91
Zinc (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.07	12/12/91
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Chloromethane	ug/L	10	ND	11/25/91
Bromomethane	ug/L	10	ND	11/25/91
Vinyl Cloride	ug/L	10	ND	11/25/91
Chloroethane	ug/L	10	ND	11/25/91
Methylene Chloride	ug/L	10	ND	11/25/91
Acetone	ug/L	10	ND	11/25/91
Carbon Disulfide	ug/L	10	ND	11/25/91
1,1-Dichloroethene	ug/L	10	ND	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

REPORT OF LABORATORY ANALYSIS

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122724	
Date Collected:			11/19/91	
Date Received:			11/21/91	
Client Sample ID:			HP-2	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
1,1-Dichloroethane	ug/L	10	ND	11/25/91
1,1-Dichloroethene (total)	ug/L	10	ND	11/25/91
Chloroform	ug/L	10	ND	11/25/91
1,2-Dichloroethane	ug/L	10	ND	11/25/91
2-Butanone	ug/L	10	ND	11/25/91
1,1,1-Trichlorethane	ug/L	10	ND	11/25/91
Carbon Tetrachloride	ug/L	10	ND	11/25/91
Bromodichloromethane	ug/L	10	ND	11/25/91
1,2-Dichloropropane	ug/L	10	ND	11/25/91
cis-1,3-Dichloropropene	ug/L	10	ND	11/25/91
richloroethene	ug/L	10	ND	11/25/91
Dibromochloromethane	ug/L	10	ND	11/25/91
1,1,2-Trichloroethane	ug/L	10	ND	11/25/91
Benzene	ug/L	10	ND	11/25/91
trans-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Bromoform	ug/L	10	ND	11/25/91
4-Methyl-2-Pentanone	ug/L	10	ND	11/25/91
2-Hexanone	ug/L	10	ND	11/25/91
Tetrachloroethene	ug/L	10	ND	11/25/91
1,1,2,2-Tetrachloroethane	ug/L	10	ND	11/25/91
Toluene	ug/L	10	ND	11/25/91
Chlorobenzene	ug/L	10	ND	11/25/91
Ethylbenzene	ug/L	10	ND	11/25/91
Styrene	ug/L	10	ND	11/25/91
Xylene (total)	ug/L	10	ND	11/25/91
1,2-Dichloroethane-d4			100%	11/25/91
Toluene-d8			96%	11/25/91
4-Bromofluorobenzene			97%	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

REPORT OF LABORATORY ANALYSIS

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122732	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			RB	
Parameter	Units	MDL		DATE ANALYZED
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Antimony (EPA Method 7041, Furnace AAS)	mg/L	0.005	ND	12/10/91
Arsenic (EPA Method 7060, Furnace AAS)	mg/L	0.005	ND	12/04/91
Barium (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Beryllium (EPA 7091)	mg/L	0.002	ND	12/16/91
Cadmium (EPA Method 7131, Furnace AAS)	mg/L	0.0001	ND	12/06/91
Chromium (EPA Method 7191, Furnace AAS)	mg/L	0.001	ND	12/06/91
Cobalt (EPA 7201)	mg/L	0.005	ND	12/13/91
Copper (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.04	12/12/91
Lead (EPA Method 7421, Graphite Furnace)	mg/L	0.003	ND	12/05/91
Mercury (EPA Method 7470, Cold Vapor AA)	mg/L	0.0002	ND	12/12/91
Nickel (EPA Method 6010/200.7, ICP)	mg/L	0.02	ND	12/12/91
Selenium (EPA Method 7740, Furnace AAS)	mg/L	0.005	ND	12/04/91
Silver (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Thallium (EPA Method 7841, Furnace AAS)	mg/L	0.005	ND	12/05/91
Tin (EPA 6010)	mg/L	5	ND	12/20/91
Vanadium (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/24/91
Zinc (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.02	12/12/91
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Chloromethane	ug/L	10	ND	11/26/91
Bromomethane	ug/L	10	ND	11/26/91
Vinyl Cloride	ug/L	10	ND	11/26/91
Chloroethane	ug/L	10	ND	11/26/91
Methylene Chloride	ug/L	10	ND	11/26/91
Acetone	ug/L	10	ND	11/26/91
Carbon Disulfide	ug/L	10	ND	11/26/91
1,1-Dichloroethene	ug/L	10	ND	11/26/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

Mr. Jeff Bennett
Page 19

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122732	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			RB	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
1,1-Dichloroethane	ug/L	10	ND	11/26/91
1,1-Dichloroethene (total)	ug/L	10	ND	11/26/91
Chloroform	ug/L	10	ND	11/26/91
1,2-Dichloroethane	ug/L	10	ND	11/26/91
2-Butanone	ug/L	10	ND	11/26/91
1,1,1-Trichlorethane	ug/L	10	ND	11/26/91
Carbon Tetrachloride	ug/L	10	ND	11/26/91
Bromodichloromethane	ug/L	10	ND	11/26/91
1,2-Dichloropropane	ug/L	10	ND	11/26/91
cis-1,3-Dichloropropene	ug/L	10	ND	11/26/91
Trichloroethene	ug/L	10	ND	11/26/91
Dibromochloromethane	ug/L	10	ND	11/26/91
1,1,2-Trichloroethane	ug/L	10	ND	11/26/91
Benzene	ug/L	10	ND	11/26/91
trans-1,3-Dichloropropene	ug/L	10	ND	11/26/91
Bromoform	ug/L	10	ND	11/26/91
4-Methyl-2-Pentanone	ug/L	10	ND	11/26/91
2-Hexanone	ug/L	10	ND	11/26/91
Tetrachloroethene	ug/L	10	ND	11/26/91
1,1,2,2-Tetrachloroethane	ug/L	10	ND	11/26/91
Toluene	ug/L	10	ND	11/26/91
Chlorobenzene	ug/L	10	ND	11/26/91
Ethylbenzene	ug/L	10	ND	11/26/91
Styrene	ug/L	10	ND	11/26/91
Xylene (total)	ug/L	10	ND	11/26/91
1,2-Dichloroethane-d4			100%	11/26/91
Toluene-d8			99%	11/26/91
4-Bromofluorobenzene			99%	11/26/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

Mr. Jeff Bennett
Page 20

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122740	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			FB	
Parameter	Units	MDL		DATE ANALYZED
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Antimony (EPA Method 7041, Furnace AAS)	mg/L	0.005	ND	12/10/91
Arsenic (EPA Method 7060, Furnace AAS)	mg/L	0.005	ND	12/04/91
Barium (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.05	12/12/91
Beryllium (EPA 7091)	mg/L	0.002	ND	12/16/91
Cadmium (EPA Method 7131, Furnace AAS)	mg/L	0.0001	ND	12/06/91
Chromium (EPA Method 7191, Furnace AAS)	mg/L	0.001	ND	12/06/91
Cobalt (EPA 7201)	mg/L	0.005	ND	12/13/91
Copper (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.1	12/12/91
Lead (EPA Method 7421, Graphite Furnace)	mg/L	0.003	ND	12/05/91
Mercury (EPA Method 7470, Cold Vapor AA)	mg/L	0.0002	ND	12/12/91
Nickel (EPA Method 6010/200.7, ICP)	mg/L	0.02	0.04	12/12/91
Selenium (EPA Method 7740, Furnace AAS)	mg/L	0.005	ND	12/04/91
Silver (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Thallium (EPA Method 7841, Furnace AAS)	mg/L	0.005	ND	12/05/91
Tin (EPA 6010)	mg/L	5	ND	12/20/91
Vanadium (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/24/91
Zinc (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.33	12/12/91
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Chloromethane	ug/L	10	ND	11/26/91
Bromomethane	ug/L	10	ND	11/26/91
Vinyl Cloride	ug/L	10	ND	11/26/91
Chloroethane	ug/L	10	ND	11/26/91
Methylene Chloride	ug/L	10	ND	11/26/91
Acetone	ug/L	10	ND	11/26/91
Carbon Disulfide	ug/L	10	ND	11/26/91
1,1-Dichloroethene	ug/L	10	ND	11/26/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

Mr. Jeff Bennett
Page 21

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122740	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			FB	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
1,1-Dichloroethane	ug/L	10	ND	11/26/91
1,1-Dichloroethene (total)	ug/L	10	ND	11/26/91
Chloroform	ug/L	10	ND	11/26/91
1,2-Dichloroethane	ug/L	10	ND	11/26/91
2-Butanone	ug/L	10	ND	11/26/91
1,1,1-Trichlorethane	ug/L	10	ND	11/26/91
Carbon Tetrachloride	ug/L	10	ND	11/26/91
Bromodichloromethane	ug/L	10	ND	11/26/91
1,2-Dichloropropane	ug/L	10	ND	11/26/91
cis-1,3-Dichloropropene	ug/L	10	ND	11/26/91
Trichloroethene	ug/L	10	ND	11/26/91
Dibromochloromethane	ug/L	10	ND	11/26/91
1,1,2-Trichloroethane	ug/L	10	ND	11/26/91
Benzene	ug/L	10	ND	11/26/91
trans-1,3-Dichloropropene	ug/L	10	ND	11/26/91
Bromoform	ug/L	10	ND	11/26/91
4-Methyl-2-Pentanone	ug/L	10	ND	11/26/91
2-Hexanone	ug/L	10	ND	11/26/91
Tetrachloroethene	ug/L	10	ND	11/26/91
1,1,2,2-Tetrachloroethane	ug/L	10	ND	11/26/91
Toluene	ug/L	10	ND	11/26/91
Chlorobenzene	ug/L	10	ND	11/26/91
Ethylbenzene	ug/L	10	ND	11/26/91
Styrene	ug/L	10	ND	11/26/91
Xylene (total)	ug/L	10	ND	11/26/91
1,2-Dichloroethane-d4			98%	11/26/91
Toluene-d8			97%	11/26/91
4-Bromofluorobenzene			101%	11/26/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

Mr. Jeff Bennett
Page 22

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:			70 0122759	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			Travel	
Parameter	Units	MDL	Blanks	DATE ANALYZED
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Chloromethane	ug/L	10	ND	11/25/91
Bromomethane	ug/L	10	ND	11/25/91
Vinyl Cloride	ug/L	10	ND	11/25/91
Chloroethane	ug/L	10	ND	11/25/91
Methylene Chloride	ug/L	10	ND	11/25/91
Acetone	ug/L	10	ND	11/25/91
Carbon Disulfide	ug/L	10	ND	11/25/91
1,1-Dichloroethene	ug/L	10	ND	11/25/91
1,1-Dichloroethane	ug/L	10	ND	11/25/91
1,1-Dichloroethene (total)	ug/L	10	ND	11/25/91
Chloroform	ug/L	10	ND	11/25/91
1,2-Dichloroethane	ug/L	10	ND	11/25/91
2-Butanone	ug/L	10	ND	11/25/91
1,1,1-Trichlorethane	ug/L	10	ND	11/25/91
Carbon Tetrachloride	ug/L	10	ND	11/25/91
Bromodichloromethane	ug/L	10	ND	11/25/91
1,2-Dichloropropane	ug/L	10	ND	11/25/91
cis-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Trichloroethene	ug/L	10	ND	11/25/91
Dibromochloromethane	ug/L	10	ND	11/25/91
1,1,2-Trichloroethane	ug/L	10	ND	11/25/91
Benzene	ug/L	10	ND	11/25/91
trans-1,3-Dichloropropene	ug/L	10	ND	11/25/91
Bromoform	ug/L	10	ND	11/25/91
4-Methyl-2-Pentanone	ug/L	10	ND	11/25/91
2-Hexanone	ug/L	10	ND	11/25/91
Tetrachloroethene	ug/L	10	ND	11/25/91
1,1,2,2-Tetrachloroethane	ug/L	10	ND	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

REPORT OF LABORATORY ANALYSIS

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Parameter	Units	MDL		DATE ANALYZED
PACE Sample Number:			70 0122759	
Date Collected:			11/20/91	
Date Received:			11/21/91	
Client Sample ID:			Travel Blanks	
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY CLP				
Toluene	ug/L	10	ND	11/25/91
Chlorobenzene	ug/L	10	ND	11/25/91
Ethylbenzene	ug/L	10	ND	11/25/91
Styrene	ug/L	10	ND	11/25/91
Xylene (total)	ug/L	10	ND	11/25/91
1,2-Dichloroethane-d4			105%	11/25/91
Toluene-d8			98%	11/25/91
4-Bromofluorobenzene			98%	11/25/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Mr. Jeff Bennett
Page 24

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

PACE Sample Number:	70 0122767
Date Collected:	11/20/91
Date Received:	11/21/91
Client Sample ID:	BG-3

Parameter	Units	MDL		DATE ANALYZED
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Antimony (EPA Method 7041, Furnace AAS)	mg/L	0.005	ND	12/10/91
Arsenic (EPA Method 7060, Furnace AAS)	mg/L	0.005	0.009	12/04/91
Barium (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.11	12/12/91
Beryllium (EPA 7091)	mg/L	0.002	ND	12/16/91
Cadmium (EPA Method 7131, Furnace AAS)	mg/L	0.0001	0.0035	12/06/91
Chromium (EPA Method 7191, Furnace AAS)	mg/L	0.001	0.013	12/06/91
Cobalt (EPA 7201)	mg/L	0.005	ND	12/13/91
Copper (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.02	12/12/91
Lead (EPA Method 7421, Graphite Furnace)	mg/L	0.003	0.015	12/05/91
Mercury (EPA Method 7470, Cold Vapor AA)	mg/L	0.0002	ND	12/12/91
Nickel (EPA Method 6010/200.7, ICP)	mg/L	0.02	ND	12/12/91
Selenium (EPA Method 7740, Furnace AAS)	mg/L	0.005	ND	12/04/91
Silver (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	12/12/91
Thallium (EPA Method 7841, Furnace AAS)	mg/L	0.005	ND	12/05/91
Tin (EPA 6010)	mg/L	5	ND	12/20/91
Vanadium (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.02	12/24/91
Zinc (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.06	12/12/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

These data have been reviewed and are approved for release.

Mark A. Valentini

Mark A. Valentini, Ph.D.
Regional Director

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

Mr. Jeff Bennett
Page 25

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Antimony (EPA Method 7041, Furnace AAS)
Batch: 70 08286
Samples: 70 0122651, 70 0122660, 70 0122678, 70 0122708, 70 0122716
70 0122724, 70 0122732, 70 0122740

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Antimony (EPA Method 7041, Furnace AAS)	mg/L	0.005	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Antimony (EPA Method 7041, Furnace AAS)	mg/L	0.005	0.05	84%	98%	15%

MDL Method Detection Limit
RPD Relative Percent Difference

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

Mr. Jeff Bennett
Page 26

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Arsenic (EPA Method 7060, Furnace AAS)
Batch: 70 08142
Samples: 70 0122651, 70 0122660, 70 0122678, 70 0122708, 70 0122716
70 0122724

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Arsenic (EPA Method 7060, Furnace AAS)	mg/L	0.005	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Arsenic (EPA Method 7060, Furnace AAS)	mg/L	0.005	0.05	92%	92%	0%

MDL Method Detection Limit
RPD Relative Percent Difference

Mr. Jeff Bennett
Page 27

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Arsenic (EPA Method 7060, Furnace AAS)
Batch: 70 08143
Samples: 70 0122732, 70 0122740, 70 0122767

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Arsenic (EPA Method 7060, Furnace AAS)	mg/L	0.005	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Arsenic (EPA Method 7060, Furnace AAS)	mg/L	0.005	0.05	98%	90%	8%

MDL Method Detection Limit
RPD Relative Percent Difference

Mr. Jeff Bennett
Page 28

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Beryllium (EPA 7091)
Batch: 70 08482
Samples: 70 0122651, 70 0122660, 70 0122678, 70 0122708, 70 0122716
70 0122724, 70 0122732, 70 0122740, 70 0122767

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Beryllium (EPA 7091)	mg/L	0.002	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Beryllium (EPA 7091)	mg/L	0.002	0.0025	108%	112%	3%

MDL Method Detection Limit
RPD Relative Percent Difference

Mr. Jeff Bennett
Page 29

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Cadmium (EPA Method 7131, Furnace AAS)
Batch: 70 08208
Samples: 70 0122651, 70 0122660, 70 0122678, 70 0122708, 70 0122716
70 0122724, 70 0122732, 70 0122740

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Cadmium (EPA Method 7131, Furnace AAS)	mg/L	0.0001	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Cadmium (EPA Method 7131, Furnace AAS)	mg/L	0.0001	0.001	90%	90%	0%

MDL Method Detection Limit
RPD Relative Percent Difference

Mr. Jeff Bennett
Page 30

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Chromium (EPA Method 7191, Furnace AAS)
Batch: 70 08238
Samples: 70 0122651, 70 0122660, 70 0122678, 70 0122708, 70 0122716
70 0122724, 70 0122732, 70 0122740, 70 0122767

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Chromium (EPA Method 7191, Furnace AAS)	mg/L	0.001	0.001

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Chromium (EPA Method 7191, Furnace AAS)	mg/L	0.001	0.01	110%	100%	9%

MDL Method Detection Limit
RPD Relative Percent Difference

Mr. Jeff Bennett
Page 31

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Cobalt (EPA 7201)
Batch: 70 08534
Samples: 70 0122651, 70 0122660, 70 0122678, 70 0122708, 70 0122716
70 0122724, 70 0122732, 70 0122740, 70 0122767

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Cobalt (EPA 7201)	mg/L	0.005	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Cobalt (EPA 7201)	mg/L	0.005	0.02	100%	85%	16%

MDL Method Detection Limit
RPD Relative Percent Difference

Mr. Jeff Bennett
Page 32

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Copper (EPA Method 6010/200.7, ICP)
Batch: 70 08425
Samples: 70 0122651, 70 0122660, 70 0122678, 70 0122708, 70 0122716
70 0122724, 70 0122732, 70 0122740, 70 0122767

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Barium (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND
Copper (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND
Nickel (EPA Method 6010/200.7, ICP)	mg/L	0.02	ND
Silver (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND
Zinc (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Barium (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.2	90%	90%	0%
Copper (EPA Method 6010/200.7, ICP)	mg/L	0.01	2.0	91%	94%	3%
Nickel (EPA Method 6010/200.7, ICP)	mg/L	0.02	2.0	90%	88%	2%
Silver (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.2	89%	90%	3%
Zinc (EPA Method 6010/200.7, ICP)	mg/L	0.01	2.0	91%	89%	2%

MDL Method Detection Limit
RPD Relative Percent Difference

Mr. Jeff Bennett
Page 33

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Lead (EPA Method 7421, Graphite Furnace)
Batch: 70 08174
Samples: 70 0122651, 70 0122660, 70 0122678, 70 0122708, 70 0122716
70 0122724, 70 0122732

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Lead (EPA Method 7421, Graphite Furnace	mg/L	0.003	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Lead (EPA Method 7421, Graphite Furnace	mg/L	0.003	0.02	105%	105%	0%

MDL Method Detection Limit
RPD Relative Percent Difference

Mr. Jeff Bennett
Page 34

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Mercury (EPA Method 7470, Cold Vapor AA)
Batch: 70 08355
Samples: 70 0122651, 70 0122660, 70 0122678, 70 0122708, 70 0122716
70 0122724, 70 0122732, 70 0122740, 70 0122767

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Mercury (EPA Method 7470, Cold Vapor AA	mg/L	0.0002	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Mercury (EPA Method 7470, Cold Vapor AA	mg/L	0.0002	0.01	100%	100%	0%

MDL Method Detection Limit
RPD Relative Percent Difference

Mr. Jeff Bennett
Page 35

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Selenium (EPA Method 7740, Furnace AAS)
Batch: 70 08139
Samples: 70 0122651, 70 0122660, 70 0122678, 70 0122708, 70 0122716

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Selenium (EPA Method 7740, Furnace AAS)	mg/L	0.005	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Selenium (EPA Method 7740, Furnace AAS)	mg/L	0.005	0.05	98%	94%	4%

MDL Method Detection Limit
RPD Relative Percent Difference

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

Mr. Jeff Bennett
Page 36

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Selenium (EPA Method 7740, Furnace AAS)
Batch: 70 08140
Samples: 70 0122724, 70 0122732, 70 0122740, 70 0122767

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Selenium (EPA Method 7740, Furnace AAS)	mg/L	0.005	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Selenium (EPA Method 7740, Furnace AAS)	mg/L	0.005	0.05	98%	94%	4%

MDL Method Detection Limit
RPD Relative Percent Difference

Mr. Jeff Bennett
Page 37

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Thallium (EPA Method 7841, Furnace AAS)
Batch: 70 08201
Samples: 70 0122651, 70 0122660, 70 0122678, 70 0122708, 70 0122716
70 0122724, 70 0122732, 70 0122740

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Thallium (EPA Method 7841, Furnace AAS)	mg/L	0.005	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Thallium (EPA Method 7841, Furnace AAS)	mg/L	0.005	0.02	100%	95%	5%

MDL Method Detection Limit
RPD Relative Percent Difference

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

Mr. Jeff Bennett
Page 38

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

Tin (EPA 6010)
Batch: 70 08678
Samples: 70 0122651, 70 0122660, 70 0122678, 70 0122708, 70 0122716
70 0122724, 70 0122732, 70 0122740, 70 0122767

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Tin (EPA 6010)	mg/L	5	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Tin (EPA 6010)	mg/L	5	20.0	111%	107%	3%

MDL Method Detection Limit
RPD Relative Percent Difference

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Client Reference: NAS Corpus Christi

Vanadium (EPA Method 6010/200.7, ICP)
Batch: 70 08728
Samples: 70 0122651, 70 0122660, 70 0122678, 70 0122708, 70 0122716
70 0122724, 70 0122732, 70 0122740, 70 0122767

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Vanadium (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Vanadium (EPA Method 6010/200.7, ICP)	mg/L	0.01	0.2	92%	94%	4%

MDL Method Detection Limit
RPD Relative Percent Difference

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

Mr. Jeff Bennett
Page 40

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

VOLATILE ORGANICS, EPA METHOD 624 GC/MS
Batch: 70 07962
Samples: 70 0122643, 70 0122651, 70 0122660, 70 0122678, 70 0122686
70 0122694, 70 0122724, 70 0122732, 70 0122740, 70 0122759

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Chloromethane	ug/L	10	ND
Vinyl Chloride	ug/L	10	ND
Bromomethane	ug/L	10	ND
Chloroethane	ug/L	10	ND
Trichlorofluoromethane	ug/L	5	ND
1,1,2-Trichlor-1,2,2-trifluoroethane	ug/L	5	ND
2-Butanone (MEK)	ug/L	50	ND
1,1-Dichloroethene	ug/L	5	ND
Carbon Disulfide	ug/L	5	ND
Acetone	ug/L	50	ND
Methylene Chloride	ug/L	5	10(*)
trans-1,2-Dichloroethene	ug/L	5	ND
1,1-Dichloroethane	ug/L	5	ND
Chloroform	ug/L	5	ND
1,1,1-Trichloroethane	ug/L	5	ND
1,2-Dichloroethane	ug/L	5	ND
cis-1,2-Dichlorethene	ug/L	5	ND
Carbon Tetrachloride	ug/L	5	ND
Benzene	ug/L	5	ND
1,2-Dichloropropane	ug/L	5	ND
Trichloroethene (TCE)	ug/L	5	ND
Bromodichloromethane	ug/L	5	ND
trans-1,3-Dichloropropene	ug/L	5	ND
4-Methyl-2-pentanone (MIBK)	ug/L	50	ND
Toluene	ug/L	5	ND
cis-1,3-Dichloropropene	ug/L	5	ND
1,1,2-Trichloroethane	ug/L	5	ND
Dibromochloromethane	ug/L	5	ND
2-Hexanone	ug/L	50	ND
Tetrachloroethene	ug/L	5	ND

MDL Method Detection Limit
(*) Laboratory contamination.

Mr. Jeff Bennett
Page 41

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

VOLATILE ORGANICS, EPA METHOD 624 GC/MS
Batch: 70 07962
Samples: 70 0122643, 70 0122651, 70 0122660, 70 0122678, 70 0122686
70 0122694, 70 0122724, 70 0122732, 70 0122740, 70 0122759

METHOD BLANK:

Parameter	Units	MDL	Method Blank
VOLATILE ORGANICS, EPA METHOD 624 GC/MS			
Chlorobenzene	ug/L	5	ND
Ethylbenzene	ug/L	5	ND
Bromoform	ug/L	5	ND
Xylene(s) Total	ug/L	5	ND
Styrene	ug/L	5	ND
1,1,2,2,-Tetrachloroethane	ug/L	5	ND
1,3-Dichlorobenzene	ug/L	5	ND
1,4-Dichlorobenzene	ug/L	5	ND
1,2-Dichlorobenzene	ug/L	5	ND
1,2-Dichloroethane-d4 (Surrog. Recovery			98%
Toluene-d8 (Surrogate Recovery)			99%
4-Bromofluorobenzene (Surrog.Recovery)			97%

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
1,1-Dichloroethene	ug/L	5	50	88%	90%	2%
Benzene	ug/L	5	50	100%	104%	3%
Trichloroethene (TCE)	ug/L	5	50	98%	98%	0%
Toluene	ug/L	5	50	102%	100%	1%
Chlorobenzene	ug/L	5	50	106%	106%	0%

MDL Method Detection Limit
RPD Relative Percent Difference

Mr. Jeff Bennett
Page 42

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 41112150

Client Reference: NAS Corpus Christi

VOLATILE ORGANICS, EPA METHOD 624 GC/MS
Batch: 70 08009
Samples: 70 0122708

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Chloromethane	ug/L	10	ND
Vinyl Chloride	ug/L	10	ND
Bromomethane	ug/L	10	ND
Chloroethane	ug/L	10	ND
Trichlorofluoromethane	ug/L	5	ND
1,1,2-Trichlor-1,2,2-trifluoroethane	ug/L	5	ND
2-Butanone (MEK)	ug/L	50	ND
1,1-Dichloroethene	ug/L	5	ND
Carbon Disulfide	ug/L	5	ND
Acetone	ug/L	50	ND
Methylene Chloride	ug/L	5	9(*)
trans-1,2-Dichloroethene	ug/L	5	ND
1,1-Dichloroethane	ug/L	5	ND
Chloroform	ug/L	5	ND
1,1,1-Trichloroethane	ug/L	5	ND
1,2-Dichloroethane	ug/L	5	ND
cis-1,2-Dichlorethene	ug/L	5	ND
Carbon Tetrachloride	ug/L	5	ND
Benzene	ug/L	5	ND
1,2-Dichloropropane	ug/L	5	ND
Trichloroethene (TCE)	ug/L	5	ND
Bromodichloromethane	ug/L	5	ND
trans-1,3-Dichloropropene	ug/L	5	ND
4-Methyl-2-pentanone (MIBK)	ug/L	50	ND
Toluene	ug/L	5	ND
cis-1,3-Dichloropropene	ug/L	5	ND
1,1,2-Trichloroethane	ug/L	5	ND
Dibromochloromethane	ug/L	5	ND
2-Hexanone	ug/L	50	ND
Tetrachloroethene	ug/L	5	ND
Chlorobenzene	ug/L	5	ND

MDL Method Detection Limit
*) Laboratory contamination.

Mr. Jeff Bennett
Page 43

QUALITY CONTROL DATA

December 24, 1991
PACE Project Number: 411121508

Client Reference: NAS Corpus Christi

VOLATILE ORGANICS, EPA METHOD 624 GC/MS
Batch: 70 08009
Samples: 70 0122708

METHOD BLANK:

Parameter	Units	MDL	Method Blank
VOLATILE ORGANICS, EPA METHOD 624 GC/MS			
Ethylbenzene	ug/L	5	ND
Bromoform	ug/L	5	ND
Xylene(s) Total	ug/L	5	ND
Styrene	ug/L	5	ND
1,1,2,2,-Tetrachloroethane	ug/L	5	ND
1,3-Dichlorobenzene	ug/L	5	ND
1,4-Dichlorobenzene	ug/L	5	ND
1,2-Dichlorobenzene	ug/L	5	ND
1,2-Dichloroethane-d4 (Surrog. Recovery			96%
Toluene-d8 (Surrogate Recovery)			103%
4-Bromofluorobenzene (Surrog.Recovery)			101%

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
1,1-Dichloroethene	ug/L	5	50	92%	88%	4%
Benzene	ug/L	5	50	100%	102%	1%
Trichloroethene (TCE)	ug/L	5	50	96%	94%	2%
Toluene	ug/L	5	50	104%	102%	1%
Chlorobenzene	ug/L	5	50	106%	108%	1%

MDL Method Detection Limit
RPD Relative Percent Difference

APPENDIX B

CHAIN OF CUSTODY FORMS

411126.50
Revised
pg 1 of 2

CHAIN OF CUSTODY RECORD

LABORATORY: PACE Inc
ATTENTION: Mark Valentini
PROJECT NO.: N00226000/
PAGE 1 of 2

NAVY C.L.E.A.N.
DISTRICT II
Site NAS Corpus Christi
Contact: EnSafe/Allen & Hoshall
5720 Summer Trees Dr., Suite 8, Memphis, TN 38134
Phone (901) 383-9115, Fax (901) 383-1743

CLIENT NAME: EnSafe
COLLECTED BY: Greg Pierce

SAMPLE ID	DATE	TIME	comp	grab	well	SAMPLE LOCATION	# of containers	MEDIA (X): SOIL	WATER	SEDIMENT	GROUNDWATER	SAMPLE ANALYSIS (X): CLP Volatiles	Metals								PRESERVATION
HP-6	11/20/91	11:10		X		NAS Corpus	3		X			X								12264.3	HCL
HP-12	11/20/91	12:00		X		"	4		X			X	X							65.1	HCL / HNO_3
MW-13	11/20/91	12:30			X	"	4					X	X							66.0	HCL / HNO_3
MW-13D	11/20/91	12:30			X	"	4					X	X							67.8	HCL / HNO_3
MW-13MS	"	12:35			X	"	3					X								68.6	HCL
MW-13MSD	"	12:35			X	"	3					X								69.4	HCL
HP-3	"	930		X		"	4					X	X							70.8	HCL / HNO_3
MW-10	"	13:55			X	"	1						X							71.6	HNO_3
HP-2	11/19/91	14:00		X		"	4					X	X							72.4	HCL / HNO_3
RB	11/20/91	8:30		X		"	4					X	X							73.2	HCL / HNO_3
FB	"	15:30		X		"	4					X	X							74.0	HCL / HNO_3
SG-3 HP	"	16:00		X		"	1						X							76.8	HNO_3

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
Greg Pierce	11/20/91	15:40					

RELINQUISHED BY:	DATE	TIME	RECEIVED AT LAB BY:	DATE	TIME	REMARKS
			Tammy Lee Sessoms	11/21/91	13:20	

TO 04203044158832673022
NOV 27,1991 11:14AM FROM

Revised

CHAIN OF CUSTODY RECORD 411121.508

LABORATORY: Pace Inc
ATTENTION: Mark Valentini
PROJECT NO.: N00226G001
PAGE 2 of 2

NAVY C.L.E.A.N.
DISTRICT II

Site
Contact: EnSafe/Allen & Hoshall
5720 Summer Trees Dr., Suite 8, Memphis, TN 38134
Phone (901) 383-9215, Fax (901) 383-1743

CLIENT NAME: EnSafe
COLLECTED BY: Gray Pierce

SAMPLE ID	DATE	TIME	comp	grab	well	SAMPLE LOCATION	# of containers	MEDIA (X): SOIL	WATER	SEDIMENT	GROUNDWATER	SAMPLE ANALYSIS (X): CLP Volatiles										PRESERVATION
Trip Blank	11/20/91	16:00		X		NAS Corpus	6					X									12275.9	HCL

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
Gray Pierce	11/22/91	9:45a					

RELINQUISHED BY:	DATE	TIME	RECEIVED AT LAB BY:	DATE	TIME	REMARKS
			Sam for Lea Sansone	11/22/91	13:20	