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Site Characterization and Evaluation Report

for

Marine Corps Air Station

Cherry Point, North Carolina

Northern Division

Naval Facilities Engineering Command

Contract Number N62472-90-D-1298

Contract Task Order 0165

August 1994

Halliburton NUS
CORPORATION

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SITE CHARACTERIZATION AND EVALUATION REPORT FOR MARINE CORPS AIR STATION CHERRY POINT, NORTH CAROLINA

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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Environmental Restoration Branch, Code 1823
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EXECUTIVE SUMMARY

This Site Characterization and Evaluation Report is presented to satisfy requirements of unilateral Contract Task Order (CTO) 165, under Comprehensive Long-Term Environmental Action Navy (CLEAN), Contract Number N62472-90-D-1298. This Site Characterization and Evaluation Report presents the results of the field investigations performed for five sites at Marine Corps Air Station (MCAS) Cherry Point, North Carolina.

The site characterization investigation was performed for three Military Construction (MCON) projects being conducted at five locations at MCAS Cherry as part of the Base Realignment and Closure (BRACs). To support the evaluation samples of soil, groundwater, and concrete chips were taken and analyzed for parameters to be used in identifying health risk problems and to support disposal of the material if needed. Following analysis samples were validated to ensure the usability of the data and risk analysis was performed to determine exposure based on dermal contact, ingestion, and inhalation exposures.

The results of this report are detailed in a manner which environmental personnel and regulatory agencies are familiar and includes necessary discussions on the methods used to evaluate data in order to reach risk assessment conclusions. However, due to the use of the document by construction and engineering laypersons, the results presented in Section 7 are in more familiar terms in order to facilitate understanding of the conclusions drawn.

As described in this report, analytical results for all sites indicate the presence of contaminants at low levels in both the soils and groundwater. However, the levels at which they exist present no immediate or long-term risk as shown by the risk assessment calculations included in Appendix B of this report.

1.0 SITE BACKGROUND

1.1 INTRODUCTION

Halliburton NUS Corporation (HNUS) has prepared this report in response to unilateral Contract Task Order (CTO) 165, under Comprehensive Long-Term Environmental Action Navy (CLEAN), Contract Number N62472-90-D-1298. CTO 165 requests that Halliburton NUS prepare a Site Characterization and Evaluation Report using data gathered during site investigations at five sites located within Marine Corps Air Station (MCAS) Cherry Point, Cherry Point, North Carolina.

A Work Plan was developed by Halliburton NUS which detailed the proposed investigation activities at Sites 1 through 5 (Military construction (MCON) Projects P-962T, P-966T, and P-965T). The final version of the plan was submitted to the Navy on February 28, 1994. Due to additional information obtained from the A/E contractors for the MCON projects, mobilization was delayed and a meeting was held on March 9, 1994 at the Navy facilities in Norfolk, Virginia. Following this meeting, a Work Plan Amendment prepared by HNUS was submitted on March 16, 1994. Once full funding was available to perform the revised scope of work, field investigation activities were initiated on April 4, 1994, and proceeded to completion on April 26, 1994. Analytical results from the initial investigation indicated the need for additional data. Following negotiations and preparation of a Work Plan Addendum, a second field effort was undertaken between July 5 and July 9, 1994. The details of these investigations are included in this report.

1.2 SCOPE AND OBJECTIVE

The purpose of this Site Characterization and Evaluation Report is to identify contaminants which may require cleanup prior to the demolition of existing structures and site preparation required for construction of housing for personnel being relocated as part of the Base Realignment and Closure (BRACs). The study areas are located on MCAS Cherry Point, North Carolina within the five sites chosen for MCON P-962T, MCON P-965T, and MCON P-966T. These sites are as follows:

- **Site 1** Northwest end of Building 154, in the vicinity of administrative building construction for MCON P-962T.

- **Site 2** North of Building 129 and south of Building 137 (Hangar 3) in the vicinity of a two-story addition to Building 129 and 56-foot-high warehouse bay addition to Building 137 for MCON P-966T.

- **Site 3** East of Building 137 (Hangar 1) in the vicinity of 50-foot shelter addition for MCON P-966T.

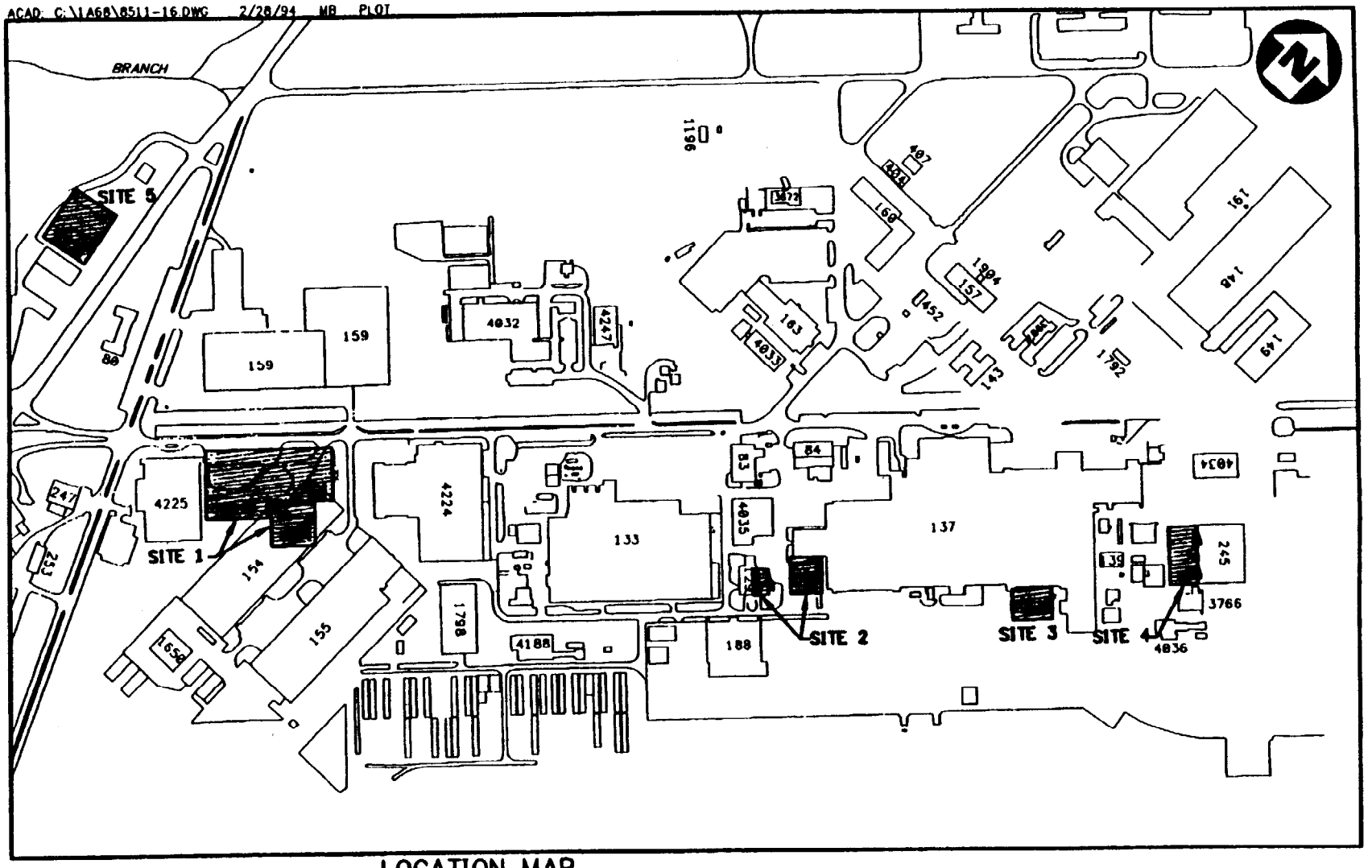
- **Site 4** South of Building 245 in the vicinity of MCON P-965T.

- **Site 5** In the vicinity of warehouse construction between Buildings 86 and 246 for MCON P-962T.

The location map for all sites at MCAS Cherry Point is presented in Figure 1-1.

1.3 ORGANIZATION OF REPORT

Section 1.0 is this introduction to the report and includes a discussion of the scope and objectives in addition to a brief description of the site locations. Section 2.0 presents details of the site histories, Section 3.0 includes a description of procedures used during collection of samples in the field, Section 4.0 presents the site conditions, Section 5.0 presents the site assessment, Section 6.0 develops the baseline risk assessment, and Section 7.0 provides a summary of the site characterizations.



LOCATION MAP
CTO 165 - SITES 1-5
MCAS, CHERRY POINT, NORTH CAROLINA

0 500 1000
SCALE IN FEET

FIGURE 1-1

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2.0 SITE HISTORIES

2.1 MARINE CORPS AIR STATION DESCRIPTION

The MCAS Cherry Point (see Figure 1-1) is part of a military installation located in southeastern Craven County, north of Havelock, North Carolina. The MCAS is located on a 11,485-acre tract of land bounded on the north by the Neuse River estuary, on the east by Hancock Creek, and on the South by North Carolina Highway 101. The irregular west boundary lies approximately 0.75 miles west of Slocum Creek.

2.2 MCAS HISTORY

The mission of the MCAS Cherry Point is to maintain and operate support facilities, services, and materials of the U.S. Marine Corps Aircraft Wing, or its units thereof, and other units and activities as designated by higher authorities in coordination with the Chief of Naval Operations. The MCAS Cherry Point additionally provides facilities for training and support of the Fleet Marine Force Atlantic Aviation Units. The MCAS Cherry Point is also designated as a primary aviation supply point and is host to a Naval Aviation Depot (NADEP).

The MCAS Cherry Point was commissioned in 1942. Continuing construction in 1943 included the addition of a massive aircraft assembly and repair shop, which later became the NADEP. During the 1950s and 1960s, land was acquired which increased the MCAS Cherry Point acreage to more than 11,000 acres (excluding the outlying bombing range, MCALF Bogue, and MCOLF Atlantic). During the 1970s, intense commercial and residential development occurred around the MCAS Cherry Point, particularly within the city of Havelock. In 1980, the city of Havelock annexed MCAS Cherry Point.

2.3 SITE DESCRIPTIONS

Review of real estate records and mapping during a historical data investigation provided information concerning the past uses of the five areas addressed in this document.

2.3.1 Site 1 (MCON P-962T)

Building 154 was originally constructed in 1943 to serve as warehouse storage with the following specific descriptors applied over time as the facility's functions were revised: storage for air/ground organization;

materials and equipment staging storage; motor T storage; MTIS building; general warehouse naval supplies; administrative storage; administrative office; general storage (depot); general storage (ready issue); and for the period from May 1979 through October 1982 organic storage I and L. The building presently serves as storage for mission readiness and is accessed by both road and rail service.

2.3.2 Site 2 (MCON P-966T)

Building 129 was originally constructed in 1943 to serve as a seat shop. Over time the following specific titles were applied for its different uses; parachute shop; ordnance; support equipment calibration; metals component shop; A/C weapon overhaul and test; maintenance, A/C spare storage; metal fabrication/ manufacture; support equipment rework shop; aircraft accessory overhaul shop; and manufacture/repair.

Building 137 was originally constructed in 1943 to serve as a corrosion control/clean shop with the following specific titles applied over time as the facility's functions were revised: nonmetal components shop; nonmetal fabrication/manufacturing shop; cafeteria; hydraulic components shop; dynamic components shop; electronic system components; pneumatic oxygen shop; turbine accessories shop; plant services for aircraft overhaul; covered ground-check flight test; inertial qualification instruction overhaul shop; heat treating; engine test cell; miscellaneous parts/component repair; metal fabrication/manufacturing; metal components shop; support equipment calibration; engineering laboratory; DED manufacturing and repair-general purpose; aircraft rework shop; maintenance, aircraft spare storage; DED electrical, communication, and armament-general purpose; DED aircraft and engine accessory overhaul-general purpose; and administrative office. Current uses include aircraft maintenance and overhaul, parts and supplies storage, and administration.

2.3.3 Site 3 (MCON P-966T)

See description in paragraph 2.3.2 above for Building 137.

2.3.4 Site 4 (MCON P-965T)

Building 245 was originally constructed in 1958 and currently serves as a paint and finishing hanger. No records of other uses exist.

2.3.5 Site 5 (MCON P-962T)

Building 86 is currently a thrift shop and Building 246 is currently used by the Office of Personnel Morale, Welfare, and Recreation. Their distance from Site 5 make them irrelevant. No other recorded information exists regarding other uses.

3.0 FIELD ACTIVITIES

The investigative techniques used at each of the sites were identical and supported sampling of surface and subsurface soil, groundwater, and concrete structures. The goal of the field effort was to identify contaminants that may be encountered during construction activities, identify potential receptors, and to assess risk potential to those receptors exposed to chemicals that may be released from contaminated site media over time. The media investigated were sampled using procedures described in detail in the following subsections.

Sample locations for Sites 1 through 5 are shown in Figures 3-1 through 3-5, respectively. Sample logsheets and chain-of-custody forms are provided in Appendix A. Boring logs are included in Appendix B.

3.1 SOIL INVESTIGATION

Surface and subsurface soil was sampled at each of the five sites during the initial investigation as described int he project Work Plan. In accordance with the Work Plan Addendum, only surface soil was sampled during the second round. During the initial investigation the Geoprobe System, a direct-push sampling technology was utilized to provide a cost-effective alternative to using a drill rig and crew for sample collection. The Geoprobe unit is a hydraulically operated, truck-mounted system that can push or extract soil sampling equipment into or out of the ground. The unit was also used to install groundwater sampling points, discussed in detail in Section 3.2.

The soil samples were collected using a 2-inch Shelby tube (Macro Core) sampler that was push-driven to predetermined depth intervals. The tube contained a clear polyterphenyl liner held in place by a cutting shoe on the bottom and a drive head on top of the sampling apparatus. After removal of the Shelby tube sampler, the sample was retrieved by unscrewing the cutting head and, when needed, the drive head, and removing the liner sleeve. The sample was removed from the liner sleeve by cutting the sleeve lengthwise and removing the sample from the sleeve for direct placement into sample containers. The liner remained closed and inaccessible to direct atmospheric contact except when held open by hand. Monitoring of the soils using an organic vapor analyzer equipped with a photoionizing detector (HNu) was performed for each grab soil sample prior to placement into the appropriate sample containers. No HNu readings above background were observed for any of the soil samples.

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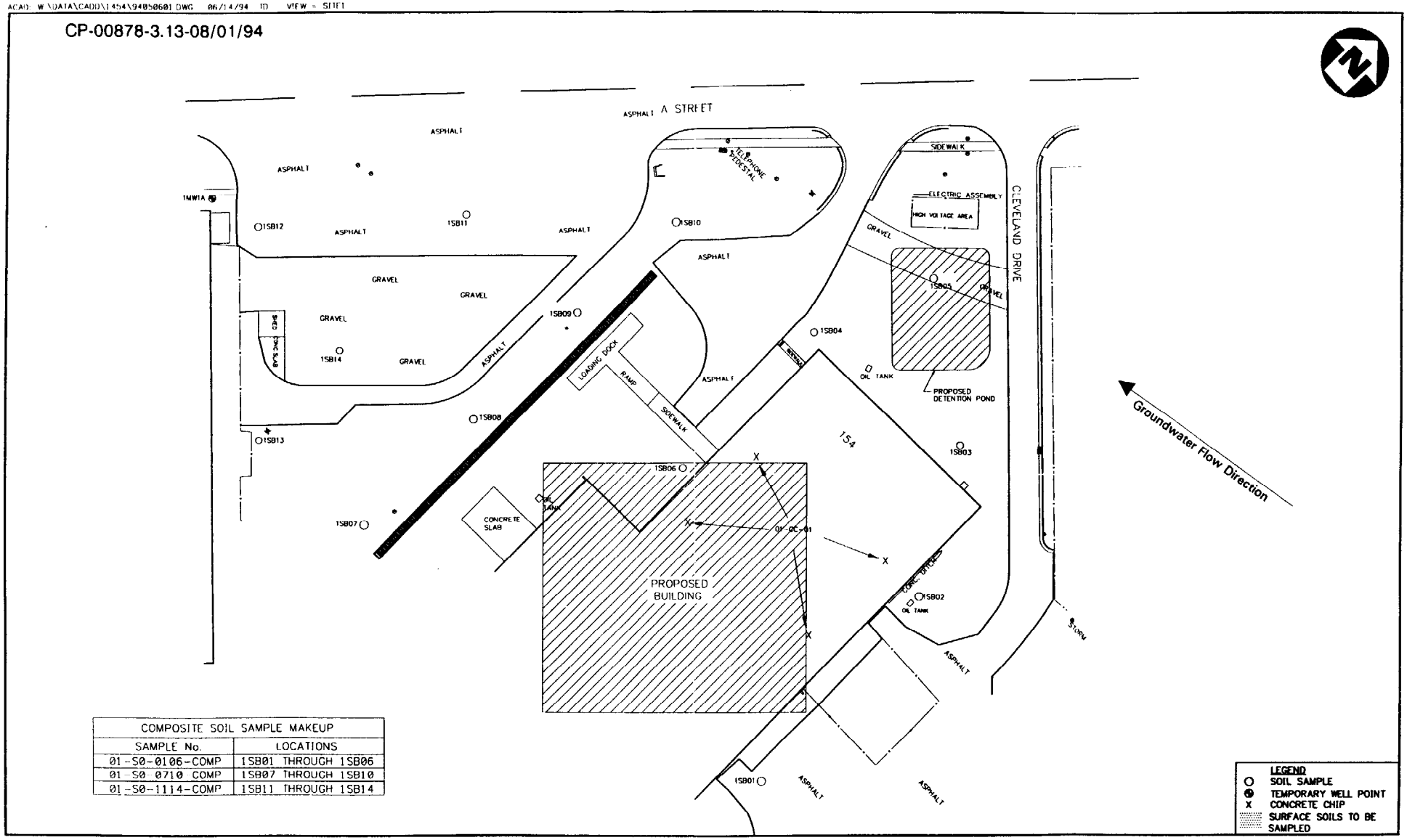

COMPOSITE SOIL SAMPLE MAKEUP	
SAMPLE No.	LOCATIONS
01-S0-0106-COMP	1SB01 THROUGH 1SB06
01-S0-0710-COMP	1SB07 THROUGH 1SB10
01-S0-1114-COMP	1SB11 THROUGH 1SB14

LEGEND
- O SOIL SAMPLE
- TEMPORARY WELL POINT
- X CONCRETE CHIP
- SURFACE SOILS TO BE SAMPLED

FIGURE 3-1

SITE 1 (MCON P-962T)
SITE MAP
MCAS CHERRY POINT, NORTH CAROLINA

0 60 120
SCALE IN FEET

HALLIBURTON NUS Corporation

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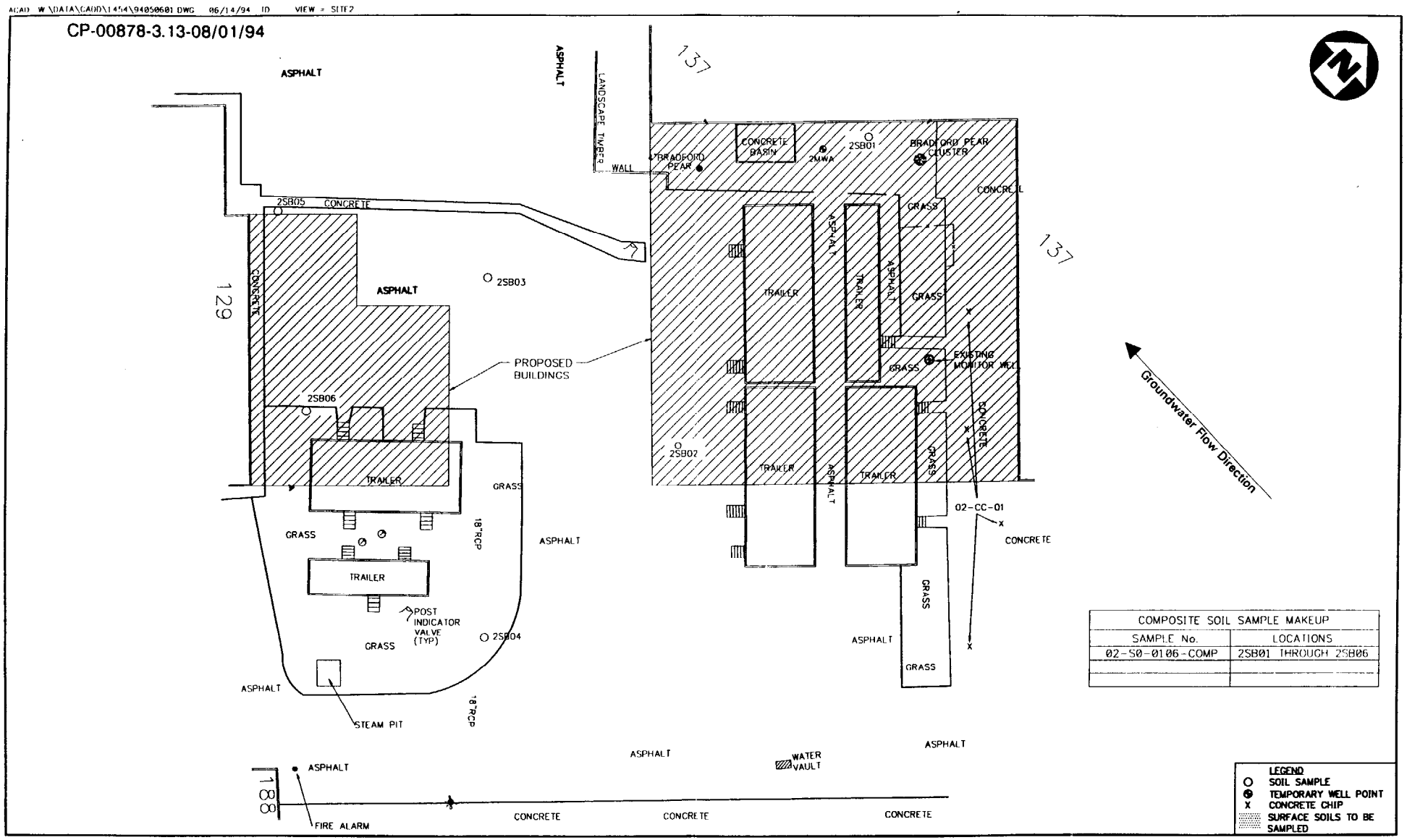

COMPOSITE SOIL SAMPLE MAKEUP	
SAMPLE No.	LOCATIONS
02-S0-0106-COMP	2SB01 THROUGH 2SB06

FIGURE 3-2

SITE 2 (MCON P-966T)
SITE MAP
MCAS CHERRY POINT, NORTH CAROLINA

0 30 60
SCALE IN FEET

HALLIBURTON NUS Corporation

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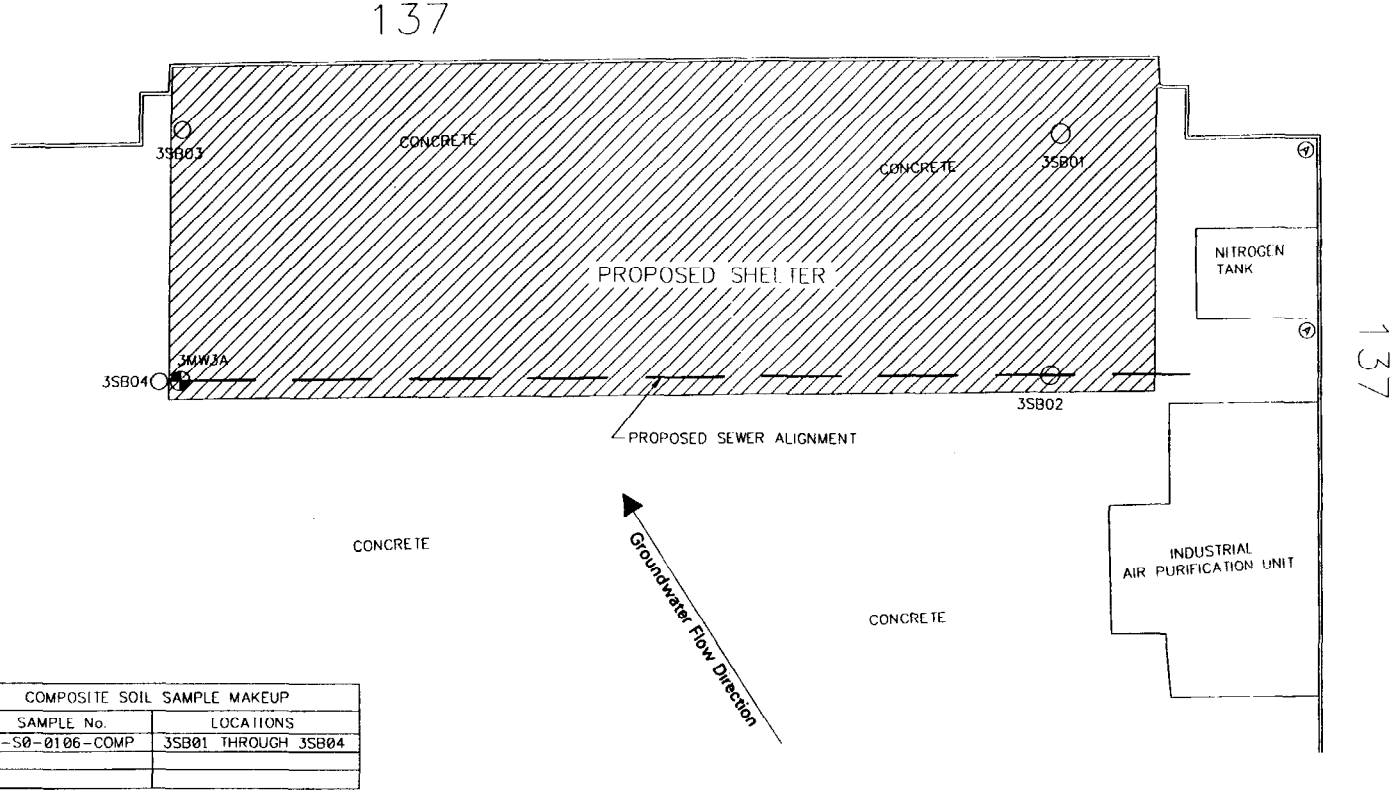


COMPOSITE SOIL SAMPLE MAKEUP	
SAMPLE No.	LOCATIONS
03-S0-0106-COMP	3SB01 THROUGH 3SB04

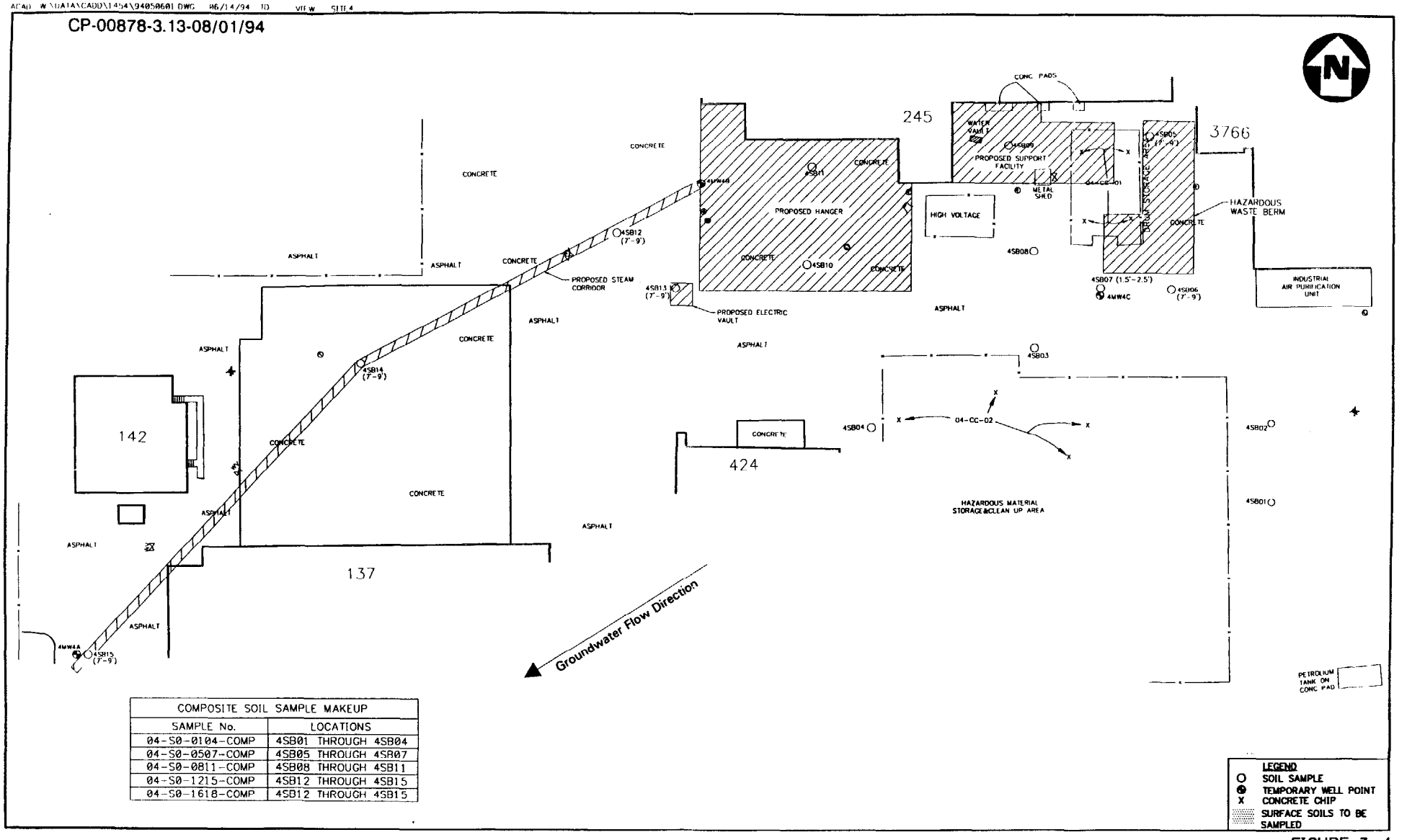
LEGEND
- SOIL SAMPLE
- TEMPORARY WELL POINT
- CONCRETE CHIP
- SURFACE SOILS TO BE SAMPLED

FIGURE 3-3

SITE 3 (MCON P-966T)
SITE MAP
MCAS CHERRY POINT, NORTH CAROLINA

0 20 40
SCALE IN FEET

HALLIBURTON NUS Corporation



COMPOSITE SOIL SAMPLE MAKEUP	
SAMPLE No.	LOCATIONS
04-S0-0104-COMP	4SB01 THROUGH 4SB04
04-S0-0507-COMP	4SB05 THROUGH 4SB07
04-S0-0811-COMP	4SB08 THROUGH 4SB11
04-S0-1215-COMP	4SB12 THROUGH 4SB15
04-S0-1618-COMP	4SB12 THROUGH 4SB15

FIGURE 3-4

SITE 4 (MCON P-965T)
SITE MAP
MCAS CHERRY POINT, NORTH CAROLINA

0 40 80
SCALE IN FEET

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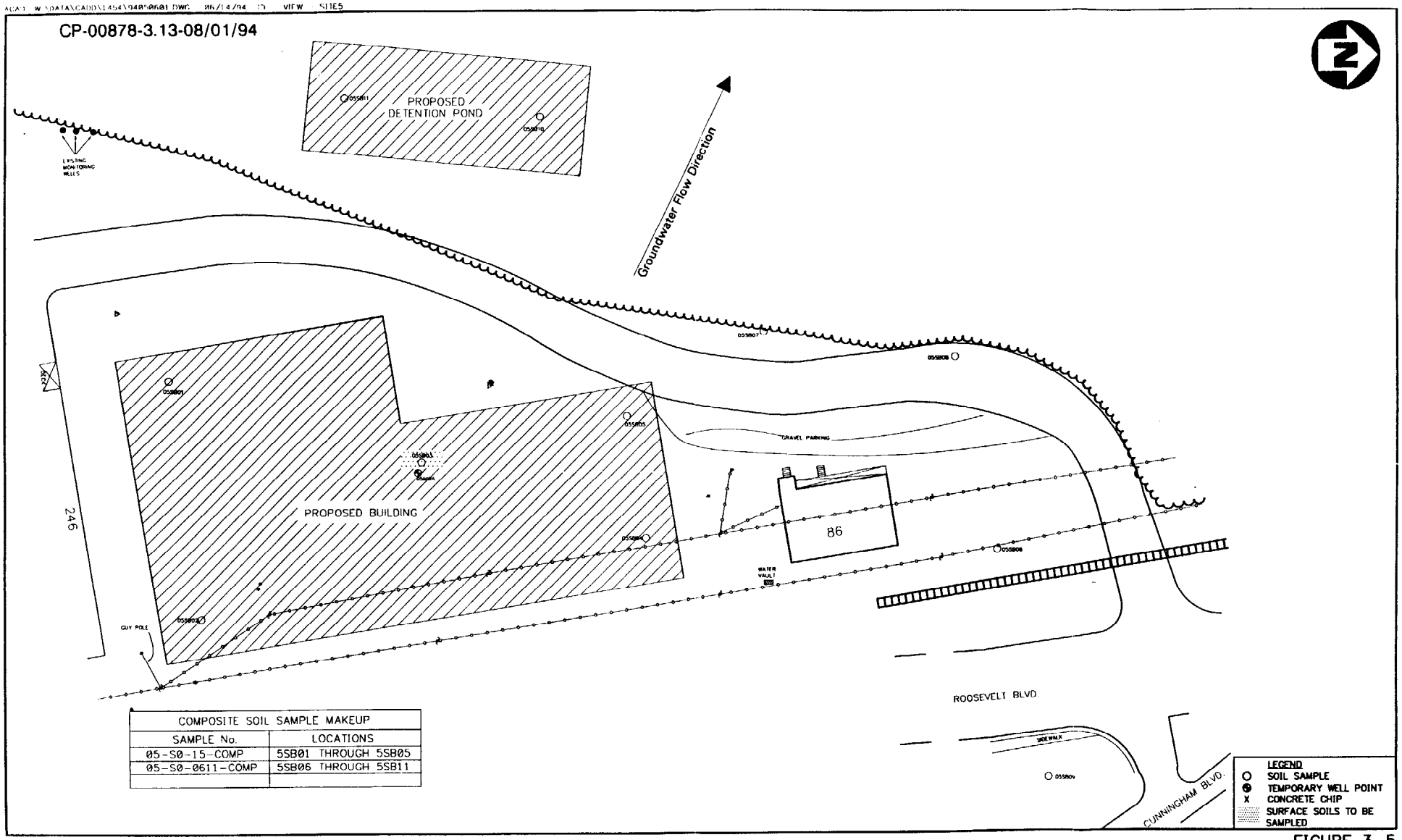

COMPOSITE SOIL SAMPLE MAKEUP	
SAMPLE No.	LOCATIONS
05-S0-15-COMP	5SB01 THROUGH 5SB05
05-S0-0611-COMP	5SB06 THROUGH 5SB11

FIGURE 3-5

SITE 5 (MCON P-962T)
SITE MAP
MCAS CHERRY POINT, NORTH CAROLINA

0 50 100
SCALE IN FEET

HALLIBURTON NUS Corporation

Composited surface soil samples were collected from the surface 1 foot (0 to 1 foot below ground surface) of grouped locations at each site. Discrete sample locations which make up a composite sample group are identified on Figures 3-1 through 3-5. Each grab sample that was used for the composite sample was collected individually and stored in an amber glass container on ice in a cooler until all samples for that composite were collected. The sample was then homogenized and placed in the appropriate sample container.

During the second investigation, disposable sampling trowels or hand augers were used to collect the discrete surface soil samples adjacent to the original sample locations. All samples were taken at a depth of 0-1 foot below ground surface, or if the locations were in a paved area, from the first 1-foot below the paving subgrade. The locations of the discrete surface soil samples are shown on Figures 3-1 through 3-5. Following collection, the samples were monitored using an HNu equipped with a photoionizing detector and then placed into the appropriate sample container as outlined int he Work Plan Addendum. No HNu readings above background were observed for any of the soil samples.

In accordance with Naval Energy and Environmental Activity (NEESA) requirements as outlined in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program (NEESA 20.2-047B, June 1988), blind duplicate samples were sent to the analytical laboratory. The sample identification scheme, as described in the Work Plan (dated February 1994), was used, however, the location number of the duplicate sample was incremented beginning with the number that was one greater than the total number of boring locations at a given site. For example, at Site 4 where 15 boring locations were sampled, duplicates were identified as locations SO-16, SO-17, etc. Sample collection times were noted to be different than actual on the sample labels and chain-of-custody forms for duplicate samples. The actual duplicate sample collection times were correctly noted on the appropriate sample logsheet forms and in the field/site logbook.

3.2 GROUNDWATER INVESTIGATION

Groundwater was investigated at all sites by installation and sampling of groundwater monitoring well points as outlined in the Work Plan. These temporary sampling points provided a cost-effective alternative to permanent monitoring wells and allowed investigation of a large area in a short period of time. The following subsections described the installation, abandonment, development, purging, and sampling of the well points installed during this investigation.

3.2.1 Well Point Installation and Abandonment

At each site, a minimum of one well point was installed to obtain groundwater samples. The data collected provides an assessment of the chemicals present in the groundwater at each site and also provides a general assessment of the hydrogeological conditions and flow direction. Locations of well points are shown on Figures 3-1 through 3-5.

The Geoprobe System was used to install all well points. Each well point was 1-inch outside and 1/2 inch inside diameter carbon steel consisting of a 2-foot slotted well screen and 1-foot connection to which 3-foot lengths of push rods were attached. Each section was push driven using hydraulic and air hammer features of the Geoprobe to a minimum depth of 15 feet below ground surface. After installation, the top of the well point was covered with aluminum foil and a plastic cap. The top of the well point was purposely driven to below ground surface grade so that the location could be covered with soil to minimize the potential for tampering.

The location was surveyed and elevations for each well point were determined at the ground surface. After surveying, each well point was abandoned by simple removal of the well point sections using the Geoprobe System. The annulus was allowed to collapse and the remaining hole backfilled with surficial material from that location.

3.2.2 Well Point Development

Each well point was permitted to equilibrate for at least 24 hours, after which a depth to static water level was performed. Initial measurements of the water level were used to assess the groundwater elevation in the well point and to determine the amount of silt and sand infiltration that had occurred during well point installation. For well points at Sites 1 and 5, it was necessary to drive the well point an additional 3 feet further to obtain enough standing water in the well point to permit low-flow sampling.

Well points were developed using a peristaltic pump and polyethylene tubing to remove silt and sand which had entered the well point. Typically, as much as 2 to 3 feet of material was required to be removed from the point. A maximum of 5 gallons of water, silt, and sand was removed from each well point during development. Development consisted of inserting a length of polyethylene tubing to the bottom of the well point, and agitating the tubing vertically while the pump removed materials. The pump operated at a maximum rate of approximately 2 liters per minute. After removal of settled material from the bottom of the well point, the well point was vigorously pumped at maximum capacity until discharge water was visibly colorless and clear and no further sediments were being generated. Despite efforts to remove fine material

from the vicinity of the well screen during well development, is was still necessary to remove silt and sand from the well point prior to purging for sampling.

3.2.3 Well Point Purging and Groundwater Sampling

The sampling apparatus used for collecting groundwater samples consisted of a 5-foot length of 3/8-inch-diameter teflon tubing into which a small section (< 1 inch long) of silastic tubing was inserted at each end. Inside the teflon tubing, a decontaminated 1/4-inch-diameter steel ball bearing prevented water from leaking out of the teflon portion of the tubing by acting as a check valve. At the top end of the teflon tubing, a length of polyethylene tubing was force fitted into the silastic tubing and used to connect to the teflon sample collection tube with the peristaltic pump. Silastic tubing was threaded through the pump and a section of teflon tubing was used for discharge.

Prior to sampling, thorough purging of the well points was performed to ensure collection of a representative groundwater sample. Due to the small inside diameter of the well points (1/2 inch), more than 5 volumes of standing water were removed from each location. During purging, periodic measurement of pH, specific conductivity, temperature, and color and turbidity of the groundwater was performed as outlined in the Work Plan. Groundwater sample collection was not initiated until stabilization of these parameters was observed. Stabilization was defined as ±0.1 pH units, ±10% for specific conductance, ±0.1°C for temperature, and < 10 nephelometric turbidity units (NTU) for turbidity.

Groundwater sampling was performed using the peristaltic pump discharging directly into the appropriate sample containers. Sample containers were filled by analysis in the following order: Target Compound List (TCL) semivolatile organic compounds, TCL pesticides and PCBs, Total Petroleum Hydrocarbons (TPH) by SW846 Methods 3050 and 9071, Target Analyte List (TAL) metals, cyanide, and chemical oxygen demand. After these samples were collected, the pump was permitted to run while these samples were secured.

Volatile samples (volatile organic compounds analyzed by SW846 Method 8260 and TPH analyses by SW846 Method 8015) were then obtained from the teflon sample collection tube. The pump was shut off, tubing removed from the well point, disconnected from the polyethylene tubing, and groundwater was poured directly from the bottom of the teflon tubing into the sample vials. The 5-foot section of teflon tubing permitted collection of only volatile organic samples or TPH, consequently, after pouring the volatile organic sample, the apparatus was reassembled, reinserted into the well point, and the pump reactivated. The groundwater was purged until visibly clear prior to collection of the volatile TPH sample. Duplicate and matrix spike sample collection was performed in the same manner, however, all volatile organic samples were collected prior to collection of the volatile TPH samples.

3.3 CONCRETE CHIP SAMPLING

Composite concrete chip samples were collected from structures at Sites 1, 2, and 4 which will require demolition and removal to accommodate new construction. Each composite sample was collected from four individual locations in each structure. Each sample location was cleared of debris and surface material prior to chipping. The surficial 1/4 inch of the concrete at each grab location was chipped using a decontaminated hammer and cold chisel. The samples were placed directly into the appropriate sample container as described in the Work Plan and shipped immediately to the laboratory for RCRA characterization analysis (TCLP metals and organics, ignitability, reactivity, and corrosivity).

3.4 DECONTAMINATION PROCEDURES

All nondedicated sampling equipment was decontaminated both prior to beginning field sampling and between samples. This equipment included the Shelby tube soil samplers, trowels, well-point screens, and push rods. The following steps were taken:

1. Potable water rinse
2. Alconox or liquinox detergent wash
3. Potable water rinse
4. Nitric acid rinse diluted with deionized water (except when sampling for metals)
5. Analyte-free water rinse
6. Isopropanol rinse
7. Air dry
8. Wrap in aluminum foil

Field analytical equipment such as instrument probes was rinsed first with analyte-free water, then with the sample liquid prior to introduction to the sample liquid for measurement.

3.5 WASTE HANDLING AND DISPOSAL

All investigation-derived wastes (IDW), including soil, development and purge water, and decontamination fluids were disposed of in approved manners. Soils remaining following sample collection were returned to the boring locations from which they were originally obtained. Development and purge water from monitoring well points was containerized in 55-gallon drums and was discharged into the Industrial Wastewater Treatment Plant (IWTP) at the completion of investigative activities. The decontamination fluids were also discharged to the IWTP at the completion of field activities. The drums used to contain

groundwater and decontamination fluids were double-rinsed with potable water and placed in the drum storage area at the base. The rinse water was discharged to the IWTP.

Personal protective equipment (PPE) and other solid waste materials generated during the field investigation were disposed of in doubled plastic garbage bags which were placed in the garbage dumpster located behind Building 4223.

3.6 QUALITY CONTROL SAMPLES

In addition to environmental sample acquisition, quality control (QC) samples were collected in accordance with Navy requirements. The types of QC samples collected are defined as follows:

- **Trip Blanks**. Trip blanks were samples which originated from analyte-free water collected in sample vials at the laboratory. The vials were shipped with the sample containers to the sampling sites and returned to the laboratory with the volatile organic compound (VOC) samples. The trip blanks were analyzed for the same list of volatile organic compounds as the environmental samples.

- **Equipment Rinsate Blanks**. Equipment rinsate blanks were obtained under representative field conditions by running analyte-free water through the sampler after decontamination and placing the runoff water in the appropriate sample containers for analysis. Equipment rinsate blanks are used to assess the effectiveness of decontamination procedures. As described in NEESA guidance, every other rinsate blank delivered to the laboratory was analyzed.

- **Field Blanks**. Field blanks were obtained by direct pouring from the potable water source into the sample containers. Field blanks are used to assess contamination present in source water used for equipment decontamination.

- **Field Duplicates**. Field duplicates were generated by splitting selected samples into two portions for analysis. The field duplicates were used to assess the overall precision of the sampling and analysis program. The field duplicates were analyzed in the laboratory for the same parameters as the associated environmental samples.

4.0 SITE CONDITIONS

4.1 GENERAL SITE CONDITIONS

4.1.1 MCAS Topography

The MCAS is located approximately 30 miles inland from Cape Lookout on the Atlantic Ocean, and is located within the Atlantic Coastal Plain Physiographic Province. The province is characterized as an elevated sea bottom environment with low topographic relief, and is generally below 100 feet in elevation. Subsurface materials consist of Cretaceous, Tertiary, and Quaternary deposits. These deposits generally dip gently seaward.

4.1.2 MCAS Climate

Proximity to the Atlantic Ocean significantly influences the climate of Craven County which is warm and humid with short, mild winters and long, hot summers. The average annual temperature is approximately 64°F. Periods of continuous freezing temperatures seldom last more than a few days. Average annual precipitation in Craven County is approximately 55 inches. During extreme dry years, precipitation may be as low as 35 inches, whereas rainfall may increase to 80 inches during very wet years. Tropical hurricanes pass offshore twice in an average year, but infrequently strike the coast with full force.

4.1.3 MCAS Drainage

The MCAS is bounded on two sides by surface water bodies: the Neuse River to the north, and Hancock Creek to the east. In addition, Slocum Creek runs from south to north near the western boundary of the MCAS. Drainage is directed toward these surface water bodies via a system of ditches, storm sewers, and local tributaries. Dominant drainage is toward Slocum Creek on the west and to Hancock Creek on the east. Tributaries to Slocum Creek drain four sub-basins. These sub-basins are Sandy Branch, Schoolhouse Branch, Luke Rowes Gut, and Turkey Gut.

Slocum Creek is shallow, warm, and brackish. It serves as a recreational resource (e.g., boating) for military personnel and local residents. The North Carolina Department of Environmental Health and Natural Resources (NCDEHNR) has classified Slocum Creek and Hancock Creek as SC estuarine waters. SC classification is defined as suitable for fish and wildlife propagation; secondary recreation (i.e., recreational

activities not involving whole-body contact); and other uses applicable for waters of lower quality. The East Prong of Slocum Creek has been classified as Class C fresh water, which is also suitable for fish and wildlife propagation and secondary recreation. It is also suitable for agriculture purposes. The Neuse River in the vicinity of Cherry Point has been classified as SB estuarine water which is defined as being suitable for fish and wildlife propagation and primary recreation activities (activities involving whole-body contact) (North Carolina Department of Environment, Health, and Natural Resources, November 1, 1990).

4.1.4 Underground Utilities

Underground utilities are present at all sites, however, due to the limited data available, the actual types and numbers are unknown. Known utility types include: steam, electric, phone, vacuum, air, and storm and sanitary sewer.

4.2 SITE GEOLOGY

Geology of all five sites consists of sedimentary deposits of mottled silty sand and sandy silt materials with some gravelly sand mixtures present for the entire depth of all borings (maximum depth of 9 feet). The soils at the sites appear to be naturally-occurring sediments. Boring logs showing the local conditions for each site are included in Appendix B.

4.3 HYDROGEOLOGY

4.3.1 Regional Hydrogeology

The hydrogeology in the vicinity of the MCAS is dominated by its proximity to the ocean, sedimentary environment, and abundance of brackish surface water. The facility is underlain by four non-saline aquifers composed primarily of sand and sandy limestone to a depth of approximately 500 feet. These aquifers from the shallowest to the deepest are the Surficial Aquifer, the Pungo River Aquifer, the Yorktown Aquifer, and the Castle Hayne Aquifer. Below a depth of 500 feet, the aquifers become saline. Three confining units separate the aquifers beneath the MCAS.

4.3.2 Site Hydrogeology

Groundwater flow direction, as indicated by previous work in adjacent areas, is generally to the west. This is supported by the groundwater elevation measurements made during the site characterization investigation. Elevations are highest in the easternmost wells (Site 4) at about 15 feet above mean sea level (msl) and are

lowest in the westernmost well at approximately 4 feet above msl. Measurements were taken during only one round of sampling and do not represent static water level elevations at all times of the year. During previous investigations at adjacent areas, water level elevations have been documented to fluctuate by several feet, depending on the time of year and amount of precipitation (see Table 4-1).

TABLE 4-1

GROUNDWATER ELEVATIONS
MCAS CHERRY POINT, NORTH CAROLINA

Well Number	Water Level Below Ground Surface (feet)	Elevation of Ground Surface (Ft,MSL)	Elevation of Static Groundwater (Ft,MSL)	Elevation of Screened Interval (Ft,MSL)
01-MW1A	15.94	23.71	7.77	6-8
02-MW2A	10.91	24.41	13.50	6-8
03-MW3A	9.45	24.01	14.56	8-10
04-MW4A	8.25	22.99	14.74	8-10
04-MW4B	8.47	23.87	15.40	9-11
04-MW4C	8.64	24.02	15.38	9-11
05-MW5A	16.90	20.96	4.06	3-5

Note: Water level reading obtained April 1994.

5.0 SITE ASSESSMENT

5.1 ANALYTICAL METHODOLOGY

The analytical methods used were selected to provide information to support risk assessment and to comply with investigative requirements outlined by regulatory agencies as necessitated to identify the proper disposal options. The following text details the analyses that were performed, provides justification for their utility as appropriate, and identifies the corresponding NEESA QC level. Validated analytical data and method-specific detection and quantitation limits are presented in Appendix C.

Both soils and groundwater were analyzed for Volatile Organic Compounds (VOCs) using Method 8260 as described in Test Methods for Evaluating Solid Wastes (SW-846), Third Edition (U.S. EPA, June 1990). The compound list used for analysis was expanded to include chemicals contained in the CLP statement of work dated 8/91 (OLM01.8). Method 8260 is a gas chromatography/mass spectroscopy (GC/MS) method which provides positive identification (needed for quantitative risk assessment) and low detection and quantitation limits which are required for underground storage tank investigations and groundwater assessment in the State of North Carolina. The use of this non-CLP method, however, prevented generation of QC Level D analytical data as defined by NEESA. Although defined as QC Level C data, the data is deemed suitable for use in a risk assessment because of Method 8260 equivalence with the CLP low concentration analytical protocol (CLP OLC02.0) and because a complete set of raw QC data, equivalent in every respect to a CLP data package except format, was provided by the laboratory for data validation purposes.

Target Compound List (TCL) semivolatile organic compounds and pesticides and PCBs were analyzed with reference to the OLM01.8 CLP statement of work dated August 1993. These data were generated as NEESA QC Level D data. Target Analyte List (TAL) metals and cyanide were analyzed according to protocol outlined in the ILM03.0 CLP statement of work. Data for these analyses are NEESA QC Level D data.

Analyses for Total Petroleum Hydrocarbons (TPH) were conducted to comply with investigative requirements set forth by the State of North Carolina. The characterization of TPH in soils provides assessment of volatile, low and medium to high boiling point range hydrocarbons, and residual hydrocarbons. Analyses for each fraction are selective. Low boiling point hydrocarbons are identified by analysis by a modified SW-846 Method 8015, gas chromatography (GC) with benzene, toluene,

ethylbenzene, and xylene (BTEX) distinction. Medium- to high-range boiling point hydrocarbons are quantified by use of SW-846 Methods 3550 and 8015, extraction, and GC analysis. Residual hydrocarbons are determined by SW-846 Method 9071, freon extraction and gravimetric analysis of the residue. All methods are non-CLP and data are NEESA Level C data.

At sites requiring groundwater disposal, analysis for the chemical oxygen demand (COD) was performed. COD analysis was performed with reference EPA 600 Series Method 410.4 and the data QC level is NEESA Level C data.

To facilitate disposal of excavated soils and demolition of concrete debris, the RCRA characteristics for these materials was determined. Concrete was assumed to be unreactive and inert, thereby requiring only the Toxic Leaching Characteristic Procedure (TCLP, SW1311). Analyses were performed for RCRA regulated volatile, semivolatile, pesticide, herbicide, and metallic chemicals. Soils required analysis for ignitability, corrosivity, and reactivity in addition to the TCLP analyses. All preparation and analytical procedures for these media were performed as described in 40 CFR Part 136. Data for RCRA characteristic analyses are NEESA Level C data.

5.2 DATA VALIDATION

The data were validated with reference to U.S. EPA Functional Guidance for evaluating organic and inorganic analyses, NEESA Level D data validation protocol, and method-specific requirements. A data validation memorandum was generated for the analyses of each sample set that summarizes the findings of the data review. These memoranda, which were submitted to the HNUS project manager, provide an explanation of the applied data qualifiers, and identifies problems associated with data usability. The validated and tabulated analytical database is presented in Appendix C.

Organic analyses were validated in accordance with NEESA Level D validation requirements and with reference to "Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses" (U.S. EPA, February 1, 1988). The data were validated based on a review of the following parameters:

- Holding Times
- GC/MS Tuning
- Initial and Continuing Calibration
- Field QC and Laboratory Blanks
- Surrogate Recovery
- Matrix Spike/Matrix Spike Duplicate

- Field Duplicates
- Internal Standards Performance
- TCL Compound Identification
- Compound Quantitation
- Tentatively Identified Compounds (TICs)

Data that were compromised as a result of noncompliance in one or more of the review areas were qualified as outlined in the validation guidance. Data validation reports summarize all qualification actions taken. No major problems resulting in the rejection of analytical data for organics analyses were noted.

Inorganic analyses were validated in accordance with NEESA Level D validation requirements and with reference to "Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses" (U.S. EPA, July 1, 1988). The data were validated based on a review of the following parameters:

- Holding Times
- Initial and Continuing Calibration Standard Performance
- Field QC and Laboratory Blanks
- ICP Interference Check Sample
- Laboratory Check Sample
- Laboratory Duplicate Sample
- Matrix Spike Sample
- Furnace Atomic Absorption QC
- ICP Serial Dilution
- Sample Result Verification
- Field Duplicates

Data that were compromised as a result of noncompliance in one or more of the review areas were qualified as outlined in the validation guidance. Data validation reports summarize all qualification actions taken.

Analyses for TPH, COD, and RCRA characteristics were validated with reference to method-specific requirements. A data validation memorandum summarizing the findings and conclusions was generated for each data set and submitted to the HNUS project manager.

5.3 NATURE AND EXTENT OF CONTAMINATION

This section will provide a site-specific discussion of the analytical results with respect to the chemical contamination detected. The results presented are limited to data collected during this investigation, however, some site background information that is available from previous activities is presented.

5.3.1 Site 1 (MCON P-962T)

Site 1 is located in the vicinity of the north end of Building 154. The areal extent of the site includes the existing parking lot bounded by a building and "A" Street. A total of 14 soil borings, 3 composites, and 1 downgradient groundwater monitoring wellpoint were the basis for this site investigation. All soil borings were sampled at depths of 3 to 5 feet below ground surface. The monitoring wellpoint was installed to a depth of approximately 18 feet below ground surface. The frequency of occurrence and range of positive detection for chemicals in soils at Site 1 are presented in Table 5-1.

5.3.1.1 Soils

Based on the results of the analyses conducted at Site 1, low concentrations of trichloroethene (bis(2-ethylhexyl)phthalate, metallic constituents, and various pesticide compounds are noted to be present at the site. The only positive results reported for trichloroethene (3.3 µg/kg) and bis(2-ethylhexyl)phthalate (340 µg/kg) were detected in sample SO-13. Maximum concentrations of pesticides were detected in surficial samples SO-05 (Dieldrin, 120 µg/kg), SO-04 (4,4'-DDD,39 µg/kg), and SO-07 (Endrin, 1.8 µg/kg). All other maximums are noted from composite samples SO-0710-COMP (Aldrin - 2.6 µg/kg, Heptachlor epoxide - 2.6 µg/kg, and Chlordane isomers - 77 µg/kg total). 4,4'-DDT and 4,4'-DDE were detected in 01-SO-0106-COMP at concentrations of 330 and 300 µg/kg, respectively.

Several TAL metals were detected in the discrete soil samples at Site 1. Most notable of the detections are arsenic (detected in 6 of 19 samples at a maximum concentration of 4.9 mg/kg), barium (detected in 3 samples at a maximum of 20.2 mg/kg), chromium (in all samples at a maximum of 13.7 mg/kg), manganese in 10 samples at a maximum of 34 mg/kg), manganese (15 of 19 samples, 42.1 µg/kg maximum), mercury (4 of 19 samples with a maximum of 0.05 µg/kg), silver (1 of 19 samples at 1.2 µg/kg), selenium (detected in 2 of 14 samples at a maximum of 0.58 mg/kg), vanadium (18 of 19 samples with a maximum of 17.1 µg/kg), zinc (1 of 19 samples at 175 µg/kg), and cyanide (detected in 2 of 19 samples with a maximum of 4.6 µg/kg).

TABLE 5-1

SUMMARY OF POSITIVELY DETECTED CHEMICALS AT SITE 1
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Frequency of Positive Detection	Concentration Range	Location of Maximum	Range of Background Concentrations*
SOILS - ORGANICS		**(µg/kg)**		
Trichloroethene	1/19	3.3	SO-13-0305	ND(6)-ND(8)
Bis(2-ethylhexyl) phthalate	1/6	340	SO-13-0001	ND(380)-ND(410)
Aldrin	1/14	2.6	SO-0710-COMP	NA
Heptachlor epoxide	1/14	2.6	SO-0710-COMP	NA
Dieldrin	6/14	2.3-120	SO-05-0001	NA
4,4'-DDE	10/14	2.9-300	SO-0106-COMP	NA
Endrin	2/14	1.7-1.8	SO-07-0001	NA
4,4'-DDD	9/14	1.7-39	SO-04-0001	NA
4,4'-DDT	11/14	2-330	SO-0106-COMP	NA
alpha-Chlordane	5/14	0.64-23	SO-0710-COMP	NA
gamma-Chlordane	1/14	24	SO-0710-COMP	NA
METALS		**(mg/kg)**		
Aluminum	19/19	1,760-9,780	SO-11-0305	651-16,900
Arsenic	6/19	0.74-4.9	SO-10-0305	0.58-5.1
Barium	3/19	17.2-20.2	SO-05-0305	6.7-30.9
Calcium	19/19	79-235,000	SO-13-0001	15.5-325
Chromium	19/19	4.7-34	SO-13-0001	3.3-223
Copper	1/19	13	SO-13-0001	NA
Iron	19/19	1,520-6,350	SO-11-0305	573-8,860
Lead	16/19	3.3-26.5	SO-13-0305	0.93-141
Magnesium	18/19	99.1-2,940	SO-13-0001	34.3-871
Manganese	15/19	3.9-42.1	SO-13-0001	2.2-16
Mercury	4/19	0.03-.05	SO-01-0001	ND(0.11)
Nickel	3/19	1.4-65	SB-13-0001	4.7-7.6
Potassium	1/19	169	SO-05-0305	229
Selenium	4/19	.31-.58	SO-11-0305	0.24-1.1
Silver	1/19	1.2	SO-13-0001	NA
Vanadium	18/19	5.3-17.1	SO-11-0305	3.1-27
Zinc	1/19	175	SO-13-0001	1.3-9.4
Cyanide	2/19	1.4-4.6	SO-13-0001	NA

TABLE 5-1 (Continued)
SUMMARY OF POSITIVELY DETECTED CHEMICALS IN SITE 1 SOILS
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Frequency of Positive Detection	Concentration Range	Location of Maximum	Range of Background Concentrations*
GROUNDWATER - ORGANICS		**(µg/L)**		
1,1,2,2-Tetrachhloroethane	1/1	5.5	MW-1A	NA
Trichloroethene	1/1	1.4	MW-1A	NA
Trichlorofluoromethane	1/1	14	MW-1A	NA
METALS		**(µg/L)**		
Aluminum	1/1	749	MW-1A	NA
Calcium	1/1	20100	MW-1A	NA
Iron	1/1	1580	MW-1A	NA
Magnesium	1/1	10900	MW-1A	NA
Manganese	1/1	202	MW-1A	NA
Nickel	1/1	15.1	MW-1A	NA
Potassium	1/1	3860	MW-1A	NA
Sodium	1/1	13700	MW-1A	NA
Zinc	1/1	117	MW-1A	NA

*ND(0.11) - The compound was not detected at the detection limits shown in parentheses.
NA - Not analyzed.

Results of TPH analyses indicate detectable quantities of oil and grease range petroleum hydrocarbons at boring location SO-05 (310 mg/kg). No other positive results were reported for TPH for gasoline, diesel, or oil/grease range hydrocarbons at Site 1.

5.3.1.2 Groundwater

Analyses of the groundwater sampled immediately downgradient of Site 1 (01MW1A) indicate the presence of low concentrations of halogenated organic chemicals and metals. The detected organic chemicals included 1,1,2,2-tetrachloroethane (5.5 μg/L), trichloroethene (1.4 μg/L), and trichlorofluoromethane (also known as Freon-11, 14 μg/L). Metals that were detected include aluminum, calcium, magnesium, manganese, nickel, potassium, sodium, and zinc.

5.3.2 Site 2

Site 2 is located between Buildings 137 and 129. A total of six soil borings, one composite, and one groundwater monitoring locations were sampled. Frequency of detection and range of positive results reported for the soils at Site 2 are presented in Table 5-2.

5.3.2.1 Soil

A wide variety of organic and metallic chemicals were positively detected in the soils obtained from Site 2. All organic compounds were mono- and polycyclic aromatic and included: toluene, xylenes, a wide variety of polynuclear aromatic hydrocarbons (centered at SO-07), and the pesticides Endosulfan I, 4'-4'-DDE, Endrin (SO-03) and Dieldrin (maximum of 5.4 μg/kg at SO-02). The latter pesticide is also detected at boring SO-01 and SO-03. Also detected were bis(2-ethylhexyl)phthalate, and butylbenzylphthalate phthalate esters, and the polychlorinated biphenyl (PCB) aroclor-1260. The volatile organics (toluene and xylenes) were detected in one sample located at SO-01, next to Building 137. Aroclor-1260 was detected at a maximum of 3100 μg/kg at a 0-12" depth from SO-04.

5.3.2.2 Groundwater

Analyses of the groundwater collected at Site 2 (02MW1A) indicate that a variety of chlorinated volatile organic and semivolatile organic compounds in addition to metallic constituents are present. Detected compounds include chlorobenzene (2.1 μg/L), 1,2-dichlorobenzene (5.4 μg/L), 1,4-dichlorobenzene (1.8 μg/L), dichlorodifluoromethane (7.9 μg/L), 1,1-dichloroethane (6.9 μg/L), cis-1,2-dichloroethene

TABLE 5-2

SUMMARY OF POSITIVELY DETECTED CHEMICALS AT SITE 2
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Frequency of Positive Detection	Concentration Range	Location of Maximum	Range of Background Concentrations*
SOILS - ORGANICS		**(µg/kg)**		**(µg/kg)**
Toluene	1/11	9.1	SO-01-0305	ND(6)-ND(12)
Xylenes	1/11	6.9	SO-01-0305	ND(6)-ND(12)
Phenanthrene	5/9	100-1,300	SO-07-0001	ND(380)-ND(410)
Fluoranthene	6/9	160-3,700	SO-07-0001	ND(380)-ND(410)
Pyrene	6/9	130-3,400	SO-07-0001	ND(380)-ND(410)
Benzo(a)anthracene	5/9	100-2,600	SO-07-0001	NA
Chrysene	5/9	100-2,400	SO-07-0001	ND(380)-ND(410)
Bis(2-ethylhexyl)phthalate	6/9	92-770	SO-07-0001	ND(380)-ND(410)
Benzo(b)fluoranthene	6/9	56-2,900	SO-07-0001	ND(380)-ND(410)
Benzo(k)fluoranthene	6/9	71-1,400	SO-07-0001	ND(380)-ND(410)
Benzo(a)pyrene	6/9	61-2,400	SO-07-0001	ND(380)-ND(410)
Acenaphthene	1/9	100	SO-07-0001	NA
Flourene	1/9	110	SO-07-0001	NA
Anthracene	2/9	190-420	SO-07-0001	NA
Carbazole	2/9	82-110	SO-07-0001	NA
Butylbenzylphthalate	1/9	80	SO-06-0001	NA
Indeno(1,2,3-cd)pyrene	3/9	83-970	SO-07-0001	NA
Dibenz(a,h)anthracene	2/9	98-370	SO-07-0001	NA
Benzo(g,h,i)perylene	3/9	99-960	SO-07-0001	NA
Endosulfan I	1/8	0.52	SO-03-0001	NA
Dieldrin	3/8	0.86-5.4	SO-02-0001	NA
4,4'-DDE	1/8	0.11	SO-03-0001	NA
Endrin	1/8	1.3	SO-03-0001	NA
gamma-Chlordane	1/8	0.93	SO-05-0001	NA
Aroclor-1260	7/8	45-3,100	SO-04-0001	NA
METALS		**(mg/kg)**		**(mg/kg)**
Aluminum	11/11	2,330-6,490	SO-05-0305	651-16,900
Arsenic	1/11	5.2	SO-06-0305	0.58-5.1
Barium	1/11	12.9	SO-05-0305	6.7-30.9

TABLE 5-2 (Continued)
SUMMARY OF POSITIVELY DETECTED CHEMICALS AT SITE 2
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Frequency of Positive Detection	Concentration Range	Location of Maximum	Range of Background Concentrations*
Cadmium	2/11	2-2.2	SB-07-0001	NA
Calcium	11/11	204-54,600	SO-06-0001	15.5-325
Chromium	9/11	4.8-17.6	SO-07-0001	3.3-22.3
Copper	1/11	17.9	SB-06-0001	NA
Iron	11/11	803-4,670	SO-05-0305	573-8,860
Lead	10/11	2.1-51.1	SO-07-0001	0.93-141
Magnesium	7/11	123-257	SO-01-0305	34.3-871
Manganese	9/11	3-26.2	SO-01-0001	2.2-16
Mercury	3/11	0.05-0.5	SO-01-0001	ND(0.11)
Nickel	7/11	1.2-19.9	SO-07-0001	4.7-7.6
Potassium	3/11	148-192	SO-07-0305	229
Selenium	1/11	0.26	SB-01-0001	0.24-1.1
Vanadium	9/11	4.8-9.1	SO-06-0305	3.1-27
Zinc	5/11	12.1-57.5	SB-07-0001	1.3-9.4
GROUNDWATER - ORGANICS		**(μg/L)**		**(μg/L)**
Chlorobenzene	1/1	2.1	MW-2A	NA
1,2 Dichlorobenzene	1/1	5.4	MW-2A	NA
1,4 Dichlorobenzene	1/1	1.8	MW-2A	NA
Dichlorodifluoromethane	1/1	7.9	MW-2A	NA
1,1 Dichloroethane	1/1	6.9	MW-2A	NA
1,2 Dichloroethene (cis)	1/1	4.1	MW-2A	NA
Trichloroethene	1/1	0.8	MW-2A	NA
Trichlorofluoroethene	1/1	1.2	MW-2A	NA
1,2 Dichlorobenzene	1/1	4	MW-2A	NA
N-Nitrosodiphenylamine	1/1	6	MW-2A	NA

TABLE 5-2 (Continued)
SUMMARY OF POSITIVELY DETECTED CHEMICALS AT SITE 2
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Frequency of Positive Detection	Concentration Range	Location of Maximum	Range of Background Concentrations*
METALS		**(µg/L)**		**(µg/L)**
Aluminum	1/1	2650	MW-2A	NA
Arsenic	1/1	5.3	MW-2A	NA
Barium	1/1	150	MW-2A	NA
Calcium	1/1	29700	MW-2A	NA
Iron	1/1	21500	MW-2A	NA
Magnesium	1/1	3830	MW-2A	NA
Mangenese	1/1	727	MW-2A	NA
Nickel	1/1	6.6	MW-2A	NA
Potassium	1/1	8030	MW-2A	NA
Sodium	1/1	21600	MW-2A	NA
Vanadium	1/1	3	MW-2A	NA
Zinc	1/1	62.6	MW-2A	NA

*ND(0.11) - The compound was not detected at the detection limits shown in parentheses.
NA - Not analyzed.

(4.1 μg/L), trichloroethene (0.8 μg/L), and trichlorofluoromethane (1.2 μg/L). The semivolatile organic compound N-nitrosodiphenylamine was present at a concentration of 6 μg/L.

Metals detected in the groundwater at Site 2 include aluminum, arsenic, barium, calcium, iron, magnesium, manganese, potassium, sodium, vanadium, and zinc. The groundwater sample was noted to be slightly turbid upon sample collection, having a measured turbidity of 8 nephelometric turbidity units (NTU).

Positive detections of diesel range petroleum hydrocarbons and oil and grease were reported for the Site 2 groundwater sample at concentrations of 180 μg/L and 5.2 μg/L, respectively. Also, a chemical oxygen demand of 56 mg/L is reported for this groundwater sample.

5.3.3 Site 3

Site 3 is located at the entrance to Hangar 1 of Building 137. The site is covered by a concrete surface approximately 12 to 18 inches thick. Four soil boring locations, two of which were sampled to a depth of 9 feet, one composite, and one groundwater monitoring point were sampled. One surface soil was collected at 0-1' depth below the concrete. The frequency of detection and range of positive detections reported for Site 3 soils is presented in Table 5-3.

5.3.3.1 Soil

The soils collected from shallow (3 to 5 feet below ground surface) and deep sample interval did not contain detectable concentrations of any organic compounds. However, several metals including aluminum, calcium, chromium, iron, lead, magnesium, manganese, and potassium were detected at almost all of the locations. Mercury and vanadium were detected only for the surficial sample at SO-04. The high frequency of detection and comparably low concentrations that are observed for these chemicals indicate that it is unlikely that chemical contamination has occurred at this site.

One anomalous detection of oil and grease is noted for Site 3. Soil boring location SO-03, sampled at a depth of 3 to 5 feet, contained oil and grease at a reported concentration of 280 mg/kg. This concentration is noted to be equal to the sample reporting limit for this parameter.

TABLE 5-3

SUMMARY OF POSITIVELY DETECTED CHEMICALS AT SITE 3
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Frequency of Positive Detection	Concentration Range	Location of Maximum	Range of Background Concentrations (mg/kg)
METALS		**(mg/kg)**		
Aluminum	8/8	2,380-9,130	SO-04-0709	6.51-16,900
Calcium	6/8	97.6-44,700	SO-04-0001	15.5-325
Chromium	4/8	8.5-11.8	SO-04-0709	3.3-22.3
Iron	8/8	780-4,830	SO-04-0709	573-8,860
Lead	7/8	1.9-5.4	SO-04-0709	0.93-141
Magnesium	7/8	102-276	SO-04-0305	34.3-871
Manganese	5/8	6-18.4	SO-03-0305	2.2-16
Mercury	1/8	0.11	SO-04-0001	ND(0.11)
Potassium	7/8	86.9-236	SO-04-0305	229
Vanadium	1/8	8.6	SO-04-0001	3.1-27
GROUNDWATER		**(μg/L)**		
Barium	1/1	126	MW-3A	NA
Calcium	1/1	4720	MW-3A	NA
Iron	1/1	1010	MW-3A	NA
Magnesium	1/1	6000	MW-3A	NA
Mangenese	1/1	102	MW-3A	NA
Potassium	1/1	1440	MW-3A	NA
Sodium	1/1	20300	MW-3A	NA
Zinc	1/1	319	MW-3A	NA

5.3.3.2 Groundwater

No organic compounds were detected in the groundwater at the Site 3 (03MW01A) monitoring location. However, low concentrations of barium, calcium, magnesium, manganese, potassium, sodium, and zinc were reported.

No positive results were reported for TPH or COD analyses for the Site 3 groundwater sample.

5.3.4 Site 4

Site 4 is located adjacent to Building 245, currently used as a painting hangar for aircraft and parts. A total of 15 soil borings, four of which were sampled to a maximum depth of 9 feet below ground surface, 5 composites, and 3 groundwater monitoring points were sampled during the field investigation. Table 5-4 presents a summary of the frequency of detection and range of positive detections for chemicals in soils sampled at Site 4.

5.3.4.1 Soil

Soil samples that were analyzed from Site 4 contained one detection each of bis(2-ethylhexyl)phthalate (130 μg/kg) and Aroclor-1280 (28 μg/kg at SO-16). The former was detected in a composite sample from SO-16, SO-17, and SO-18. The detection of bis(2-ethylhexyl)phthalate was not confirmed in the associated duplicate sample, however, and was reported at a concentration less than the sample quantitation limit.

Nearly all of the TAL metals were detected in the soils from Site 4. Positively detected metals included aluminum, arsenic, calcium, chromium, cobalt, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, sodium, vanadium, zinc. Also, cyanide was detected in two samples. All maximum results except for cobalt, manganese, mercury, vanadium, zinc, cyanide, and the common cations (calcium, magnesium, potassium, and sodium) were less than the background range.

The results of TPH analysis of the soils from Site 4 also indicate petroleum contamination to be present. Mostly detected as oil and grease at borings located at SO-07 (360 mg/kg), SO-13 (400 mg/kg at 7 to 9 feet), SO-12 (maximum of 2,500 mg/kg), SO-14 (330 mg/kg), and SO-15 (330 mg/kg), the contamination also included diesel range hydrocarbons, detected at SO-12 (120 mg/kg).

TABLE 5-4

SUMMARY OF POSITIVELY DETECTED CHEMICALS AT SITE 4
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Frequency of Positive Detection	Concentration Range	Location of Maximum	Range of Background Concentrations*
SOILS - ORGANICS		**(µg/kg)**		**(µg/kg)**
Bis(2-ethylhexyl)phthalate	1/9	130	SO-1618-COMP	ND(380)-ND(410)
Aroclor-1260	1/9	28	SO-16-0001	NA
METALS		**(mg/kg)**		**(mg/kg)**
Aluminum	28/28	579-10,800	SO-02-0305	651-16,900
Arsenic	5/28	1.6-4.6	SO-03-0305	0.58-5.1
Calcium	23/28	100-134,000	SO-10-0001	15.5-325
Chromium	12/28	3.8-14.8	SO-02-0305	3.3-22.3
Cobalt	1/28	51.9	SB-10-0001	NA
Iron	28/28	193-18,000	SO-02-0305	573-8,860
Lead	19/28	1.4-25.6	SO-16-0001	0.93-141
Magnesium	16/28	123-1,520	SO-12-0001	34.3-871
Manganese	12/28	4.2-28.7	SO-15-0305	2.2-16
Mercury	2/28	0.04-0.1	SO-12-0709	ND(0.11)
Nickel	2/28	1.9-2.1	SO-15-0001	4.7-7.6
Potassium	10/28	123-338	SO-14-0305	229
Selenium	2/28	0.19-0.28	SB-10-0001	0.24-1.1
Sodium	1/28	119	SO-07-1525	7.5
Vanadium	10/28	1.8-27.8	SO-02-0305	3.1-27
Zinc	3/28	12.6-39	SO-12-0001	1.3-9.4
Cyanide	2/28	0.06-0.09	SO-10-0305	NA

TABLE 5-4 (Continued)
SUMMARY OF POSITIVELY DETECTED CHEMICALS AT SITE 4
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Frequency of Positive Detection	Concentration Range	Location of Maximum	Range of Background Concentrations*
GROUNDWATER - ORGANICS		**(µg/L)**		**(µg/L)**
Chloroform	2/4	0.6	MW-4C	NA
1,2 Dichloroethene (cis)	3/4	1-1.1	MW-4B, 4D	NA
Tetrachloroethene	4/4	0.9-600	MW-4D	NA
Trichloroethene	2/4	2.9	MW-4C, 4D	NA
Vinyl Chloride	1/4	1.6	MW-4B	NA
METALS		**(µg/L)**		**(µg/L)**
Aluminum	2/4	309-692	MW-4A	NA
Barium	1/4	196	MW-4B	NA
Calcium	4/4	28900-95700	MW-4B	NA
Iron	4/4	827-9660	MW-4B	NA
Magnesium	4/4	2430-6590	MW-4B	NA
Manganese	2/4	60.7-133	MW-4B	NA
Potassium	4/4	2490-12600	MW-4B	NA
Selenium	2/4	3.8-4.4	MW-4C	NA
Sodium	4/4	10500-23800	MW-4B	NA
Zinc	3/4	46.2-125	MW-4B	NA
Cyanide	2/4	1.3-5.4	MW-4B	NA

*ND(0.11) - The compound was not detected at the detection limit shown in parentheses.
NA - Not analyzed.

5.3.4.2 Groundwater

The groundwater was sampled at three locations across Site 4. Positively detected organic chemicals in the groundwater include: chloroform, cis-1,2-dichloroethene, tetrachloroethene, trichloroethene, and vinyl chloride. No semivolatile organic or pesticide/PCB compounds were detected in the groundwater at Site 4.

Positively detected metals in groundwater at Site 4 include aluminum, calcium, iron, magnesium, manganese, potassium, selenium, sodium, and zinc. Cyanide was also detected in the groundwater at concentrations near to the detection limit.

The variety and relatively high concentrations of the organic chemicals detected in samples collected from MW4C, the location nearest to Building 245, indicate this area to be the most impacted by chemical contamination. Tetrachloroethene (detected at a maximum of 600 μg/L), and associated degradation byproducts (chlorinated ethenes and methanes) are detected at their highest levels at this location. Duplicate sample analysis was performed at this location and confirmed both the identity and concentrations of these chemicals at this location. Tetrachloroethene was detected in all three groundwater samples, and its degradation compounds in only some of the samples.

5.3.5 Site 5

The area encompassed by Site 5 is situated between Buildings 86 and 246 along Roosevelt Boulevard. A total of 11 soil borings, conducted to a maximum depth of 5 feet, 2 composites, and 1 groundwater monitoring well point provide the basis for the contaminant assessment at this site. Table 5-5 summarizes frequency of detection and range of positive results for chemicals and parameters detected at Site 5.

5.3.5.1 Soil

Site 5 soils contained detectable concentrations of toluene (3.9 μg/kg) and endosulfan I (9.2 μg/kg) in one sample each. The toluene was detected at SO-11, while the pesticide was detected in the composited sample collected from the 0- to 1-foot depth at SO-06 through SO-11. The levels of contamination observed are comparable to the quantitation limits for these chemicals.

A variety of metals were detected including aluminum, arsenic, calcium, chromium, iron, lead, magnesium, manganese, mercury, nickel, potassium, and vanadium. The levels observed are less than the background ranges for most of these chemicals and indicate that most are naturally-occurring elements; exceptions include calcium and mercury. However, two notable exceptions are identified in the detection of mercury

TABLE 5-5

SUMMARY OF POSITIVELY DETECTED CHEMICALS AT SITE 5
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Frequency of Positive Detection	Concentration Range	Location of Maximum	Range of Background Concentrations*
SOILS - ORGANICS		**(µg/kg)**		**(µg/kg)**
Toluene	1/13	3.9	SO-11-0305	ND(6)-ND(12)
Endosulfan I	1/3	9.2	SO-0611-COMP	NA
METALS		**(mg/kg)**		**(mg/kg)**
Aluminum	13/13	322-7,010	SO-04-0305	651-16,900
Arsenic	10/13	2.2-4.5	SO-02-0305	0.58-5.1
Calcium	10/13	34.6-32,800	SO-03-0001	15.5-325
Chromium	12/13	3.8-9.9	SO-08-0305	3.3-22.3
Iron	13/13	1,200-5,820	SO-08-0305	573-8,860
Lead	11/13	2-4.4	SO-08-0305 and SO-04-0305	0.93-141
Magnesium	11/13	73.2-433	SO-04-0305	34.3-871
Manganese	8/13	5.5-12.5	SO-04-0305	2.2-16
Mercury	2/13	0.03-0.04	SO-03-0001	ND(0.11)
Nickel	3/13	1.1-2.7	SO-04-0305	4.7-7.6
Potassium	1/13	119	SO-11-0305	229
Vanadium	11/13	4.9-12.7	SO-08-0305	3.1-27
GROUNDWATER - METALS		**(µg/L)**		**(µg/L)**
Calcium	1/1	31700	MW-5A	NA
Iron	1/1	1410	MW-5A	NA
Magnesium	1/1	3620	MW-5A	NA
Potassium	1/1	675	MW-5A	NA
Sodium	1/1	4260	MW-5A	NA
Zinc	1/1	69.3	MW-5A	NA

*ND(0.11) - The compound was not detected at the detection limits shown in parentheses.
NA - Not analyzed.

(1 of 11 samples) and nickel (2 of 11 samples). Results for both metals are less than two times respective detection limits.

Oil and grease hydrocarbons were detected at SO-10 and SO-11 at concentrations of 270 mg/kg and 370 mg/kg, respectively. No other positive results were reported for hydrocarbons for Site 5 soils.

5.3.5.2 Groundwater

The groundwater that was sampled at Site 5 was void of detectable organic contamination. Metals, including calcium, iron, magnesium, potassium, sodium, and zinc, were the only positively detected inorganic constituents. No positive results were reported for petroleum hydrocarbons in Site 5 groundwater. Also, there was no detectable chemical oxygen demand in the groundwater sample that was collected.

5.4 CONTAMINANT FATE AND TRANSPORT

Various aspects of contaminant fate and transport are discussed in this section. Properties that affect contaminant migration are presented in Section 5.4.1, and Section 5.4.2 presents a brief discussion of contaminant persistence. Finally, Section 5.4.3 discusses site-specific issues related to contaminant fate and transport.

5.4.1 Chemical and Physical Properties of Site Contaminants

Various chemical and physical properties of the detected contaminants are presented and discussed in this section. These parameters are used to estimate the environmental behavior of site chemicals. While molecular weight, vapor pressure, and Henry's Law constant are discussed here, their values are presented in Section 6.0, Table 6-6. All other properties are shown in Table 5-6.

Empirically determined literature values of the water solubility, octanol/water partition coefficient, soil/sediment adsorption coefficient, vapor pressure, Henry's Law constant, chemical diffusivity in air, and specific gravity are presented. Calculated values are presented if literature values are not available. A discussion of the environmental significance of each of these parameters follows.

TABLE 5-6

CHEMICAL AND PHYSICAL PROPERTIES OF ORGANIC CHEMICALS
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Specific Gravity (20/4°C)	Solubility (mg/L @ 25°C)	K_{ow}	K_{oc}
Chlorobenzene	1.107	500	690	330
Chloroform	1.489	8,200	91	44
1,2-Dichlorobenzene	1.305	100	3,600	1,700
1,4-Dichlorobenzene	1.458	79	3,600	1,700
Dichlorodifluoromethane	1.1834 @ 57°C	2.8×10^2	2.16	
Trichlorofluoromethane	1.494 @ 17.2/4°C	1.1×10^3	2.53	
1,1-Dichloroethane	1.1757	5.5×10^3	1.79	
cis-1,2-Dichloroethene	1.284	800 @ 20°C		
1,1,2,2-Tetrachloroethane	1.5953	2.9×10^3	2.39	
Tetrachloroethene	1.626	200	759	364
Trichloroethene	1.460	1,100	263	126
Vinyl chloride	0.912	2,700	17	8.2
2-Butanone	0.8054	2.75×10^5	0.26	
Toluene	0.8669	5.15×10^2	2.69	
Xylenes	0.86104	Insoluble	2.77	
Phenanthrene	1.025	1.0	28,000	14,000
Fluoranthene	NA	0.26	79,000	38,000
Pyrene	NA	0.13	80,000	38,000
Benzo(a)anthracene	NA	5.7×10^{-3}	410,000	200,000
Chrysene	1.274	1.8×10^{-3}	410,000	200,000
Bis(2-ethylhexyl)phthalate	0.99	4×10^{-1}	5.3	
Benzo(b)fluoranthene	NA	0.014	1.15×10^6	550,000
Benzo(k)fluoranthene	NA	5.5×10^{-4}	6.84	
Benzo(a)pyrene	NA	3.8×10^{-3}	1.15×10^6	5.5×10^6
Aldrin	NA	0.18	200,000	96,000
Endrin	1.65	2.6×10^{-1}	4×10^5	
Acenaphthene	1.0242	3.42	8×10^3	
Fluorene	1.202	1.9	1.5×10^4	
Anthracene	1.283	1.29	2.8×10^4	
Carbazole	NA	NA	NA	NA
Butylbenzylphthalate	1.1	2.9	6×10^4	
Indeno(1,2,3-cd)pyrene	NA	6.2×10^{-4}	4.6×10^7	
Dibenz(a,h)anthracene	1.282	5×10^{-4}	9.3×10^5	
Benzo(g,h,i)perylene	NA	2.6×10^{-4}	1.7×10^7	

TABLE 5-6 (Continued)
CHEMICAL AND PHYSICAL PROPERTIES OF ORGANIC CHEMICALS
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Specific Gravity (20/4°C)	Solubility (mg/L @ 25°C)	K_{ow}	K_{oc}
Heptachlor epoxide	1.58	0.35	450	220
Endosulfan I	NA	0.28	0.02	9.6×10^{-3}
Dieldrin	1.75	1.86×10^{-1} (20°C)	4.09	
4,4'-DDT	NA	5.5×10^{-3}	8.1×10^{6}	3.9×10^{6}
4,4'-DDE	NA	6.5×10^{-6}	9.1×10^{6}	4.4×10^{6}
4,4'-DDD	NA	0.10	1.6×10^{6}	77,000
alpha-, gamma-Chlordane	1.6	0.56	3×10^{5}	10,000

Note: Positively detected analytes from subsequent sampling are not included. These chemicals, chiefly PAHs, phthalate esters, and pesticides, are characteristically immobile in soil and are not significantly volatile. Emissions modeling for these chemicals was not performed to expedite reporting of results.

5.4.1.1 Specific Gravity

Specific gravity is the ratio of the weight of a given volume of pure chemical at a specified temperature to the weight of the same volume of water at a given temperature. Its primary use is to determine whether a contaminant will have a tendency to float or sink in water if it is present as a pure compound or at very high concentrations. Contaminants with a specific gravity less than 1 will tend to float, whereas contaminants with a specific gravity greater than 1 will tend to sink.

5.4.1.2 Vapor Pressure

Vapor pressure provides an indication of the rate at which a chemical volatilizes from both soil and water. It is of primary significance at environmental interfaces, such as surface soil/air and surface water/air. Volatilization is not as important when evaluating contaminated groundwater and subsurface soils. However, in order to conservatively evaluate chemical exposures at the five sites, it will be considered. Chemicals with high vapor pressures are expected to enter the atmosphere more readily than chemicals with low vapor pressures. Semivolatile organic and pesticides and PCB compounds are considered to have low vapor pressures.

5.4.1.3 Solubility

The rate at which a chemical is leached from a waste deposit by infiltrating precipitation is directly proportional to its water solubility. Several of the detected volatile organic compounds have relatively high water solubilities, but the low concentrations observed in soils indicate low potential for significant desorption. The pesticides and PCBs are considered to have low solubilities and also would not be expected to migrate through the soil column and reach the water table.

The solubility of inorganics is strongly influenced by their valence state(s) and forms (hydroxides, oxides, carbonates, etc.). The solubility is also strongly dependent on pH, Eh, and the presence of other ionic species in solution (the Debye-Hückel theory). Solubility products reported in the literature vary with the type of complex formed. Based on review of the analytical data for soils and groundwater at all sites, it is believed that the metals in soil are not adversely impacting the groundwater.

5.4.1.4 Octanol/Water Partition Coefficient (Kow)

The octanol/water coefficient is a measure of the equilibrium partitioning of chemicals between octanol and water. A linear relationship between the K_{ow} and the uptake of chemicals by fatty tissues of animal and

human receptors (the bioconcentration factor) has been determined (Lyman et al., 1990). It is also useful in characterizing the sorption of compounds by organic soils where experimental values are not available. Larger organic molecules such as semivolatiles and pesticides and PCBs are very likely to partition to fatty tissues, while less complex organic chemicals have lower Kow values.

5.4.1.5 Soil/Sediment Adsorption Coefficient (Koc)

The soil/sediment partition (organic carbon partition) coefficient indicates the tendency of a chemical to bind to soil particles containing organic carbon. Chemicals with high K_{oc}s generally have low water solubilities and vice versa. This parameter may be used to infer the relative rates at which more mobile chemicals are transported in groundwater. Complex organic chemicals are relatively immobile and are preferentially bound to the soil phase. These compounds are not subject to rapid groundwater transport. These immobile chemicals are, however, easily transported by erosional processes when they are present in surface soils.

5.4.1.6 Distribution Coefficient (Kd)

The distribution coefficient is a measure of the equilibrium distribution of a chemical or ion in soil/water systems. The distribution of organic chemicals is a function of both the K_{oc} and the amount of organic carbon in the soil.

5.4.1.7 Henry's Law Constant (H)

Both the vapor pressure and the water solubility are of use in determining volatilization rates from surface water bodies and groundwater. The ratio of these two parameters (the Henry's Law constant) is used to calculate the equilibrium contaminant concentrations in the vapor versus the liquid phases for dilute solutions. In general, chemicals with a Henry's Law constant less $5e^{-6}$ atm-m^3/mole should volatilize very little and be present only in minute amounts in the atmosphere or in soil gas. Henry's Law constant will be used to calculate the equilibrium soil gas vapor concentration for volatile organic compounds in groundwater.

5.4.1.8 Diffusivity in Air (Da)

Chemical diffusion through a fluid phase is controlled by vapor phase concentration and the chemical-specific diffusion coefficient within the medium. The diffusion coefficient in air determines the rate which mass transport occurs and is empirically derived for many compounds. Molecular structure and mass are

the primary determinants of diffusivity of a chemical. Greater values of the molecular diffusivity will result in a more mobile constituent in the vapor phase.

5.4.2 Contaminant Persistence

The environmental persistence of the general classes of organic contaminants detected is discussed in this section.

5.4.2.1 Monocyclic aromatics

Monocyclic aromatic compounds such as benzene, toluene, ethylbenzene, and xylenes are not considered to be persistent environmental contaminants in comparison to PAHs, phthalate esters, and metals. Monocyclic aromatics are subject to degradation in both soil and water via the action of microorganisms. The biodegradation of these compounds in the soil matrix is dependent on the abundance of microflora, macronutrient availability, soil reaction (pH), temperature, oxygen, etc.

Although these compounds are amenable to microbial degradation, the rate of degradation cannot be predicted without information of the availability of nutrients and the type of bacteria present. If these contaminants discharge to a surface water body, volatilization and biodegradation may occur relatively rapidly. For example, a reported first-order biodegradation rate constant for benzene is 0.11 day^{-1} in aquatic systems (Lyman et al., 1990). This corresponds to an aquatic half-life of approximately 6 days. Other monocyclic aromatics are subject to similar degradation processes in aquatic environments (EPA, December 1982).

Additional degradation processes such as hydrolysis and photolysis are considered to be insignificant fate mechanisms for monocyclic aromatics (EPA, December 1982). However, some monocyclic aromatic compounds, such as benzene and toluene, have been shown to undergo clay-, mineral-, and soil-catalyzed oxidation (Dragun, 1988).

5.4.2.2 Chlorinated Aliphatic Compounds

Research has demonstrated that aerobic bacteria predominantly degrade organic compounds containing zero, one, or two halogens, while anaerobic bacteria predominate when more halogens are present. Thus, highly chlorinated aliphatic hydrocarbons such as tetrachloroethene are subject to reductive dehalogenation via the action of anaerobic bacteria. It does not appear that appreciable degradation of highly halogenated aliphatics occurs in aerobic aquatic systems or unsaturated soils (Lyman, et al., 1982).

The transformation pathways for chlorinated aliphatic hydrocarbons in soil systems has been documented by Dragun et al. (1988). Tetrachloroethene and trichloroethene are transformed via reductive dechlorination to 1,1-dichloroethene and 1,2-dichloroethene isomers. The terminal product of the transformation series is vinyl chloride, the chlorinated ethene with highest toxicity.

5.4.2.3 Phthalate Esters

Phthalate esters are considered to be relatively persistent environmental contaminants. Although numerous studies have demonstrated that phthalate esters undergo biodegradation, it appears that this is a very slow process in both soil and surface water. Certain microorganisms have been shown to excrete products that increase the solubility of phthalate esters and enhance their biodegradation (Gibbons and Alexander, 1989). Biodegradation of bis(2-ethylhexyl)phthalate and other phthalate esters is an important fate mechanism, as is bioaccumulation. Hydrolysis of phthalate esters is very slow, with calculated half-lives of 3 years (dimethylphthalate) to 2,000 years (bis(2-ethylhexyl)phthalate) (EPA, December 1979). Similarly, photolysis is considered to be an insignificant degradation mechanism (EPA, December 1982).

5.4.2.4 Polynuclear Aromatic Hydrocarbons (PAHs)

PAHs are common constituents of oil and grease. Land spreading applications have indicated that PAHs are amenable to microbial degradation. Studies have demonstrated that PAHs are much more amenable to degradation in soil matrices than in aquatic environments (EPA, December 1979). Under existing site conditions, the rate of microbial degradation cannot be predicted without knowledge of microbial populations. PAHs do not contain functional groups that are susceptible to hydrolytic actions, and hydrolysis is considered to be an insignificant degradation mechanism. Photolysis may be a major degradation mechanism in aquatic environments, but is probably insignificant in surface soil.

5.4.2.5 Pesticides

Whether pesticides are sprayed, dusted, or applied directly to the soil, the soil is the ultimate sink for these chemicals. It is most likely that the DDT and its isomers in the soil samples at this site originated from application of the pesticide before its use was banned in 1972. Bioconcentration of pesticides in the food chain is another important fate mechanism, especially for DDT. Hydrolysis, oxidation, and photolysis are not generally important fate mechanisms for pesticides in soil or water, although photo-oxidation is known to occur in surface soil. The half-life for DDT in soil is reported to be between 2 and 15 years (ATSDR, October 1992). Biodegradation may occur under both aerobic and anaerobic conditions in the presence

of certain soil microorganisms. Under aerobic conditions, DDT is slowly converted to DDE, whereas under anaerobic conditions, it is more rapidly converted to DDD.

5.4.2.6 Polychlorinated Biphenyls (PCBs)

PCBs are considered to be very persistent organic chemicals. Biodegradation is the only process known to degrade PCBs under environmental conditions, and only the lighter compounds are measurably biodegraded (EPA, December 1979). Although some microorganisms (e.g., *Phanaerochaete chrysosporium*) may biodegrade PCBs, such fungi may not exist in local soil. There is experimental evidence to suggest that heavier PCBs (five or more chlorines) can undergo photolytic degradation, but there are no data to suggest that this process operates under environmental conditions. Base, acid, and neutral-promoted hydrolysis are considered to be inconsequential degradation mechanisms for PCBs (EPA, December 1982).

5.4.2.7 Metals

The transport and fate of metals in the environment are primarily controlled by sorption to soil/sediment material. The metal-organic relationships, both in soil and water, increase in importance as the organic carbon content increases. Some metals such as arsenic are extremely soluble and mobile in the environment. Many other metals such as nickel, selenium, zinc, and copper have an affinity for hydrous iron and manganese oxides, as well as for organic materials, and are therefore preferentially adsorbed to soil. The mobility of most metals increases as the soil pH decreases.

5.4.3 Contaminant Migration Pathways

Based on the analytical results for the five sites, general conclusions can be made with respect to contaminant fate and transport. These conclusions are discussed on a site-specific basis.

5.4.3.1 Site 1

The chemicals detected at Site 1 include trichloroethene, pesticides, and metals in soil and halogenated volatile organics and metals in groundwater. One detection of oil and grease range hydrocarbons was made. Metallic constituents detected in soil and groundwater are low (i.e., comparable to published background levels for this geographical region) and concentrations are not likely to vary over time.

The organics in soil are also unlikely to be transported from the site by physical processes because of low observed concentrations. The pesticides at Site 1, although detected at a reasonably high level, are securely bound to organic carbon in the soil and significant migration and transport is unlikely. The DDT and metabolites (DDD and DDE) is noted to be persistent in soils, not subject to high rates of biotransformation.

Groundwater chemicals are most likely to be transported off site because of groundwater flow. Partitioning from the water column to organic carbon can be expected, however, the low concentrations detected may inhibit this process in the environment.

5.4.3.2 Site 2

Site 2 soils are characterized by detections of hydrocarbons and Aroclor-1260. The metals detected are comparable to background levels. Groundwater contains low concentrations of halogenated volatile organics and low concentrations of metals.

The volatile organics detected in Site 2 soils may volatilize to a limited extent, however, the low concentrations will likely limit the process significantly. The polynuclear aromatics and PCBs preferentially sorb to the soil and are not subject to significant leaching from precipitation due to low solubility in water. PAHs are subject to biotransformational processes.

Groundwater chemicals are likely to be mobile in the groundwater and may degrade via natural attenuation. The low concentrations detected may prohibit volatilization from groundwater to soil gas.

5.4.3.3 Site 3

Only metallic chemicals were detected in the media at Site 3. The levels of metals were characteristically low and are likely due to background.

5.4.3.4 Site 4

Organic chemicals in the soil and groundwater at Site 4 are mobile and subject to various degradational processes in the environment. Volatile organic chemicals in the soil and groundwater may volatilize to the soil gas, however, this is not likely to be a measurable effect. The most significant fate processes for these chemicals are transformation (biological and chemical) and groundwater transport.

5.4.3.5 Site 5

Site 5 chemicals detected in soils include low concentrations of toluene, endosulfan I (a pesticide), and metals. The groundwater contained detectable amounts of metals only. The organic chemical concentrations are so low that physical transport is unlikely. Biotransformation is, however, a likely fate mechanism.

6.0 RISK ASSESSMENT

This section of the Site Characterization Report provides a quantitative assessment of the risks posed to human receptors potentially exposed to contaminants detected in the site media that were investigated. The risk assessment consists of the following elements:

- **Data Evaluation**. Provides interpretation of analytical data with respect to the risk assessment and identifies potential chemicals of concern to human health based on frequency of detection, maximum concentrations, and individual chemical toxicity.

- **Conceptual Site Model**. Defines scenarios under which human receptors may realize quantifiable exposures to the detected site contaminants. The site model will be used as a basis to quantify exposure.

- **Vapor Transport Modeling**. This section details the transport modeling for chemical vapor emissions from soils and groundwater.

- **Exposure Assessment**. Provides a quantified measure of exposure by combining analytical information with defined exposure input parameters which are consistent with, and defined by, the conceptual site model.

- **Toxicity Assessment**. The section presents toxicological information for the identified potential chemicals of concern. Also included in this discussion is a summary of applicable State and Federal requirements and occupational exposure standards.

- **Risk Characterization**. This portion of the risk assessment integrates the results of the exposure and toxicity assessments to provide a numerical risk evaluation for human receptors identified in the conceptual site model. The characterization results are interpreted to identify levels of protection which may be required.

The risk assessment process is designed to be extremely conservative and the risks which are presented are "worst case," applying to the most sensitive receptors which are evaluated. The methods used for the risk assessment are consistent with current U.S. EPA guidance as outlined in:

- Risk Assessment Guidance for Superfund - Volume 1 - Human Health Evaluation Manual (Part A), U.S. EPA, December 1989.
- Risk Assessment Guidance for Superfund - Volume 1 - Human Health Evaluation Manual (Part A) "Supplemental Guidance" - Standard Default Exposure Factors, U.S. EPA, March 25, 1991.
- Dermal Exposure Assessment: Principles and Applications, U.S. EPA, January 1992.
- USEPA Region IV Supplemental Guidance, February, 1992.

6.1 DATA EVALUATION

Data evaluation is the process whereby analytical information is interpreted with the goal of selecting chemicals which may pose significant risks to receptors. Identification of the potential chemicals of concern begins with retention of all chemicals detected in the media at each of the sites. Tables 5-1 through 5-5 provide a summary of the detected chemicals and associated maximum concentrations for Sites 1 through 5, respectively. The potential chemicals of concern for each site are determined based on consideration of the observed concentrations and chemical-specific toxicity.

All detected organic compounds, except phenanthrene and benzo(g,h,i)perylene (for which no toxicity data are available), are retained as potential chemicals of concern. Metallic constituents are screened based on toxicity. Chemicals for which no toxicity data are available and essential nutrients including aluminum, calcium, iron, magnesium, potassium, and sodium are eliminated from consideration in the risk assessment. All other detected metals and cyanide are retained for further evaluation. Analytical results for Total Petroleum Hydrocarbons (TPH) are not considered quantitatively, however, the data are used for comparison to State regulatory limits.

6.1.1 Chemicals of Concern

The selection of the chemicals of concern is provided on a site-specific basis. Justification for elimination or omission of detected contaminants is based on site conditions or other considerations. Metallic

groundwater chemicals are not retained for risk assessment, but are compared to regulatory standards in the risk characterization.

6.1.1.1 Site 1

Site 1 groundwater contains detectable organic and inorganic chemicals. The metals aluminum, calcium, iron, magnesium, and potassium have been deleted from consideration as chemicals of concern in soil at Site 1 because they are essential human nutrients. Only positively detected organic chemicals are retained as groundwater chemicals of concern because the positively detected metals are nonvolatile and will not result inhalation exposure to any receptors either during construction or long-term employment at the site.

Table 6-1 summarizes the potential chemicals of concern used for risk assessment at Site 1.

6.1.1.2 Site 2

The chemicals of concern for the soils and groundwater at Site 2 are presented in Table 6-2. Aluminum, calcium, iron, magnesium, and potassium have been eliminated from consideration as chemicals of concern in the soils at Site 2 for the reason previously discussed. Positively detected organic chemicals, except phenanthrene and benzo(g,h,i)perylene, are retained as groundwater chemicals of concern for groundwater at Site 2. Inorganic groundwater constituents are not evaluated quantitatively in the human health risk assessment because these chemicals are assumed to be nonvolatile and associated inhalation pathways are incomplete during construction or long-term employment at the site.

6.1.1.3 Site 3

The chemicals of concern for the soils and groundwater at Site 3 are presented in Table 6-3. After elimination of aluminum, calcium, iron, magnesium, and potassium, only chromium, lead, and manganese are retained. No groundwater chemicals are selected as potential chemicals of concern because no organic compounds were detected and the positively detected metals are nonvolatile and will not provide inhalation exposure to any receptors either during construction or long-term employment at the site.

6.1.1.4 Site 4

Site 4 exhibits the most extensive chemical contamination for groundwater of all sites. Aluminum, calcium, iron, magnesium, potassium, and sodium were eliminated from the list of potential chemicals of concern

TABLE 6-1

SUMMARY OF POTENTIAL CHEMICALS OF CONCERN
SITE 1 SOIL AND GROUNDWATER
MCAS CHERRY POINT, NORTH CAROLINA

Soil	Groundwater
Organics:	Organics:
Trichloroethene	1,1,2,2-Tetrachloroethane
Bis(2-ethylhexyl)phthalate	Trichloroethene
Aldrin	Trichlorofluoromethane
Heptachlor epoxide	
Dieldrin	
4,4'-DDE	
Endrin	
4,4'-DDD	
4,4'-DDT	
alpha-Chlordane	
gamma-Chlordane	
Metals:	Metals:
Arsenic	Manganese
Barium	Nickel
Chromium	Zinc
Copper	
Lead	
Manganese	
Mercury	
Nickel	
Selenium	
Silver	
Vanadium	
Zinc	
Cyanide	

TABLE 6-2

SUMMARY OF POTENTIAL CHEMICALS OF CONCERN
SITE 2 SOIL AND GROUNDWATER
MCAS CHERRY POINT, NORTH CAROLINA

Soil	Groundwater
Organics:	Organics:
Toluene	Chlorobenzene
Xylenes	1,2-Dichlorobenzene
Phenanthrene	1,4-Dichlorobenzene
Fluoranthene	Dichlorodifluoromethane
Pyrene	1,1-Dichloroethane
Benzo(a)anthracene	cis-1,2-Dichloroethene
Chrysene	Trichloroethene
Bis(2-ethylhexyl)phthalate	Trichlorofluoromethane
Benzo(b)fluoranthene	
Benzo(k)fluoranthene	
Benzo(a)pyrene	
Acenapthene	
Flourene	
Anthracene	
Carbazole	
Butylbenzylpthalate	
Indeno(1,2,3-cd)pyrene	
Dibenz(a,h)anthracene	
Benzo(g,h,i)perylene	
Endosulfan I	
Dieldrin	
4,4'DDE	
Endrin	
gamma-Chlordane	
Aroclor-1260	
Metals:	Metals:
Arsenic	Arsenic
Barium	Barium
Cadmium	Manganese
Chromium	Nickel
Copper	Vanadium
Lead	Zinc
Manganese	
Mercury	
Nickel	
Selenium	
Vanadium	
Zinc	

TABLE 6-3

SUMMARY OF POTENTIAL CHEMICALS OF CONCERN
SITE 3 SOIL
MCAS CHERRY POINT, NORTH CAROLINA

Soil	Groundwater
Metals: Chromium Lead Manganese Mercury Vanadium	Metals: Barium Manganese Zinc

in soils. Site 4 groundwater metals results, although not used for a quantitative risk evaluation, are to be considered for identification of regulatory level exceedences. Table 6-4 summarizes the Site 4 potential chemicals of concern for soil and groundwater.

6.1.1.5 Site 5

The potential chemicals of concern for Site 5 soil includes toluene, endosulfan I, arsenic, barium, beryllium, chromium, copper, lead, manganese, mercury, nickel, and vanadium as shown in Table 6-5. Eliminated chemicals include aluminum, calcium, iron, magnesium, and potassium. Groundwater sample data will not be considered for quantitative risk assessment, but will be compared to regulatory standards. No positive results were reported for organic chemicals in the groundwater.

6.1.2 Representative Concentrations

The representative concentrations to be used for the quantitative risk assessment are the maximum detected medium-specific concentrations for the chemicals of concern at each of the sites. This will provide the most conservative evaluation of risk possible, while at the same time, develop accurate estimates of maximum exposure.

6.2 CONCEPTUAL SITE MODEL

Assessment of chemical exposure by human receptors is based on the conceptual site model. The sites under investigation are located in a industrial/commercial area and are not planned for future residential development. Consequently, only employment-related contact scenarios need be evaluated. Under realistic conditions, two exposure scenarios are appropriate, namely, short-term exposure by construction workers at each site, and long-term exposure by receptors employed at the sites.

6.2.1 Short-term Construction Scenario

The short-term exposure scenario applies to construction workers involved in invasive activities at each site. Such work could involve demolition, material removal, earth moving and grading, and trenching or excavation work to accommodate installation of subsurface structures and/or utilities. All aspects of this type of work can potentially result in exposure via incidental ingestion of, direct dermal contact with, and inhalation of chemicals which were detected in the soils and groundwater at each site. The receptor exposed under this scenario would experience short-term exposure high dosage while in contact with media at the sites and the work can require high levels of physical exertion.

TABLE 6-4

SUMMARY OF POTENTIAL CHEMICALS OF CONCERN
SITE 4 SOIL AND GROUNDWATER
MCAS CHERRY POINT, NORTH CAROLINA

Soil	Groundwater
Organics:	Organics:
Bis(2-ethylhexyl)phthalate Aroclor-1260	Chloroform cis-1,2-Dichloroethene Tetrachloroethene Trichloroethene Vinyl chloride
Metals:	Metals:
Arsenic Chromium Cobalt Lead Manganese Mercury Selenium Vanadium Zinc Cyanide	Barium Manganese Selenium Zinc

TABLE 6-5

SUMMARY OF POTENTIAL CHEMICALS OF CONCERN
SITE 5 SOIL
MCAS CHERRY POINT, NORTH CAROLINA

Soil	Groundwater
Organics:	
Toluene	
Endosulfan I	
Metals:	Metals:
Arsenic	Zinc
Barium	
Beryllium	
Chromium	
Copper	
Lead	
Manganese	
Mercury	
Nickel	
Vanadium	

6.2.2 Long-term Exposure Scenario

Long-term exposure to site contaminants can only be realized by inhalation of vapor emissions from volatile chemicals contained in the soils beneath newly constructed facilities. Although contact concentrations are much lower than would be realized during construction activities, the longer duration of exposure may result in a greater lifetime exposure. The receptor under this scenario is assumed to work a 40-hour work week and is not subjected to considerable physical stresses.

6.3 VAPOR TRANSPORT MODELING

Chemical emissions from soil have been evaluated under two scenarios, excavation and simple vapor emission. The models consider diffusive transport of contaminants from an unlimited reservoir of chemicals at the maximum detected concentrations. Chemicals are not assumed to undergo transformation with time. This approach is considered conservative in view of the fact that many of the constituent chemicals found in the media at the sites are susceptible to transformation via degradation mechanisms. Soil and groundwater chemical vapor emissions have been estimated based on the assumption of complete volatilization to the extent permitted by Henry's Law.

The following subsections describe the derivation and use of the vapor emission models. Results of the modeling are used to estimate contact concentrations for each of the applicable exposure scenarios. Results of the modeling are presented in Appendix D.

6.3.1 Soil Chemical Vapor Emissions from Excavations

Soil chemical vapor emissions have been modeled using the RTI Land Treatment Model for landfills as presented in Hazardous Waste Treatment, Storage and Disposal Facilities (TSDF) - Air Emission Models (U.S. EPA, November 1989). Although the model has been developed for open landfill emissions modeling, the use of the model for evaluation of excavation emissions is considered appropriate as the chemical release mechanism is the same (i.e., vapor diffusion from soil).

The results obtained from the use of this predictive model compare acceptably to measured field concentrations (U.S. EPA, Estimation of Air Impacts for the Excavation of Contaminated Soil, EPA450/1-92-004, March 1992). The model evaluates the emissions rate for specific chemicals based on chemical-specific concentrations in soil, vapor pressures, diffusion coefficients in air, and molecular weights. Site-specific inputs include soil porosity (air filled and total), ambient temperature, windspeed,

soil bulk density, contaminant depth and layer thickness, excavation dimensions, and total time of the excavation activity.

Maximum detected analytical results for chemicals in soil at a the minimum depth of 3 feet are conservatively assumed to be representative of all excavated soil. Subsurface soil from which vapors emanate is assumed to be at a constant temperature of 60°F. Only initial sampling data are considered for vapor emissions modeling as no volatile organics were detected during subsequent surface soil sampling and the additional semivolatile organics and pesticides/PCBs detected do not volatilize appreciably to affect the risk assessment.

The Emission Rate (ER) for chemicals is governed by the following equation:

$$ER = \frac{M_o}{l}\left[\frac{1}{\frac{\varepsilon_a}{k_G K_{eq}} + \sqrt{\left(\frac{\pi t}{K_{eq} D_e}\right)}}\right]$$

Where:

ER	=	Chemical Emission Rate ($gm/cm^2/s$)
M_o	=	Area loading of constituent (gm/cm^2)
l	=	Thickness of waste layer (cm)
ε_a	=	Air filled soil porosity (decimal fraction)
k_G	=	Gas-phase mass transfer coefficient (cm/s)
K_{eq}	=	Ratio of gas-phase constituent to total constituent in the solid waste (unitless)
t	=	Total time of excavation (s)
D_e	=	Effective diffusivity of chemical (cm^2/s)

Of the previous input variables, the following values are calculated as shown:

- Area loading of constituent (M_o): $M_o = l \; L \; C$

  Where: L = Waste loading in soil (gm_{waste}/cm^3_{soil})
  C = Mass fraction of constituent in waste (decimal fraction)

- Gas-phase mass transfer coefficient (k_G): $k_G = (4.82 \times 10^{-3}) \; U^{0.78} \; Sc_G^{-0.67} \; d_e^{-0.11}$

Where:

U	=	Mean annual windspeed (m/s)
Sc_G	=	Chemical-specific Schmidt number = $\mu_g/(\rho_g \times D_a)$
d_e	=	Effective diameter of excavation (m) = $(4\pi/A)^{0.5}$
μ_g	=	Viscosity of air (gm/cm/s)
ρ_g	=	Density of air (gm/cm^3)
A	=	Area of excavation (m^2)
D_a	=	Chemical diffusivity in air (cm^2/s)

- Ratio of gas-phase constituent to total constituent in the solid waste (K_{eq}):

$$K_{eq} = \frac{P^{\bullet}\ MW_{waste}}{R\ T}\ \frac{e_a}{L}$$

Where:

$P^{\bullet}$	=	Temperature-specific chemical vapor pressure (atm)
MW_{waste}	=	Average molecular weight of the waste material (gm/mol)
R	=	Ideal gas law constant (82.05 cm^3 atm/mol K)
T	=	Temperature of waste in soil (K)

- Effective diffusivity of chemical (D_e): $D_e = D_a \dfrac{\epsilon_a^{3.33}}{\epsilon_t^2}$

Where:

D_a	=	Chemical-specific diffusivity in air (cm^2/s)
ϵ_t	=	Total soil porosity (fraction)

Temperature-specific vapor pressures for all modeled soil chemicals were obtained from vapor pressure data and through the use of the Clausius-Clapeyron equation.

Emissions from the excavated source areas in Site 4 are considered only. No other site will require significant excavation for construction activities or had volatile organic chemicals detected. Vapors generated within the confines of the excavation pits for the underground storage tank and the utility corridor for Building 245 are considered. The bulk exchange of vapors from the soil into the surrounding atmosphere (controlled by the mass transfer coefficient) is neglected, resulting in a higher calculated vapor concentration than will be realized during actual construction.

The calculated emissions rate estimates were used to determine chemical concentrations in air inside the excavated pit. The concentration of chemical inside the excavation pit is determined to be the total mass of chemical emitted (i.e., the emission rate times the area times the total time the excavation is open) divided by the total volume of the excavation. If the modeled air concentration is greater than the calculated saturation concentration (as determined by the temperature-specific vapor pressure), then the air saturation concentration is used.

A summary of the chemical-specific physical transport values used for vapor emission modeling in soil is provided in Table 6-6. Site-specific model input values are presented in Table 6-7. Results of vapor transport modeling for soil chemicals is presented in Table 6-8. Emissions modeling spreadsheet printouts for the excavation model are provided in Appendix D.

6.3.2 Long-term Chemical Vapor Emissions

Vapor emissions modeling for long-term emission of volatile soil and groundwater chemical vapors is performed differently than the construction scenario, assuming that soil gas vapors from soil and groundwater chemicals volatilize to the extent governed by Henry's Law and the chemical-specific vapor pressure. The Henry's Law Constant may be determined empirically or may be estimated based on the chemical-specific ratio of the vapor pressure to the aqueous solubility.

The ambient air concentrations inside buildings were determined by using a simplified version of the transport relationship described in Fick's first law of diffusive transport. The emissions estimation equation provides a flux rate for contaminants based on chemical-specific diffusion coefficient and depth to contamination. The ambient air concentrations are determined by assuming all of the air entering the closed building comes from the soil gas and that half of the building volume is ventilated hourly.

The low concentrations of chemicals detected in the soils and groundwater at all sites (less than parts per million levels) indicate that no free product liquid (or solid) materials are present. Soil gas emissions from the chemical sources are assumed to be sorbed preferentially to the aqueous-phase liquids in the soil (i.e., absorbed in the soil moisture). By assuming this, soil gas partitioning from the aqueous-phase is controlled

TABLE 6-6

CHEMICAL VAPOR TRANSPORT DATA
SOIL AND GROUNDWATER CHEMICALS
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Molecular Weight (gm/mol)	Vapor Pressure Data (mm Hg @ °C)		Calculated Enthalpy of Vaporization (L-atm/mol)	Diffusivity in Air (cm^2/s)	Henry's Law Constant ($atm\text{-}m^3/mol$)
Chlorobenzene	112.56	11.8 @ 25	760 @ 132	NP	7.30×10^{-2}	3.93×10^{-3}
Chloroform	119.38	160 @ 20	760 @ 61.7	NP	1.04×10^{-1}	3.39×10^{-3}
1,2-Dichlorobenzene	147.00	1.5 @ 25	760 @ 180.5	NP	6.90×10^{-2}	2.95×10^{-3}
1,4-Dichlorobenzene	147.00	1.8 @ 25	760 @ 174	NP	6.90×10^{-2}	4.33×10^{-3}
Dichlorodifluoromethane	120.91	4250 @ 20	760 @ -29.8	NP	1.04×10^{-1}	3.90×10^{-1}
Trichlorofluoromethane	137.38	687 @ 20	760 @ 23.7	NP	1.04×10^{-1}	5.83×10^{-2}
1,1-Dichloroethane	98.96	234 @ 25	760 @ 57.3	NP	1.04×10^{-1}	5.87×10^{-3}
cis-1,2-Dichloroethene	96.94	202 @ 25	760 @ 60.3	NP	1.04×10^{-1}	4.08×10^{-3}
1,1,2,2-Tetrachloroethane	167.85	4 @ 25	760 @ 146.2	NP	7.10×10^{-2}	3.8×10^{-4}
Tetrachloroethene	165.83	19 @ 25	760 @ 121	NP	7.20×10^{-2}	2.69×10^{-2}
Trichloroethene	131.39	77 @ 25	760 @ 87	3.95×10^{2}	7.90×10^{-2}	1.17×10^{-2}
Vinyl chloride	62.50	2580 @ 20	760 @ -13.4	NP	1.06×10^{-1}	2.78×10^{-2}
2-Butanone	72.11	100 @ 25	760 @ 79.6	3.21×10^{2}	8.08×10^{-2}	4.66×10^{-5}
Toluene	92.14	28 @ 25	760 @ 110.6	3.62×10^{2}	8.70×10^{-2}	5.92×10^{-3}
Xylenes	106.17	5 @ 15.5	10 @ 27.3	4.18×10^{2}	8.70×10^{-2}	4.33×10^{-3}
Phenanthrene	178.23	1 @ 118.2	760 @ 340	5.89×10^{2}	5.00×10^{-2}	3.93×10^{-5}
Fluoranthene	202.26	5×10^{-6} @ 25	760 @ 375	8.53×10^{2}	5.00×10^{-2}	6.5×10^{-6}

TABLE 6-6 (Continued)
CHEMICAL VAPOR TRANSPORT DATA SOIL AND GROUNDWATER CHEMICALS
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Molecular Weight (gm/mol)	Vapor Pressure Data (mm Hg @ °C)		Calculated Enthalpy of Vaporization (L-atm/mol)	Diffusivity in Air (cm^2/s)	Henry's Law Constant ($atm\text{-}m^3/mol$)
Pyrene	202.26	2.5 @ 200	760 @ 393	7.66×10^{2}	5.00×10^{-2}	5.1×10^{-6}
Benzo(a)anthracene	228.29	5×10^{-9} @ 20	NA (sublimes)	NP	5.1×10^{-2}	6.6×10^{-7}
Chrysene	228.29	6.3×10^{-9} @ 25	760 @ 448	1.06×10^{3}	5.00×10^{-2}	1.05×10^{-6}
bis(2-Ethylhexyl)phthalate	390.54	1.2 @ 200	760 @ 385	8.91×10^{2}	3.51×10^{-2}	3×10^{-7}
Benzo(b)fluoranthene	252.32	5×10^{-7} @ 20	760 @ 480	8.33×10^{2}	5.00×10^{-2}	1.2×10^{-5}
Benzo(k)fluoranthene	252.32	9.59×10^{-11} @ 20	760 @ 480	1.17×10^{3}	5.00×10^{-2}	1.4×10^{-3}
Benzo(a)pyrene	252.32	5×10^{-9} @ 20	10 @ 310	1.04×10^{3}	4.3×10^{-2}	4.9×10^{-7}
Aldrin	364.91	2.3×10^{-5} @ 20	NA	NP	NA	4.9×10^{-7}
Heptachlor epoxide	389.32	2.6×10^{-6} @ 20	NA	NP	NA	3.16×10^{-5}
Endosulfan I	406.95	1×10^{-5} @ 25	NA	NP	NA	1.01×10^{-4}
Dieldrin	380.91	1.8×10^{-7} @ 25	NA	NP	NA	5.84×10^{-5}
4,4'-DDT	354.49	1.5×10^{-7} @ 20	760 @ 260	NP	NA	3.89×10^{-5}
4,4'-DDE	319.03	1×10^{-6} @ 30	760 @ 193	NP	NA	2.34×10^{-5}
4,4'-DDD	320.05	6.5×10^{-6} @ 20	NA	NP	NA	2.16×10^{-5}
alpha-, gamma-Chlordane	409.80	1×10^{-5} @ 25	2 @ 175	NP	NA	4.79×10^{-5}

NP Vapor transport modeling not performed. Chemical not detected in soil or lacks sufficient data to permit modeling.
NA Vapor transport data not available. Pesticides assumed not significantly volatile for modeling.

TABLE 6-7

PHYSICAL DATA INPUTS FOR VAPOR TRANSPORT MODELING
MCAS CHERRY POINT, NORTH CAROLINA

SITE-SPECIFIC DATA				
Site	Depth to Contaminant (Feet)	Depth to Groundwater (Feet)	Future Building Dimensions (meters) (L x W x H)	Excavation Dimensions (meters) (L x W x D)
1	3	16	40 x 40 x 10	NA
2	3	11	40 x 40 x 10 and 30 x 20 x 10	NA
4	3	9	50 x 30 x 10	20 x 10 x 8 (UST) 15 x 2 x 5 (Utility Corridor)

GENERAL CONDITIONS DATA	
Ambient Soil Temperature	60°F
Soil Porosity	0.31 (total)
	0.1 (air filled)
Mean Wind Speed	4 m/sec
Bulk Soil Density	1.35 gm/cm^3
Density of Air	1.2 x 10^{-3} gm/cm^3
Viscosity of Air	1.8 x 10^{-4} gm/cm/s

TABLE 6-8

SUMMARY OF VAPOR TRANSPORT MODELING RESULTS
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Chemical Vapor Concentration in Air (mg/m^3)				
	Site 1	Site 2	Site 4		
	Future Building	Future Building	Excavation (Construction)	UST (Construction)	Future Building
Chlorobenzene	NA	2.1×10^{-4}	NA	NA	NA
Chloroform	NA	NA	NA	NA	9.2×10^{-6}
1,2-Dichlorobenzene	NA	4×10^{-4}	NA	NA	NA
1,4-Dichlorobenzene	NA	1.9×10^{-4}	NA	NA	NA
Dichlorodifluoromethane	NA	7.7×10^{-2}	NA	NA	NA
Trichlorofluoromethane	0.01	1.7×10^{-3}	NA	NA	NA
1,1-Dichloroethane	NA	1.0×10^{-3}	NA	NA	NA
cis-1,2-Tetrachloroethane	NA	4.2×10^{-4}	NA	NA	2.0×10^{-5}
1,1,2,2-Tetrachloroethane	2.6×10^{-5}	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	7.1×10^{-2}
Trichloroethene	4.8×10^{-4}	2.3×10^{-4}	NA	NA	1.5×10^{-4}
Vinyl chloride	NA	NA	NA	NA	2.0×10^{-4}
Toluene	NA	1.3×10^{-3}	NA	NA	NA
Xylenes	NA	6.6×10^{-4}	NA	NA	NA
Phenanthrene	NA	2.2×10^{-4}	NA	NA	NA
Fluoranthene	NA	5.2×10^{-5}	NA	NA	NA
Pyrene	NA	3.3×10^{-5}	NA	NA	NA
Benzo(a)anthracene	NA	2.1×10^{-6}	NA	NA	NA
Chrysene	NA	3.9×10^{-6}	NA	NA	NA
Bis(2-ethylhexyl)phthalate	NA	9×10^{-7}	0.01	0.01	4.9×10^{-7}
Benzo(b)fluoranthene	NA	3.6×10^{-5}	NA	NA	NA
Benzo(k)fluoranthene	NA	4.9×10^{-3}	NA	NA	NA
Benzo(a)pyrene	NA	1.6×10^{-7}	NA	NA	NA

NA Vapor transport modeling not performed. Chemical not detected at site.

by the Henry's Law Constant. The following equation provides an estimate of the equilibrium soil gas concentration:

$$C_{sg} = \frac{C \times H \times 1000}{RT}$$

Where:	C_{SG}	=	Concentration of chemical in soil gas (mg/m^3)
	C	=	Chemical-specific concentration medium (mg/kg or mg/L)
	H	=	Chemical-specific Henry's Law constant (m^3-atm/mol)
	1000	=	Units conversion factor (L/m^3)
	R	=	Universal gas constant (m^3-atm/mol K)
	T	=	Absolute temperature (K)

Vapor flux into the building is a function of the chemical diffusivity and depth to contamination. Contaminant depth is conservatively assumed to be 3 feet bgs at all times. Flux estimates are determined as follows:

$$F\ (mg/m^2 \cdot hr) = \frac{D_e \cdot C_{SG}}{X}$$

Where:	F	=	Chemical flux rate ($mg/m^2/hr$)
	D_e	=	Chemical effective diffusivity $(m^2/hr) = D_{air}\ P_t^{1.33}$
	C_{SG}	=	Soil gas concentration (mg/m^3)
	X	=	Source depth (m^3)
	D_{air}	=	Chemical diffusivity in air (m^2/hr)
	P_t	=	Total soil porosity (fraction)

The flux estimate is very conservative because it assumes diffusion to occur in dry soils and does not consider partitioning of chemical vapors to organic carbon naturally present in soils.

The ambient air concentrations are based on the planned building dimensions and the assumption that all of the air entering the building is drawn from a porous floor. Air is assumed to be exchanged at the rate of one-half the building volume per hour. Indoor air concentration is determined according to the following equation:

$$C_{indoor}\ (mg/m^3) = \frac{FA}{Q}$$

Where: Q = Air exchange rate (m^3/hr)
A = Building footprint area (m^2)

Table 6-8 presents a summary of the results of the long-term chemical vapor emissions modeling.

6.4 EXPOSURE ASSESSMENT

The purpose of this section is to evaluate the potential for human exposure to the hazardous chemicals in the environmental media at the site. The conceptual site model characterized the exposed populations and potential exposure routes. The exposure assessment provides exposure estimates and chemical dosage for the receptors.

To determine whether there is an actual or potential exposure at the site, the most likely pathways of contaminant release and transport as well as the human and environmental activity patterns at the site must be considered. A complete exposure pathway has three components: (1) a source of chemicals that can be released to the environment; (2) a route of contaminant transport through an environmental medium; and (3) an exposure or contact point for a human or environmental receptor. If any of these conditions are not satisfied the pathway is incomplete, and no risk can be determined.

6.4.1 Exposure Routes

There are two environmental media at the sites through which receptors can be either directly or indirectly exposed to site-related contaminants: soil and air. Exposure routes involved include dermal contact, ingestion, and/or inhalation.

6.4.1.1 Soil

Direct contact with contaminated soil can result in a dermal exposure. For example, construction personnel working at the sites could get contaminated soil on their skin. Organic chemicals in soil are dermally absorbed to some extent, but metals are not generally considered to be dermally absorbed. However, metals will be considered for the dermal exposure route.

In addition, incidental ingestion of soil can occur after hand-to-mouth contact by receptors. This exposure route is also applicable to base personnel. Inhalation of dusts are accounted by an extremely conservative ingestion rate.

The inhalation of volatile chemicals diffusing from contaminated soils can result in exposure via absorption through the lungs. Only organic chemicals are assumed to volatilize sufficiently to provide quantitative assessment of risk.

6.4.1.2 Groundwater

At the current time, no residential wells are located in the immediate vicinity of the sites. Therefore, no groundwater exposure scenarios will be evaluated. However, available data will be compared to regulatory criteria and assessed qualitatively. A discussion is presented in the risk characterization.

6.4.2 Exposure Estimates

The estimation methods and models used in this section are consistent with current EPA risk assessment guidance (U.S. EPA, December 1989; March 25, 1991; and January 1992). Exposure estimates associated with each exposure route are presented below. All exposure scenarios incorporate the maximum contaminant concentrations in the estimation of intakes. Therefore, only one exposure scenario was developed for each exposure route/receptor combination.

Noncarcinogenic risks are estimated using the concept of an average annual exposure. The intake incorporates terms describing the exposure time and/or frequency that represent the number of hours per day and the number of days per year that exposure occurs. This is used with a term known as the averaging time, which converts the daily exposure frequency and duration to an annual exposure by dividing by 365 days per year of exposure.

Carcinogenic risks, on the other hand, are calculated as an incremental lifetime risk, and therefore incorporate terms to represent the exposure duration (years) over the course of a lifetime (70 years, or 25,550 days).

6.4.2.1 Soil Exposure

Two exposure routes are examined for exposure to contaminated soils at Sites 1 through 5. They are evaluated for exposure by adult employees involved in construction activities via exposure by incidental ingestion and direct dermal contact with soil only.

The incidental ingestion of contaminated soils is characterized using the following expression (U.S. EPA, December 1989).

$$Intake\ (mg/kg\text{-}day) = \frac{C \times IngR \times CF \times FI \times EF \times ED}{BW \times AT}$$

Where:

C	=	Maximum detected chemical concentration in soil (mg/kg)
IngR	=	Ingestion Rate (mg soil/day)
CF	=	Conversion Factor (10^{-6} kg/mg)
FI	=	Fraction Ingested from Contaminated Source
EF	=	Exposure Frequency (days/year)
ED	=	Exposure Duration (years)
BW	=	Body Weight (kg)
AT	=	Averaging Time (period over which exposure is averaged - days)

The average daily intake of soil ingestion for adult construction receptors involved in construction activities is 480 mg/day. This accounts for the amount of soil which is inadvertently ingested through hand-to-mouth contact and inhaled as fugitive dusts. The fraction ingested is established 1.0 for the construction worker and the exposure frequency was estimated to be 250 days/year. This frequency conservatively assumes construction to take 1 year to complete. Exposure durations of 1 year for the construction worker was used for exposure calculations.

Table 6-9 provides a summary of exposure input parameters for incidental ingestion of contaminated soil.

TABLE 6-9

SUMMARY OF EXPOSURE ASSESSMENT INPUT VALUES
MCAS CHERRY POINT, NORTH CAROLINA

Parameter	Value	Units	Source/Rationale
Chemical concentration in Soil (C_s)	Chemical-specific	mg/kg	Maximum detected concentration
Chemical Concentration in Air	Chemical-specific	mg/m^3	Modeled value based on maximum detected concentration
Soil Ingestion Rate (IngR)	480	mg/day	U.S. EPA, March 25, 1991
Air Inhalation Rate (InhR)	20	m^3/day	U.S. EPA, March 25, 1991
Exposed Skin Surface Area (SA)	6,160	cm^2	U.S. EPA, May 1989, 50th percentile male head, hand, forearms, lower legs
Adherence Factor (AF)	1.0	mg/cm^2	U.S. EPA, January 1992
Absorbed Fraction of Contaminant (ABS)	0.01 - organics 0.001 - inorganics	Unitless	U.S. EPA, Region IV Guidance
Exposure Time (ET)	Current construction 12	hrs/day	Estimate
	Future occupational 8	hrs/day	Estimate
Exposure Frequency (EF)	250	days/yr	U.S. EPA, March 25, 1991
Exposure Duration (ED)	Current construction 1	years	Conservative estimate
	Future occupational 25	years	U.S. EPA, March 25, 1991
Conversion Factor (CF)	10^{-6}	kg/mg	Definition
Body Weight (BW)	70	kg	U.S. EPA, March 25, 1991
Averaging Time (AT)	365 days/yr x ED	days	Noncarcinogens
	365 days/yr x LT	days	Carcinogens
Lifetime (LT)	70	years	U.S. EPA, December 1989

The second most important exposure scenario considered for soil is direct dermal contact. The amount of contaminant absorbed is estimated by the following equation (U.S. EPA, December 1989).

$$\textit{Absorbed Dose (mg/kg-day)} = \frac{C \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:

C =	Chemical Concentration in Soil (mg/kg)
CF =	Conversion Factor (10^{-6} kg/mg)
SA =	Skin Surface Area Available for Contact (cm^2/day)
AF =	Soil to Skin Adherence Factor (mg/cm^2)
ABS=	Absorption Factor (unitless)
EF =	Exposure Frequency (days/year)
ED =	Exposure Duration (years)
BW =	Body Weight (kg)
AT =	Averaging Time (period over which exposure is averaged in days)

Skin surface area available for contact is limited to exposure of head, lower arms, lower legs, and hands for construction worker and represents the 50% value for adult males (U.S. EPA, May 1989).

The soil-to-skin adherence factor is estimated to be 1.0 mg/cm^2 for all receptors. The absorption factor is assumed to be 0.01 (1%) for organic compounds and 0.001 (0.1%) for metals in accordance with EPA Region IV guidance.

All other input parameters (C, EF, ED, BW, and AT) have the same values for each receptor as were defined in the incidental ingestion scenario. Input parameters for the dermal contact exposure scenario are also summarized in Table 6-9.

The third route considered for exposure to contaminated soils is by inhalation of chemical vapors. Exposure by this route is calculated by the following relationship (Cowherd et al., 1984).

$$\textit{Inhalation exposure dose (mg/kg-day)} = \frac{X \times InhR \times EF \times ED}{BW \times AT}$$

Where:

X =	Contaminant Air Concentration (mg/m^3) as determined by the vapor transport
InhR =	Inhalation Rate (m^3/day)

EF = Exposure Frequency (days/year)

ED = Exposure Duration (years)

BW = Body Weight (kg)

AT = Averaging Time (period over which exposure is averaged in days)

The inhalation rate was assumed to be 20 m^3 for the construction scenario and 4.8 m^3/day for the longer-term employees.

Exposure time was established to be 8 hours/day for adult employees. Exposure durations of 1 year for construction, and 25 years for adult employees were also used.

All other input parameters (BW and AT) have the same values for each receptor as were defined in the previous soil exposure scenarios. Input parameters for exposure to fugitive dust are summarized in Table 6-9.

6.5 TOXICITY ASSESSMENT

The purpose of this section is to identify the potential health hazards associated with exposure to each of the chemicals of concern. A toxicological evaluation characterizes the inherent toxicity of a compound. The literature indicates that the chemicals of concern cause carcinogenic and/or noncarcinogenic health effects in humans. In addition, many of the chemicals have adverse effects on environmental receptors. Although the chemicals of concern may cause adverse health effects, dose-response relationships and the potential for exposure must be evaluated before the risks to receptors can be determined. Dose-response relationships correlate the magnitude of the intake with the probability of toxic effects, as discussed below.

6.5.1 Health Effects

An important component of the risk assessment process is the relationship between the intake of a chemical (the amount of a chemical that is absorbed by a receptor) and the potential for adverse health effects resulting from that intake. Dose-response relationships provide a means by which potential public health impacts may be quantified. The published information of doses and responses is used in conjunction with information on the nature and magnitude of human exposure to develop an estimate of potential health risks.

Standard Reference Doses (RfDs) and/or Cancer Slope Factors (CSFs) have been developed by the EPA for many organics and inorganics. This section provides a brief description of these parameters.

6.5.1.1 Reference Doses (RfDs)

The RfD is developed by the EPA for chronic and/or subchronic human exposure to hazardous chemicals and is solely based on the noncarcinogenic health effects imparted by a chemical. The RfD is usually expressed as a dose (mg) per unit body weight (kg) per unit time (day). It is generally derived by dividing a no-observed-(adverse)-effect-level (NOEL or NOAEL) or a lowest-observed-adverse-effect-level (LOAEL) by an appropriate uncertainty factor. NOAELs, etc., are determined from laboratory or epidemiological toxicity studies. The uncertainty factor is based on the availability of toxicity data.

Uncertainty factors are generally applied as multiples of 10 to represent specific areas of uncertainty in the available data. A factor of 10 is used to account for variations in the general population (to protect sensitive subpopulations), when extrapolating test results from animals to humans (to account for interspecies variability), when a NOAEL derived from a subchronic study (instead of a chronic study) is used to develop the RfD, and when a LOAEL is used instead of a NOAEL. In addition, the EPA reserves the use of a modifying factor of up to 10 for professional judgment of uncertainties in the data base not already accounted for. The default value of the modifying factor is 1.

The RfD incorporates the surety of the evidence for chronic human health effects. Even if applicable human data exist, the RfD (as diminished by the uncertainty factor) still maintains a margin of safety so that chronic human health effects are not underestimated. Thus the RfD is an acceptable guideline for evaluation of noncarcinogenic risk, although the associated uncertainties preclude its use for precise risk quantitation.

6.5.1.2 Cancer Slope Factor (CSF)

CSFs are applicable for estimating the lifetime probability (assuming a 70-year lifetime) of human receptors developing cancer as a result of exposure to known or potential carcinogens. This factor is generally reported by the EPA in units of $(mg/kg/day)^{-1}$ and is derived through an assumed low-dosage linear relationship and an extrapolation from high to low dose responses determined from animal studies. The value used in reporting the CSF is the upper 95 percent confidence limit.

6.5.1.3 Weight of Evidence

The weight of evidence designations indicate the likelihood that a chemical is a human carcinogen, based on both animal and human studies. The classification is as follows:

- Class A Known human carcinogen
- Class B Potential human carcinogen. B1 indicates that limited human data are available. B2 indicates that there is sufficient evidence of carcinogenicity in animals, but inadequate or no evidence in humans.
- Class C Possible human carcinogen
- Class D Not classifiable as to human carcinogenicity
- Class E Evidence of noncarcinogenicity in humans

6.5.2 Applicable or Relevant and Appropriate Regulation (ARARs)

This section presents the available regulatory standards or guidelines for all of the chemicals of concern at the Site 29. Currently, the only enforceable Federal regulatory standards for exposures to groundwater contamination are the MCLs. However, MCLs have not been specified for many of the chemicals of concern; therefore, other regulatory guidelines may be used for comparative purposes to infer health risks and environmental impacts. Also, the State of North Carolina has promulgated regulations for groundwater and soil which are summarized below.

6.5.2.1 Maximum Contaminant Levels (MCLs)

MCLs are enforceable standards promulgated under the Safe Drinking Water Act and are designed for the protection of human health. MCLs are based on laboratory or epidemiologic studies and apply to drinking water supplies consumed by a minimum of 25 persons. They are designed for prevention of human health effects associated with lifetime exposure (70 years) of an average adult (weighing 70 kg) who consumes 2 liters of water per day, but they also reflect the technical feasibility of removing the contaminant from the water. These enforceable standards also reflect the fraction of toxicant expected to be absorbed by the gastrointestinal tract.

Toxic Substances Control Act (TSCA)

The Toxic Substances Control Act of 1976 charged the Environmental Protection Agency with the task of identifying and controlling production and use of chemicals which demonstrate deleterious effects on

human health or the environment. The act, and subsequent actions taken by the EPA, have provided controls on the production, use, and handling of many hazardous chemicals, including PCBs.

PCBs are considered carcinogenic and are found primarily in electrical transformers. TSCA requires removal and proper disposal of liquid and solid PCB-containing materials which contain greater than 50 ppm. Suggested action levels of 1 ppm (residential soils) and 10 to 25 ppm (industrial soils) have been recommended by the EPA (Owser Directive 9355.4-01).

6.5.2.2 State of North Carolina Groundwater Standards

North Carolina Administrative Code, Title 15, Subchapter 2L, dated November 8, 1993, presents standards for Class GA waters. GA groundwaters are defined as the highest quality groundwater with chloride concentrations equal to or less than 250 mg/L. Because historical results of chloride analyses of the groundwater at the site areas were less than 250 mg/L and it is identified as a potential source of drinking water during previous risk assessments, the groundwater at all sites will be considered as Class GA.

6.5.2.3 North Carolina Action Levels for Petroleum-Contaminated Soils

The State of North Carolina publication "Groundwater Section Guidelines for the Investigation and Remediation of Soils and Groundwater," dated March 1993, sets action levels for selected parameters. If contaminant concentrations in soil equal or exceed the calculated action levels, further investigative and/or remedial steps are required. The action levels are as follows:

Parameter	Action Level
Gasoline	60 ppm*
Diesel	240 ppm
Oil and Grease	1200 ppm

*ppm parts per million

6.5.2.4 Occupational Standards (Air)

Air quality standards for occupational exposures are available for all chemicals for which soil chemical vapor emission modeling was performed. The occupational standards that may apply include Permissible Exposure Limits (PELs) that are established by OSHA, Threshold Limit Values (TLVs) that are developed by the American Conference of Governmental Industrial Hygienists (ACGIH), and Recommended Exposure

Limits (RELs) that have been identified by the National Institute for Occupational Safety and Health (NIOSH). Of the occupational standards presented, only the OSHA values are regulatory.

6.5.3 Summary

Table 6-10 presents the values of the available ARARs and dose-response parameters for both carcinogenic and noncarcinogenic chemicals of concern. All available toxicity information is included in this table. If the intake of a chemical exceeds these standards or guidelines, there is a possibility that a receptor may experience adverse health effects.

6.6 RISK CHARACTERIZATION

Potential human health risks resulting from the exposures outlined in the preceding sections are characterized on a quantitative and qualitative bases in this section. Quantitative risk estimates are generated based on risk assessment methods outlined in current EPA guidance (EPA, December 1989), and the qualitative assessment consists of a comparison of measured concentrations to standards or guidelines.

Noncarcinogenic risk estimates are presented in the form of Hazard Quotients and Hazard Indices that are determined through comparison of estimated intakes with published Reference Doses. Incremental cancer risk estimates are provided in the form of dimensionless probabilities based on Cancer Slope Factors.

Estimated human intakes were developed for each of the specific exposure routes discussed in the preceding sections. Both carcinogenic and noncarcinogenic risks are summarized for each exposure route on a series of tables in this section. Detailed calculations are provided in Appendix D.

Noncarcinogenic risk is assessed using the concept of Hazard Quotients and Hazard Indices. The Hazard Quotient is the ratio of the estimated intake and the Reference Dose (RfD) for a selected chemical of concern, as follows:

$$\text{Hazard Quotient} = \text{Intake} / \text{RfD}$$

A Hazard Index is generated by summing the individual Hazard Quotients for the chemicals of concern. If the value of the Hazard Index exceeds unity (1.0), there is a potential noncarcinogenic health risk associated with exposure to that particular chemical mixture (EPA, September 24, 1986). At that time,

TABLE 6-10

SUMMARY OF TOXICOLOGICAL DATA AND REGULATORY STANDARDS
POTENTIAL CHEMICALS OF CONCERN
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Reference Dose (mg/kg day)[1]			Cancer Slope Factor (kg-day/mg)[1]			Federal MCL (mg/L)	NC State Standard Class GA (mg/L)	Time-Weighted Occupational Standard (mg/m^3)[5]
	Oral	Inhalation	Dermal (%ABS)	Oral	Inhalation	Dermal (%ABS)			
Toluene	2×10^{-1} [1]	1.1×10^{-1} [1]	2×10^{-1} (100)	NA		(100)	1	1.0	188
Xylenes	2×10^{0} [1]	8.6×10^{-2} (para)	2×10^{0} (100)			(100)	10	0.53	434
2-Butanone	6×10^{-1} [1]	3×10^{-1} [1]	6×10^{-1} (100)			(100)	—	0.17	590
Chloroform	1×10^{-2} [1]		1×10^{-2} (100)	6×10^{-3} [1]	8.0×10^{-2} [1]	6.1×10^{-3} (100)	0.1	0.00019	49
Dichlorodifluoromethane	2×10^{-1} [1]	6×10^{-2} [2a]					—	1.4	4,950
Trichlorofluoromethane	3×10^{-1} [1]	2×10^{-1} [2a]					—	2.1	5,620
Chlorobenzene	2×10^{-2} [1]		6×10^{-3} (30)			(30)	NA	0.05	46
1,2-Dichlorobenzene	9×10^{-2} [1]		9×10^{-2} (100)			(100)	0.6	0.62	150
1,4-Dichlorobenzene	2×10^{-1} [3]	2.3×10^{-1} [2]	2×10^{-1} (100)			(100)	0.075	0.075	60
1,1-Dichloroethane	1×10^{-1} [3]	1×10^{-1} [2]	1×10^{-1} (100)			(100)	—	0.7	405
cis-1,2-Dichloroethene	1×10^{-2} [2]		1×10^{-2} (100)			(100)	0.07	0.07	793
Trichloroethene			(100)	1.1×10^{-2}	6×10^{-3}	1.1×10^{-2} (100)	0.005	0.0028	269
1,1,2,2-Tetrachloroethane			(50)	2.0×10^{-1} [1]	2.0×10^{-1} [1]	4×10^{-1} (50)	—	—	6.9
Tetrachloroethene			(100)	5.2×10^{-2}	2×10^{-3}	5.2×10^{-2} (100)	0.005	0.0007	170
Vinyl chloride			(100)	1.9×10^{0} [2b]	3×10^{-1} [2b]	1.9×10^{0} (100)	0.002	1.5×10^{-5}	13
Bis(2-ethylhexyl)phthalate	2×10^{-2} [1]		1×10^{-2} (50)	1.4×10^{-2} [1]		2.8×10^{-2} (50)	0.4	0.003	5
Butylbenzylphthalate	2×10^{-1}		1×10^{-1} (50)			(50)	0.1	NA	

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TABLE 6-10 (Continued)
SUMMARY OF TOXICOLOGICAL DATA AND REGULATORY STANDARDS
POTENTIAL CHEMICALS OF CONCERN
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Reference Dose (mg/kg day)[1]			Cancer Slope Factor (kg-day/mg)[1]			Federal MCL (mg/L)	NC State Standard Class GA (mg/L)	Time-Weighted Occupational Standard (mg/m^3)[5]
	Oral	Inhalation	Dermal (%ABS)	Oral	Inhalation	Dermal (%ABS)			
Acenaphthene	6E-2		3×10^{-2} (50)			(50)	NA	NA	
Fluorene	4E-2		2×10^{-2} (50)			(50)			
Anthracene	3E-1		2×10^{-1} (65)			(65)	NA	NA	
Carbazole				2E-2[2]			NA	NA	
Indeno(123-cd)pyrene			(50)	TEF = 0.1 7.3E-1		1.46×10^{-0}(50)	0.0004	NA	
Dibenz(a,h)anthracene			(10)	TEF = 1.0 7.3 E0		1.46×10^{-1}(10)	0.0003	NA	
Benzo(g,h,i)perylene			(50)			(50)	NA	NA	
Phenanthrene			(50)			(50)	---	NA	NA
Fluoranthene	4×10^{-2}		2×10^{-2} (50)			(50)	NA	NA	NA
Pyrene	3×10^{-2}		2×10^{-2} (65)			(65)	---	NA	0.2[5b]
Benzo(a)anthracene			(50)	7.3×10^{-1}		1.4×10^{0} (50)	0.0001	NA	0.2[5b]
Benzo(b)fluoranthene			(50)	7.3×10^{-1}		1.4×10^{0} (50)	0.0002	NA	0.2[5b]
Benzo(k)fluoranthene			(50)	7.3×10^{-1}		1.4×10^{0} (50)	0.0002	NA	0.2[5b]
Benzo(a)pyrene			(15)	7.3×10^{0} [1]		4.9×10^{1} (15)	0.0002	NA	0.2[5b]
Chrysene			(50)	7.3×10^{-1}		1.4×10^{0} (50)	0.0002	NA	0.2[5b]
Aldrin	3×10^{-5} [1]		1.5×10^{-5} (50)	1.7×10^{1} [1]	1.7×10^{1} [1]	3.4×10^{1} (50)	---	NA	0.25
Heptachlor epoxide	1.3×10^{-5} [1]		5.2×10^{-5} (40)	9.1×10^{0} [1]	9.1×10^{0} [1]	2.3×10^{1} (40)	0.0002	4×10^{-4}	0.5
Dieldrin	5×10^{-5} [1]		2.5×10^{-5} (50)	1.6×10^{1} [1]	1.6×10^{1} [1]	3.2×10^{1} (50)	---	NA	0.25
Endrin	3E-4		2×10^{-4} (65)			(65)	0.002	0.002	

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TABLE 6-10 (Continued)
SUMMARY OF TOXICOLOGICAL DATA AND REGULATORY STANDARDS
POTENTIAL CHEMICALS OF CONCERN
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Reference Dose (mg/kg day)[1]			Cancer Slope Factor (kg-day/mg)[1]			Federal MCL (mg/L)	NC State Standard Class GA (mg/L)	Time-Weighted Occupational Standard (mg/m^3)[5]
	Oral	Inhalation	Dermal (%ABS)	Oral	Inhalation	Dermal (%ABS)			
Endosulfan I	5×10^{-5} [2]		3×10^{-5} (60)			(60)	NA	NA	0.1
4,4'-DDE			(80)	3.4×10^{-1} [1]		4.3×10^{-1} (80)	NA	NA	NA
4,4'-DDD			(80)	2.4×10^{-1} [1]		3×10^{-1} (80)	NA	NA	NA
4,4'-DDT	5×10^{-4} [1]		4×10^{-4} (80)	3.4×10^{-1} [1]	3.4×10^{-1} [1]	4.3×10^{-1} (80)	NA	NA	1
Chlordane	6×10^{-5} [1]		5×10^{-5} (80)	1.3×10^{0} [1]	1.3×10^{0} [1]	1.6×10^{0} (80)	0.002	2.7×10^{-5}	0.5
Aroclor-1260			(85)	7.7×10^{0} [1]		9.1×10^{0} (85)	0.0005	NA	0.5
Antimony	4E-4		2×10^{-5} (5)			(5)	0.006	NA	NA
Arsenic	3×10^{-4} [1]		2.9×10^{-4} (95)	1.8×10^{0} [1]	1.5×10^{1} [1]	1.9×10^{0} (95)	0.05	0.05	0.01
Barium	7×10^{-2} [1]		2.8×10^{-3} (4)			(4)	2	2.0	0.5
Beryllium	5E-3		5×10^{-5} (1)	4.3E0	8.4E0[2]	(1)	0.004	NA	NA
Cadmium	1E-3 (food) 5E-4 (water)		5×10^{-5} (5)		6.3EO	(5)	0.005	0.005	NA
Chromium III	1×10^{0} [1]		2×10^{-2} (2)			(2)	0.1 (total Cr)	0.05 (total)	0.5
Chromium VI	5×10^{-3} [1]		1×10^{-4} (2)		4.2×10^{1} [1]	(2)	0.1 (total Cr)	0.05 (total)	0.05[5]
Cobalt	8E-3[3]		4×10^{-4} (5)			(5)	NA	NA	NA
Copper	3.7E-2[2]		2.2×10^{-2} (60)			(60)	1.3*	1.0	NA
Lead			(50)			(50)	0.015*	0.015	0.15[5]

TABLE 6-10 (Continued)
SUMMARY OF TOXICOLOGICAL DATA AND REGULATORY STANDARDS
POTENTIAL CHEMICALS OF CONCERN
MCAS CHERRY POINT, NORTH CAROLINA

Chemical	Reference Dose (mg/kg day)[1]			Cancer Slope Factor (kg-day/mg)[1]			Federal MCL (mg/L)	NC State Standard Class GA (mg/L)	Time-Weighted Occupational Standard (mg/m^3)[5]
	Oral	Inhalation	Dermal (%ABS)	Oral	Inhalation	Dermal (%ABS)			
Manganese	5×10^{-3} [1]	1.4×10^{-5} [1]	1.5×10^{-4} (3)			(3)	0.05 [4]	0.05	5[5]
Mercury	3×10^{-4} [2]	9×10^{-5} [2]	2×10^{-5} (7)			(7)	0.002	0.0011	0.1[5]
Nickel	2×10^{-2} [1]		(15)			(15)	0.1	0.10	0.1[5]
Selenium	5×10^{-3} [1]		(80)			(80)	0.05	0.05	0.2[5]
Silver	5E-3		(20)			(20)	NA	0.018	NA
Vanadium	7×10^{-3} [2]		(1)			(1)	—	NA	0.05[5]
Zinc	3×10^{-1} [1]		(25)			(25)	5 [4]	2.1	10[5]
Cyanide	2E-2		(50)			(50)	0.2	0.154	NA

* Action level.
NA Toxicity data not available for this chemical and/or exposure route.
ND Chemical not detected in groundwater.
(1) IRIS, April 1994.
(2) HEAST, 1993 FY, Table 1.
(2a) HEAST, 1993 FY, Table 2.
(2b) HEAST, 1993 FY, Table 3.
(3) Obtained from LD_{LO} (Rabbit) of 750 mg/kg (Behavioral Changes), UF = 10^5.
(4) Secondary MCL.
(5) Minimum standard of ACGIH TLV, OSHA PEL, and NIOSH REL.
(5a) Value for Aroclor-1254.
(5b) Value for coal tar pitch solubles.

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particular attention should be paid to the target organs affected by each chemical. The Hazard Index is not a mathematical prediction of the severity of toxic effects; it is simply a numerical indicator of the possibility of the occurrence of noncarcinogenic (threshold) effects. If the ratio of the intake and the RfD for any individual chemical exceeds unity, toxic effects would also be expected.

Incremental cancer risk estimates are generated for each of the exposure pathways using the estimated intakes and published Cancer Slope Factors (CSFs), as follows:

$$\text{Risk} = \text{Intake} \times \text{CSF}$$

If the above equation results in a risk greater than 0.1, the following equation is used:

$$\text{Risk} = 1 - \exp^{(-\text{Intake} \times \text{CSF})}$$

The risk determined using these equations is a unitless expression of an individual's likelihood of developing cancer as a result of exposure to carcinogenic chemicals. An incremental cancer risk of 1×10^{-6} indicates that the exposed receptor has a one in one million chance of developing cancer under the defined exposure scenario. Alternatively, such a risk may be interpreted as representing one additional case of cancer in an exposed population of one million persons. The calculated cancer risks should be recognized as upper-limit estimates. Cancer Slope Factors are the upper 95 percent confidence limit of a dose-response curve generally derived from animal studies. Actual human risk, while not identifiable, is not expected to exceed the upper limit based on the CSFs, and, in fact, may be lower.

The EPA has generally defined risks in the range of 10^{-4} to 10^{-6} as being acceptable for most hazardous waste facilities addressed under CERCLA. For CERCLA activities, residual risks on the order of 10^{-6} are the primary goal, but are often modified by such regulatory requirements as MCLs or chemical-specific cleanup goals. The risk range goal will be used as the comparative risk standard.

Carcinogenic and noncarcinogenic health risks are estimated using a number of different assumptions; therefore, the values presented in this section contain an inherent amount of uncertainty. The extent to which health risks can be characterized is primarily dependent upon the accuracy with which the toxicity of a chemical can be estimated and the accuracy of the exposure scenario assumptions. The toxicologic data that form the basis for all risk assessments contain uncertainty in the following areas:

- The extrapolation of nonthreshold (carcinogenic) effects from the high doses administered to laboratory animals to the low doses received under more common human exposure scenarios.

- The extrapolation of the results of laboratory animal studies to human or environmental receptors.

- The interspecies variation in toxicological endpoints used in characterizing potential health effects resulting from exposure to a chemical.

- The variations in sensitivity among individuals of any particular species.

In addition to these sources of uncertainty, the exposure estimates presented in Section 6.3 are also based on a number of simplifying assumptions. The assumptions made include the following:

- Receptor characteristics, such as age, body weight, and exposure duration, are based on published values, with some attempt at making them more site specific.

- Land use and activity patterns in the area are limited to the observations made during the field investigation and known land uses in the surrounding area.

- There are no antagonistic or synergistic effects between the chemicals of concern.

Table 6-11 presents the quantitative risks for human receptors. Text discussion of the regulatory exceedences is provided for each site.

6.6.1 Site 1

The calculated risks for construction workers and long-term occupant employees at Site 1 are less than a cumulative Hazard Index (HI) of one and cancer risk of 10^{-4}, the benchmarks used for comparative risk evaluation.

Under the construction exposure scenario, a cumulative HI of 0.21 is calculated. This indicates that adverse systemic (noncancer) health effects are not excepted, even for the most sensitive members of a population. The cumulative cancer risk associated with the construction worker is equal to 8.0×10^{-7}, which corresponds to approximately one cancer incidence related to site exposure for about 1.25 million exposed individuals.

The long-term employee occupant of the building at Site 1 is noted to have an associated Hazard Index of 2.4×10^{-3} and incremental cancer risk of 1.4×10^{-7}. The Hazard Index value indicates that no adverse

TABLE 6-11

SUMMARY OF RISK CHARACTERIZATION
SITES 1 - 5
MCAS CHERRY POINT, NORTH CAROLINA

Site	Receptor	Construction Worker				Future Employee
	Exposure Route	Incidental Ingestion	Dermal Contact	Inhalation of Volatiles	Total Risk	Inhalation of Volatiles
1	Hazard Index	1.7×10^{-1}	4.0×10^{-2}	NA	2.1×10^{-1}	2.4×10^{-3}
	Cancer Risk	7.5×10^{-7}	4.6×10^{-8}	NA	8.0×10^{-7}	1.4×10^{-7}
2	Hazard Index	1.6×10^{-1}	2.5×10^{-2}	NA	1.9×10^{-1}	6.2×10^{-2}
	Cancer Risk	4.3×10^{-6}	1.6×10^{-6}	NA	5.9×10^{-6}	2.4×10^{-8}
3	Hazard Index	3.6×10^{-2}	2.2×10^{-2}	NA	5.8×10^{-2}	NA
	Cancer Risk	NC	NC	NA	NC	NA
4	Hazard Index	1.5×10^{-1}	4.5×10^{-2}	8.7×10^{-3} (Utility Corridor) 2×10^{-2} (PS)	0.20 (Utility) 0.22 (PS)	0
	Cancer Risk	5.7×10^{-7}	9.7×10^{-9}	3.5×10^{-8} (Utility Corridor) 5.2×10^{-8} (PS)	6.1×10^{-7} (Utility) 6.2×10^{-7} (PS)	3.4×10^{-6}
5	Hazard Index	1.0×10^{-1}	2.3×10^{-2}	NA	1.2×10^{-1}	NA
	Cancer Risk	5.7×10^{-7}	3.7×10^{-8}	NA	6.1×10^{-7}	NA

NA Exposure route not applicable. Excavations not to be performed at this site.
NC Not calculated. Carcinogens not detected at site.
PS Pumping Station.

health effects are to be expected from employment exposures (i.e., inhalation). The incremental cancer risk corresponds to one cancer incidence in approximately 7.1 million exposed receptors.

For groundwater at Site 1, manganese (0.202 mg/L) exceeds the secondary Federal MCL and the North Carolina State Class GA groundwater standard. All other positively detected chemicals are reported to be less than regulatory standards.

Based on the results of vapor transport modeling, all chemical vapor concentrations for chemicals detected at Site 1 are less than respective occupational air quality standards for long-term exposure.

6.6.2 Site 2

As indicated in Table 6-11, construction worker receptors at Site 2 have a calculated HI of 0.18 and incremental cancer risk of 5.9×10^{-6}. The hazard index, being equal to a value less than one, indicates that no systemic health effects can be expected as a result of being exposed to chemicals in the soils at the site. The incremental cancer risk, exceeding the lower risk range goal of 10^{-6}, corresponds to about one cancer incidence attributable to site exposure for every 170,000 exposed individuals. The majority of the cancer risk is attributable to PCBs detected at the site, with the remainder primarily due to PAH chemicals.

Long-term employees occupying proposed structures at Site 2 are expected to have a hazard index equal to 0.06 and cancer risk of 2.4×10^{-8}. Both values are less than the respective benchmark comparison values.

Manganese exceeds the applicable Federal and state requirements for groundwater quality. The manganese result (0.0727 mg/L) exceeds the Federal secondary MCL and North Carolina State limit of 0.050 mg/L. No other positively detected chemicals are noted to exceed these standards.

Results for TPH at locations SO-06 and SO-07 exceed the calculated North Carolina State 1200 mg/kg regulatory standard for oil and grease in petroleum-contaminated soils.

6.6.3 Site 3

Results of the quantitative risk assessment performed for construction workers at Site 3 indicate a hazard index of 0.058, well below the value of unity which indicates potential for adverse health effects. No carcinogens were detected in Site 3 soils, therefore, no calculation of cancer risk could be performed. No

evaluation for long-term occupants of the structure has been performed as no volatile constituents were detected and the exposure route is therefore incomplete.

Groundwater results indicate that only manganese exceeds the applicable Federal and state requirements for groundwater quality. The manganese result (0.102 mg/L) exceeds the Federal secondary MCL and North Carolina State limit of 0.050 mg/L. No other positively detected chemicals are noted to exceed these standards.

6.6.4 Site 4

A cumulative Hazard Index of 0.20 and 0.22 is calculated for workers involved in the installation of the utility corridor and the pumping station, respectively. Under both scenarios, ingestion of soil during excavation results in the most significant contribution to the risk. Actual risk is likely to be much lower since contact with soil is unlikely during the entire 250 days of construction assumed for the risk assessment.

The cancer risks for construction workers are less than 10^{-6} for both construction/excavation scenarios. A total risk of 6.6×10^{-7} is calculated for receptors involved in all facets of construction activity.

The Hazard Index for future employees that may occupy the structure after construction cannot be determined as detected chemicals do not have available inhalation reference doses, however, an incremental cancer risk of 3.4×10^{-6} can be calculated. Although the cancer risk exceeds 10^{-6}, the result is still less than the upper risk range goal of 10^{-4} and corresponds to approximately one cancer incidence in 294,000 exposed receptors. It is worthy to note that the facility is a painting hangar and occupational controls are certainly instituted which would significantly decrease the calculated risks.

Detected concentrations of several chemicals in Site 4 groundwater exceed respective North Carolina State and Federal standards. The North Carolina State standards for chloroform, vinyl chloride, trichloroethene, and tetrachloroethene are all exceeded at a minimum of one well point location. Only manganese detected at MW4A and MW4B and tetrachloroethene detected at MW4C exceeded respective Federal MCLs.

Results for TPH at locations SO-12, SO-15, and SO-17 exceed the calculated North Carolina State 1200 mg/kg regulatory standard for oil and grease in petroleum contaminated soils.

6.6.5 Site 5

Results of the quantitative risk assessment performed for exposures to soil at Site 5 indicate there to be no significant risk to construction workers at the site. The Hazard Index value of 0.12 and incremental cancer risk of 6.1×10^{-7} are both below the respective benchmark values. It may be concluded that the risks are not significant.

The groundwater analytical results indicate that this medium contains no positively detected chemicals at concentrations which exceed respective state and federal standards.

7.0 SUMMARY

This section summarizes the results of the field investigation, data evaluation, and risk assessment for the five sites investigation under CTO 165. For presentation purposes, the summaries of the risk data will be provided on a site-specific basis. As shown in the analytical detail included in Appendix C, ignitability, corrosivity, reactivity, and TCLP results for soils and concrete indicate that no regulatory restrictions apply to disposal of the materials resulting from construction at any of the sites.

7.1 SITE 1 (MCON P-962T)

The Site 1 investigation consisted of 14 soil borings, one concrete chip sample and one groundwater monitoring well point. Analytical results for the site indicate the presence of low concentrations of trichloroethene, various pesticides, and naturally occurring metallic constituents in the soils. The groundwater is noted to have detectable quantities of 1,1,2,2-tetrachloroethene, trichloroethene, and trichlorofluoromethane, along with metals commonly detected in surficial aquifers in the region. The groundwater contains manganese at a level which exceeds identical North Carolina State standard and a federal secondary MCL. Petroleum hydrocarbons do not exceed North Carolina State action levels at any sampling location.

Results of the quantitative risk assessment indicate there to be no significant risks to workers involved in planned demolition and construction activity or to employees that will occupy the structure upon its completion.

7.2 SITE 2 (MCON P-965T)

Site 2 is located in the area between Buildings 137 and 129. The field investigation consisted of samples collected from six soil borings, one concrete chip sample, and one groundwater monitoring well point. Analytical results for the soils indicate the presence of low concentrations of toluene, xylenes, polynuclear aromatic hydrocarbons, aroclor-1260 (a PCB mixture) and commonly detected metals. Groundwater contained low concentrations of halogenated volatile organic compounds and metals. Manganese exceeds the North Carolina and federal MCL value for groundwater. Petroleum hydrocarbons exceed the North Carolina action level at two locations. The results show 2300 ppm at SO-06-0001 and 1800 ppm at SO-07-0001 as compared to a calculated action level of 1200 ppm for oil and grease.

The results of the quantitative risk assessment indicate that no significant risks are posed by the chemicals at Site 2 to construction workers or long-term employees occupants of the completed structures.

7.3 SITE 3 (MCON P-966T)

The field investigation of Site 3 included sampling of soils from four locations and one groundwater sample collected from a groundwater monitoring well point. No organic chemicals were detected in the soils or groundwater at Site 3. Metallic constituents were detected in the soils and groundwater at levels indicative of naturally occurring concentrations. Petroleum hydrocarbons do not exceed North Carolina State action levels at any sampling locations. Quantitative risk assessment indicates there to be no significant risks associated with occupational exposures at this site.

7.4 SITE 4 (MCON P-965T)

Site 4 investigation consisted of 15 soil borings, two concrete chip samples, and three groundwater monitoring well points. A variety of low to moderate concentration organic chemicals were detected in the soils and groundwater beneath the site. Regulatory exceedences for manganese, chloroform, trichloroethene, tetrachloroethene, and vinyl chloride are noted for the groundwater at the site. Petroleum hydrocarbons were detected at levels greater than the North Carolina State calculated action level of 1200 ppm for oil and grease at three of the sampling locations; SO-12-0709 (1700 ppm), SO-17-0709 (2500 ppm), and SO-15-0001 (1400 ppm).

Risk assessment performed for the site indicates the potential for the incidence of adverse noncancer health effects as a result of to exposure to chemical vapors within excavation pits at the site, the risk of which can be significantly reduced by requiring construction workers to use of an air-purifying respirator fitted with a cartridge for the removal of organic vapors. Long term occupants of the structure may be exposed to cancer causing chemicals contained in the groundwater which can result in an increased cancer risk of less than 10^{-5} (one incidence of cancer in 100,000 exposed individuals) during the evaluated employment duration of 25 years. However, this cancer risk evaluation is extremely conservative in view of the conservatism of the vapor transport model used and because occupational controls are already being instituted at the affected facility, a painting hangar.

7.5 SITE 5 (MCON P-962T)

The field investigation at Site 5 included sampling of eleven soil borings and one groundwater monitoring well point. Low concentrations of toluene and a pesticide were detected in soil along with natural occurring

levels of metals. Groundwater contained only low levels of metals. No exceedences of State or federal groundwater standards are noted. TPH levels do not exceed the North Carolina State calculated action levels at any sampling locations.

Risk assessment performed for the soil exposure at Site 5 indicate no significant risks are posed by the chemicals detected at the site to construction workers.

APPENDIX A

SAMPLE LOGSHEET

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS Cherry Point - CT0165 Project Site Number Site 1

NUS Source No. 1-SO-01 Source Location 1-SO-01

Sample Method:	GeoProbe Shelby Tube (2"ø) / SS Trowel
Depth Sampled:	3-5'
Sample Date & Time:	4/10/94 @ 0905
Sampled By:	NJ Straub
Signature(s):	Norman Straub

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 4/10/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
MED BRN	Silty Sand, V. Moist

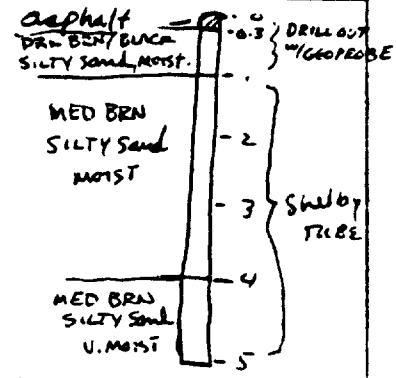
Analysis:	Preserv:
VOA (8260)	cool 4°C
Metals/CN	↓
TPH (8015)	↓
TPH (3050) / TPH (9071)	↓
-	

Observations / Notes

Sample 1-SO-01-0305
collected @ 0905

Recovery: 4.0'/4.0'

3 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- ☐ Surface Soil
- ☒ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon / Pond
- ☐ Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CT0165 Project Site Number SITE 1

NUS Source No. 1-SO-02 Source Location 1-SO-02

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS TROWEL	Composite Sample Data		
	Sample	Time	Color Description
Depth Sampled: 3-5'			
Sample Date & Time: 04/10/94 @ 0940			
Sampled By: NJ STRAUB			
Signature(s): [signature]		4/10/94	
Type of Sample: ☒ Low Concentration ☐ High Concentration ☒ Grab ☐ Composite ☐ Grab - Composite			

Sample Data	
Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
MED BRN	SILTY Sandy MOIST

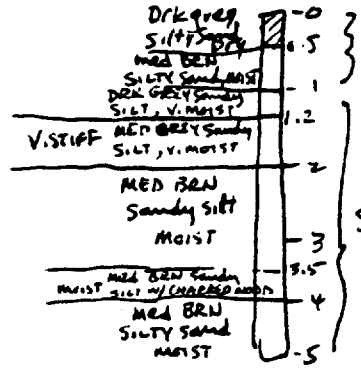
Analysis:	PRESERV:
VOA (8260)	COOL 4°C
Metals/CN	
TPH (8015)	
TPH(3550)/TPH(9071)	

Observations / Notes

Sample 1-SO-02-0305 COLLECTED @ 0940

RECOVERY: 4.0 / 4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name: MCAS CHERRY POINT - CT0165 Project Site Number: SITE 1

NUS Source No.: 1-50-03 Source Location: 1-50-03

Sample Method: GEOPROBE SHELBY TUBE (2"Φ) / SS TROWEL

Depth Sampled: 3-5'

Sample Date & Time: 4/10/94 @ 1025

Sampled By: NJ STRAUB

Signature(s): [signature]

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04/10/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Orange	Silty Sand, moist

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
Metals/CN	↓
TPH (8015)	↓
TPH(3050)/TPH(9071)	↓

Observations / Notes

Sample 1-50-03-0305

COLLECTED @ 1025

RECOVERY: 3.3'/4.0'

0 ppm HNU

Med Brn Silty Sand w/ small gravels DRY — 0
0.5
Tan — 1
DRY Silty Sand w/ FILL Gravels — 2
Fine sandy silt moist — 2.5
orange silty sand moist — 3
3.5
orange grey silty sand moist — 4
4.5
orange silty sand moist — 5

Removed w/ shovel

Shelby Tube

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTD165 Project Site Number SITE 1

NUS Source No. -1-SO-04 Source Location 1-SO-04

Sample Method: GEOPROBE SHELBY TUBE (2"Ø) / SS TROWEL

Depth Sampled: 3-5'

Sample Date & Time: 4/10/94 @ 1050

Sampled By: NJ STRAUB

Signature(s): [signature]

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Orange	Silty Sand, moist

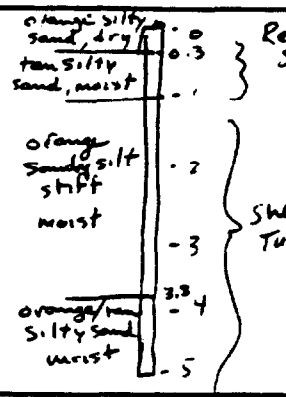
Analysis:	Preserv:
VOA (8260 +)	COOL 4°C
Metals/CN	↓
TPH (8015)	
TPH(5030)/TPH(9071)	

Observations / Notes

Sample 1-SO-04-0305 COLLECTED @ 1050

RECOVERY: 3.8'/4.0

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- ☐ Surface Soil
- ☒ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon / Pond
- ☐ Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 1

NUS Source No. 1-SO-05 Source Location 1-SO-05

Sample Method: GEOPROBE SHELBY TUBE (2Ø)/SS Trowel	Composite Sample Data		
	Sample	Time	Color Description
Depth Sampled: 3-5'			
Sample Date & Time: 4/13/94 @ 1715			
Sampled By: NJ STRAUB			
Signature(s): Norman Straub			
Type of Sample			
☒ Low Concentration			
☐ High Concentration			
☒ Grab			
☐ Composite			
☐ Grab - Composite			

NJS 4/13/94

Sample Data

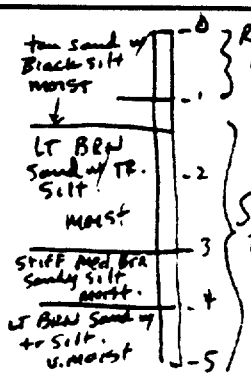
Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
red/LT BRN	Silty Sand, v. moist

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
Metals/CN	↓
TPH (8015)	
TPH (3050)/TPH (9071)	
TCLP	
ICR	

Observations / Notes

Sample S-SO-05-0305
COLLECTED @ 1715

RECOVERY: 4.0/4.0'
0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AA #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CT0165 Project Site Number Site 1

NUS Source No. 1-SO-06 Source Location 1-SO-06

Sample Method:	GEOPROBE SHELBY TUBE (2"Ø) / SS TROWEL
Depth Sampled:	3-5'
Sample Date & Time:	04/10/94 @ 1225
Sampled By:	NJ STRAUB
Signature(s):	[signature]

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
orange	SILTY Sand, moist

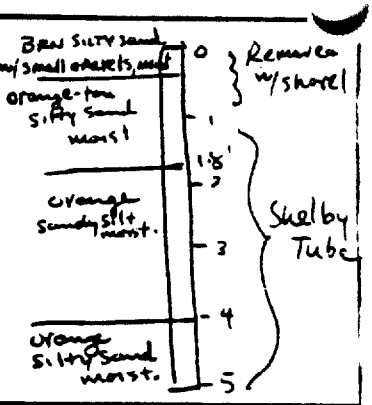
Analysis:	PRESERV:
VOA (8260)	COOL 4°C
Metals / CN	↓
TPH (8015)	↓
TPH (3050) / TPH (9071)	↓

Observations / Notes

Sample 1-SO-06-0305
COLLECTED @ 1225

RECOVERY: 4.0' / 4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name: MCAS Cherry Point
Project Site Number: Site 1
NUS Source No.: 1-So-07
Source Location: 1-So-07

Sample Method: Geoprobe Shelby Tube (2"Ø) / SS Trowel	
Depth Sampled: 3-5	
Sample Date & Time: 4/10/94 @ 1240	
Sampled By: NJ Straub	
Signature(s): Norman Straub	

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 4/10/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
Orange	Sandy silt, moist

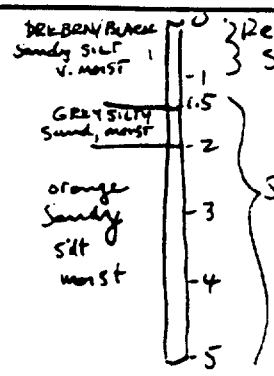
Analysis	Preserv:
VOA (8260)	Cool 4°C
Metals/CN	
TPH (8015)	
TPH(3050)/TPH(9071)	

Observations / Notes

Sample 1-So-07-0305 collected @ 1240

Recovery: 4.0/4.0

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name NCAS CHERRY POINT - CT0165 Project Site Number SITE 1

NUS Source No. 1-SO-08 Source Location 1-SO-08

Sample Method: GEOPROBE SHELBY TUBE (2") / SS TROWEL	
Depth Sampled: 3-5'	
Sample Date & Time: 4/10/94 @ 1515	
Sampled By: NJ STRAUB	
Signature(s): [signature]	

Composite Sample Data

Sample	Time	Color Description

NJS 04/10/94

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
Tan	Sand w/ TRACE SILT, MOIST

Analysis:	PRESERV:
VOA (5260)	COOL 4°C
TPH (8015)	↓
TPH (8020)/TPH (9071)	↓
Metals/CN	↓

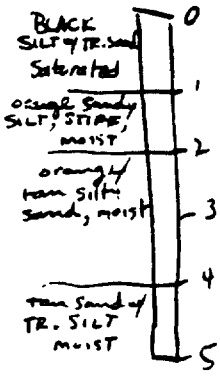
Observations / Notes

Sample 1-SO-08-0305 COLLECTED @

DUPLICATE of 1-SO-15-0305

RECOVERY: 3.7'/4.0'

2 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 1

NUS Source No. 01-SO-08 Source Location 01-SO-08

Sample Method: GEOPROBE SHELBY Tube (2"Ø) / SS Trowel

Depth Sampled: 3-5'

Sample Date & Time: 4/10/94 @ 1515

Sampled By: NJ Strauch

Signature(s): Norman Strauch

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04/10/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
tan	Sand w/ TR SILT, moist

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH (3050)/TPH (9071)	↓
Metals/CN	↓

Observations / Notes
- Sample 1-SO-15-0305 COLLECTED @ 1515 - NOTED ON Sample LABEL and COC as 1525
- DUPLICATE of 1-SO-08-0305
- See sample logsheet for 01-SO-08-0305 for details

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/04/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name NICAS CHERRY POINT - CTO165 Project Site Number SITE 1

NUS Source No. 1-SO-09 Source Location 1-SO-09

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS TROWEL

Depth Sampled: 3-5'

Sample Date & Time: 04/10/94 @ 1545

Sampled By: NJ STRAUB

Signature(s): [signature]

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
tan/orange	Sandy silt, moist

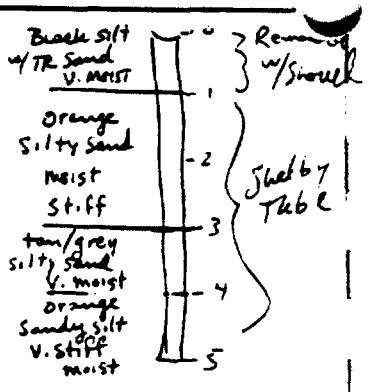
Analysis	Preserv.
VOA (8260)	COOL 4°C
Metals/CN	↓
TPH (8015	↓
TPH (3050)/TPH (9071)	↓

Observations / Notes

Sample 1-SO-09-0305 COLLECTED @ 1545

Recovery : 3.7/4.0

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CT0165 Project Site Number Site 1

NUS Source No. 1-SO-10 Source Location 1-SO-10

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS TROWEL	Composite Sample Data		
	Sample	Time	Color Description
Depth Sampled: 3-5'			
Sample Date & Time: 4/10/94 @ 1710			
Sampled By: NJ STRAUB			
Signature(s): [signature]			

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
tan	silty sand, moist

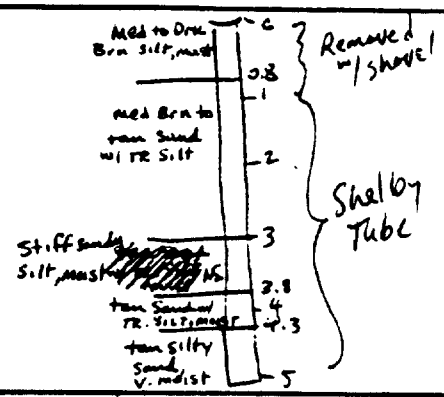
Analysis:	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH(3050)/TPH(9071)	
Metals/CN	

Observations / Notes

Sample 1-SO-10-0305 COLLECTED @ 1710

RECOVERY: 5.7'/4.0

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name: MCAS Cherry Point - CT0165 Project Site Number: SITE 1

NUS Source No. 1-So-11 Source Location 1-So-11

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS TROWEL

Depth Sampled: 3-5'

Sample Date & Time: 4/10/94 @ 1745

Sampled By: NJ STRAUB

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
tan	Silty Sand, moist

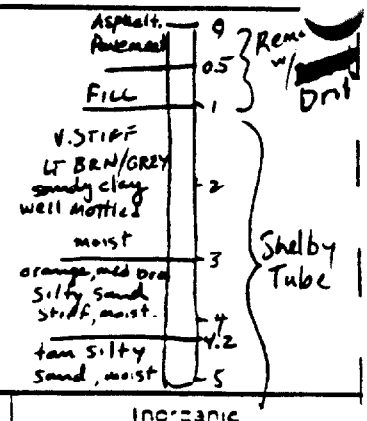
Analysis:	Preserv:
VOA (8260)	Cool 4°C
Metals/CN	↓
TPH (8015)	↓
TPH(3050)/TPH(9071)	↓

Observations / Notes

Sample 1-So-1b-0305 collected @ 1745

RECOVERY: 4.0'/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number Site 1

NUS Source No. 1-SO-12 Source Location 1-SO-12

Sample Method: GEOPROBE SHELBY TUBE (2" Ø) / SS Spoon

Depth Sampled: 3-5

Sample Date & Time: 4/10/93 @ 1845

Sampled By: NJ STRAUB

Signature(s): Nancy Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
orange	Silty Sand, moist

Analysis:	Preserv:
VOA (8260)	Cool 4°C
Metals/CN	↓
TPH (8015)	
TPH (3550)/TPH (9071)	

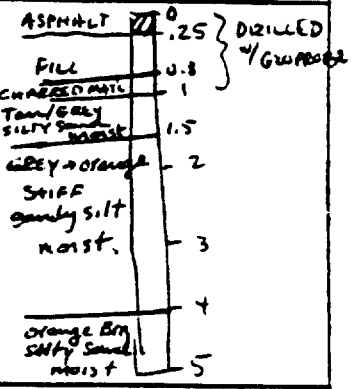
Observations / Notes

Sample 1-SO-12-0305 collected @ 1845

Duplicate of 1-SO-16-0305

Recovery: 4.0'/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CT0165 Project Site Number Site 1

NUS Source No. 1-SO-12 Source Location 1-SO-12

Sample Method: GEOPROBE SHELBY Tube (2"Ø) / SS Trowel

Depth Sampled: 3-5'

Sample Date & Time: 4/10/94 @ 1845

Sampled By: NJ Straub

Signature(s): Norman Straub

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04/10/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
orange	Silty Sand, moist

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	
TPH (3050) / TPH (9071)	
Metals / CN	

Observations / Notes

Sample 1-SO-16-0305 COLLECTED @ 1845 (labeled 1855 on COC and sample label)

DUPLICATE of 1-SO-12-0305 See 01-SO-12-0305 Sample logsheet for details

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

SAMPLE LOG SHEET

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HALLIBURTON NUS
Environmental Corporation

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- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT CTO165 Project Site Number Site 1

NUS Source No. 1-SO-13 Source Location 1-SO-13

Sample Method: (2"Φ) GEOPROBE SHELBY TUBE/SS TROWEL

Depth Sampled: 3-5'

Sample Date & Time: 4/10/94 @ 1920

Sampled By: NJSTRAUB

Signature(s): [signature]

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
Med Brn	Silty Sand v. moist.

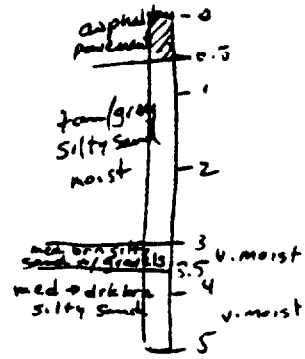
Analysis:	Preserv:
VOA (8260)	cool 4°C
Metals/CN	↓
TPH (8015)	↓
TPH (3050)/TPH (9071)	↓

Observations / Notes

Sample 1-SO-13-0305 collected @ 1920

Recovery: 3.5'/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

SAMPLE LOG SHEET

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HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CT0165 Project Site Number Site 1

NUS Source No. 1-SO-14 Source Location 1-SO-14

Sample Method: GEOPROBE SHELBY TUBE (2"Ø) / SS TROWEL

Depth Sampled: 3-5'

Sample Date & Time: 4/10/94 @ 1950

Sampled By: NJ STRAUB

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
grey / orange	Sandy silt, moist

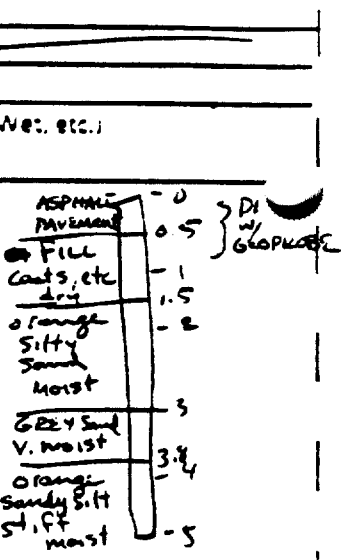
Analysis:	Preserv:
VOA (8260)	COOL 4°C
Metals/CN	
TPH (8015)	
TPH (3050)/TPH (9071)	

Observations / Notes

Sample 1-SO-14-0305 COLLECTED @ 1950

RECOVERY: 3.5/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name: MCAS Cherry Point - CTO165 Project Site Number: Site 1

NUS Source No.: 1-SO-01 THRU 1-SO-06 Source Location: 1-SO-01 THRU 1-SO-06

Sample Method: Shovel / SS TROWEL

Depth Sampled: 0-1'

Sample Date & Time: 4/10/94 @ 1130

Sampled By: NJSTRAMB

Signature(s): [signature]

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [x] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description
1-SO-01-0001	0830	DRK BRN/BLACK Sandy SILT, DRY
1-SO-02-0001	0845	MED BRN SILTY Sand, MOIST
1-SO-03-0001	1005	MED BRN SILTY Sand, MOIST
1-SO-04-0001	1015	TAN SILTY Sand, MOIST
1-SO-05-0001	1115	LT BRN SILTY Sand, MOIST
1-SO-06-0001	1122	BRN SILTY Sand w/ SM GRAVELS, MOIST

[signature] 4/10/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
DRK BROWN	SILTY Sand w/ small gravels, moist

Analysis:	Preserv:
TCL Semivolatiles	COOL 4°C
TCL Pesticides	COOL 4°C
TCL PCBs	COOL 4°C

Observations / Notes

Composite from 0-1' of 1-SO-01 THRU 1-SO-06

Sample ID: 01-SO-0106-COMP

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT Project Site Number SITE 1

NUS Source No. 1-SO-07 THRU 1-SO-10 Source Location 1-SO-07 THRU 1-SO-10

Sample Method: Shovel / SS trowel

Depth Sampled: 0-1'

Sample Date & Time: 4/10/94 @ 1210

Sampled By: NJ STRAUB

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [x] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description
1-SO-07-0001	1150	Med BRN SILTY Sand MOIST
1-SO-08-0001	1155	DRK BRN/BLK Sandy silt, Saturated
1-SO-09-0001	1157	DRK BRN/TAN Sandy silt, Moist
1-SO-10-0001	1200	DRK BRK/TAN SILTY Sand, MOIST

4/10/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
DRK BRN	SILTY Sand, MOIST

Analysis:	PRESERV:
TCL Semivolatiles	Cool 4°C
TCL Pesticides	↓
TCL PCBs	↓

Observations / Notes

Composited from 0-1' in 1-SO-07 THRU 1-SO-10

Sample ID - 1-SO-0710-comp

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

SAMPLE LOG SHEET

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HALLIBURTON NUS
Environmental Corporation

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CT0165 Project Site Number Site 1

NUS Source No. 1-SO-11 THRU 1-SO-14 Source Location 1-SO-11 THRU 1-SO-14

Sample Method: SS TROWEL

Depth Sampled: 0-1'

Sample Date & Time: 04/10/94 @ 1950

Sampled By: NJ STRAUB

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [x] Composite
- [ ] Grab - Composite

Composite Sample Data		
Sample	Time	Color Description
1-SO-11-0001	1745	LIMESTONE FILL, Tan Sand, DRY
1-SO-12-0001	~~1920~~ 1845	LIMESTONE FILL, Tan Sand, moist
1-SO-13-0001	1920	Tan/grey Silty Sand, moist
1-SO-14-0001	1950	LIMESTONE FILL, moist

NJS 4/10/94

Sample Data	
Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
Tan/white	Silty Sand w/ LIMESTONE mat'l, moist.

Analysis:	Preserv:
TCL Semivolatiles	COOL 4°C
TCL Pesticides	↓
TCL PCBs	↓

Observations / Notes

Composite Sample 1-SO-1114-COMP COLLECTED @ 1950.

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page ____ of ____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 1

NUS Source No. 01-SO-05 Source Location 01-SO-05

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS TRONEL	
Depth Sampled: 1-5'	
Sample Date & Time: 04/13/94 @ 1715	
Sampled By: NJ STRAUB	
Signature(s): Norman Straub	

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04/13/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
LT. BRN	Sand w/ TRACE SILT, MOIST

Analysis:	PRESERV:
RCRA CHARACTERISTICS	COOL 4°C
(TCLP, ICR)	

Observations / Notes

COLLECTED FROM ENTIRE LENGTH of INTERVAL.

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- ☐ Surface Soil
- ☐ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon / Pond
- ☒ Other CONCRETE CHIP

Project Site Name MCAS CHERRY POINT -CTO 165 Project Site Number Site 1

NUS Source No. 01-CC-01 (BLDG 154) Source Location 01-CC-01 (BLDG 154)

Sample Method: COLD CHISEL / SS TROWEL	
Depth Sampled: 0-1/4"	
Sample Date & Time: 04/14/94 @ 1300	
Sampled By: AF CULMONE / CW MEYER	
Signature(s)	
Type of Sample: ☒ Low Concentration ☐ High Concentration ☒ Grab ☐ Composite ☐ Grab - Composite	

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
GREY WHITE	CONCRETE, DRY

Analysis	Preserv.
RCRA CHARACTERISTICS (IGNI, TCLP)	COOL 4°C

Observations, Notes

CHIPPED FROM 4 LOCATIONS ON FLOOR OF BUILDING 154.

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 2

NUS Source No. 2-SO-01 Source Location 2-SO-01

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 3-5'

Sample Date & Time: 4/12/94 @ 1650

Sampled By: NJ STRAUB / AF CULMONE

Signature(s): Norman Straub / [illegible]

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 4/12/94

Sample Data

Color | Description. (Sand, Clay, Dry, Moist, Wet, etc.)

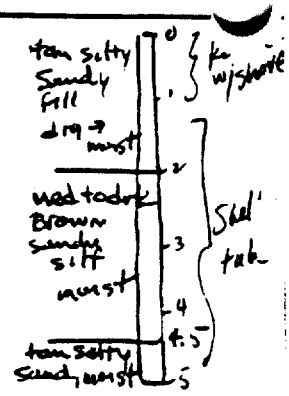
Analysis:	Preserv:
VOA (8260)	COOL 4°C
Metals/CN	↓
TPH (8015)	↓
TPH (3050)/TPH (9071)	↓

Observations / Notes

Sample 2-SO-01-0305 COLLECTED @ 1650

RECOVERY: 3.0/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 2

NUS Source No. 2-SO-02 Source Location 2-SO-02

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 3-5'

Sample Date & Time: 4/12/94 @ ~~1245~~ 1725

Sampled By: NJ STRAUB / AF CALMONE

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color _____ Description: (Sand, Clay, Dry, Moist, Wet, etc.)

Analysis:	Preserv:
VOA (8260)	COOL 4°C
Metals/CN	↓
TPH (8015)	
TPH(3550)/TPH(9071)	

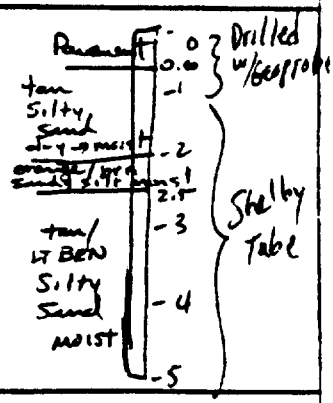
Observations / Notes

Sample 2-SO-02-0305 COLLECTED @

DUPLICATE of 2-SO-07-0305

RECOVERY: 4/4'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page ____ of ____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE

NUS Source No. 2-SO-02 Source Location 2-SO-02

Sample Method: GEOPROBE SHELBY TUBE (2Ø)/SS Trowel

Depth Sampled: 3-5

Sample Date & Time: 4/12/94 @ 1725

Sampled By: NJSTRAUB / AFCULMORE

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 4/12/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)

Analysis:	Preserv:
VOA (8260)	COOL 4°C
TPH (8015)	↓
Metals/CN	↓
TPH (3050)/TPH (9071)	↓

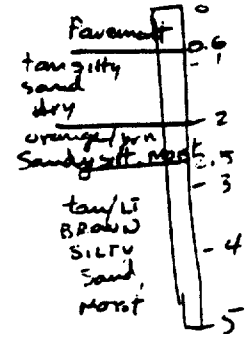
Observations / Notes

Sample 2-SO-02-0305 collected @ 1725

DUPLICATE of 2-SO-02-0305

RECOVERY: 4.0/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 2

NUS Source No. 2-SO-03 Source Location 2-SO-03

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 3-5'

Sample Date & Time: 4/12/94 @ 2000

Sampled By: NJ STRAUB / AF CULMONE

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

AB 4/12/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)

Analysis	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	
TPH (3050)/TPH (9071)	
Metals/CN	

Observations / Notes

Sample 2-SO-03-0305 COLLECTED @ 2000

RECOVERY:

0 ppm HNU

Pavement 0 – 0.75 } Drilled w/GEOPR
med to drk brn silty sand moist 1 – 2
tan silty sand v. moist 3 – 4 – 5 } Shelby Tube

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08701794

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 2

NUS Source No. 2-SO-04 Source Location 2-SO-04

Sample Method:	GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel
Depth Sampled:	3-5'
Sample Date & Time:	4/12/94 @ 2025
Sampled By:	NJ STRAUB/AF CULMONE
Signature(s):	Norman Straub

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04/12/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	
Metals/CN	
TPH (3050)/TPH (9071)	

Observations / Notes

Sample 2-SO-04-0305
COLLECTED @ 2025

RECOVERY: 4.0/4.0'

0 ppm HNU

tan silty sand dry
tan silty sand moist
grey silty sand v moist
grey silty sand saturated

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page ____ of ____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE

NUS Source No. 2-SO-05 Source Location 2-SO-05

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 3-5'

Sample Date & Time: 4/12/94 @ 1800

Sampled By: NJ STRAUB / AF CULMONE

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 4/12/94

Sample Data

Color | Description. (Sand, Clay, Dry, Moist, Wet, etc.)

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH(3050)/TPH(9071)	↓
Metals/CN	↓

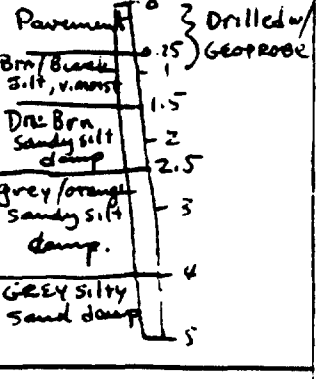
Observations / Notes

Sample 2-SO-05-0305 collected @ 1800

Matrix Spike Sample collected

RECOVERY: 4.0/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 2

NUS Source No. 2-SO-05 Source Location 2-SO-05

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	
Depth Sampled: 3-5'	
Sample Date & Time: 4/12/94 @ 1800	
Sampled By: AF CULMONE/NJ STRAUB	
Signature(s): [signature]	

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 4/12/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
Metals / CN	
TPH (8015)	
TPH (3050)/TPH (9071)	

Observations / Notes

Sample 2-SO-05-0305-MS
COLLECTED @ 1800

See sample logsheet for 2-SO-05 FOR boring details

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- ☐ Surface Soil
- ☒ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon / Pond
- ☐ Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 1

NUS Source No. 2-SO-06 Source Location 2-SO-06

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	
Depth Sampled: 3-5	
Sample Date & Time: 4/12/94 @ 1920	
Sampled By: NJ STRAUB / AF CULMONE	
Signature(s): Nanna Straub /	
Type of Sample: ☒ Low Concentration ☐ High Concentration ☒ Grab ☐ Composite ☐ Grab - Composite	

Composite Sample Data

Sample	Time	Color Description

MKS 4/12/94

Sample Data

Color _____ Description: (Sand, Clay, Dry, Moist, Wet, etc.)

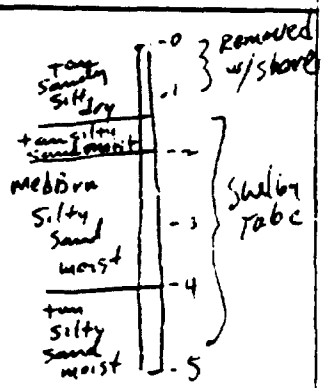
Analysis:	Preserv:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH/3050/TPH/9071)	↓
Metals/CN	↓

Observations / Notes

Sample 2-SO-06-0305 COLLECTED @ 1920

RECOVERY: 4.0/4.0'

0ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [x] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 2

NUS Source No. 02-SO-01 THRU 02-SO-06 Source Location 2-SO-01 THRU 2-SO-06

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 0-1'

Sample Date & Time: 4/12/94 @2010

Sampled By: NJ STRAUB/AF CULMONE

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description
2-SO-01-0001	1610	LT BRN/TAN SILTY Sand, dry
2-SO-02-0001	1725	~~[illegible]~~ SILTY sand, dry
2-SO-03-0001	2000	DRK BRN SILTY Sand, moist
2-SO-04-0001	2025	tan silty sand, dry
2-SO-05-0001	1800	BLACK SILT, V. MOIST
2-SO-06-0001	1920	tan silty Sand, dry

AFC 4/12/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
LT BRN	SILTY Sand, moist.

Analysis:	PRESERV:
~~VOA (8260)~~	~~COOL 4°C~~
~~TPH (8015)~~	↓
~~TPH (8050)/TPH (9074)~~	↓
~~Metals/CN~~	↓
TCL Semivolatiles	COOL 4°C
TCL Pesticides	↓
TCL PCBs	↓

Observations / Notes

Composite of 01' intervals from 2-SO-01 THRU 2-SO-06.

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

CPI-00878-3.13-08/01/94

Page 1 of 1

Case # _____

By _____

- [ ] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [x] Other Concrete Chip

Project Site Name MCAS Cherry Point - CTO 165 Project Site Number Site 2

NUS Source No. 02-CC-01 Source Location 02-CC-01

Sample Method:	Cold Chisel / SS Trowel
Depth Sampled:	0 - 1/4"
Sample Date & Time:	04/14/94 @ 1230
Sampled By:	AF Culmone / CW Meyer
Signature(s)	

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
Grey - White	Concrete chips, Dry

Analysis	Preserv:
RCRA Characteristics (TCLP only)	Cool 4°C

Observations, Notes

Chipped from 4 locations on ramp adjacent to Bldg 137.

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-0987813-08/05/94

HALLIBURTON NUS
Environmental Corporation

Page 1 of 1

Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 3

NUS Source No. 03-SO-01 Source Location 03-SO-01

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 3-5'

Sample Date & Time: 4/20/94 @ 1650

Sampled By: NJ STRAUB

Signature(s): [signature]

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04/20/94

Sample Data

Color _____ Description: (Sand, Clay, Dry, Moist, Wet, etc.)

Analysis:	Preserv:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH (3050)/TPH (9071)	
Metals/CN	

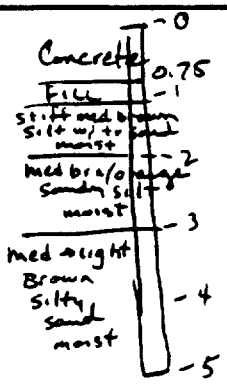
Observations / Notes

Sample 03-SO-01-0305 @ 1650

DUPLICATE of 03-SO-07-0305

RECOVERY: 4.0/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

SAMPLE LOG SHEET

CP-00878-3.13-08/01/94

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of ____

Case # _____

By _____

Project Site Name: MCAS CHERRY POINT - CTO165 Project Site Number: Site 3

NUS Source No.: 03-SO-01 Source Location: 03-SO-01

Sample Method: GEOPROBE SHELBY TUBE (2"Ø) / SS TROWEL	Composite Sample Data		
	Sample	Time	Color Description
Depth Sampled: 3-5'			
Sample Date & Time: 04/20/94 @ 1650			
Sampled By: NJ STRAUB			
Signature(s): Norman Straub			
Type of Sample			
[x] Low Concentration			
[ ] High Concentration			
[x] Grab			
[ ] Composite			
[ ] Grab - Composite			

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)

Analysis	Preserv:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH (3050)/TPH (9071)	↓
METALS/CN	↓

Observations/Notes

Sample 03-SO-01-0305 @ 1650 (noted at 1700 on LABEL and COC)

Duplicate of 03-SO-01-0305

See 03-SO-01-0305 for DETAILS

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

HALLIBURTON NUS
Environmental Corporation

SAMPLE LOG SHEET

Page 1 of 1

Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 3

NUS Source No. 03-SO-02 Source Location 03-SO-02

Sample Method:	GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel
Depth Sampled:	3-5'
Sample Date & Time:	4/20/94 @ 1555
Sampled By:	NJ STRAUB
Signature(s):	Norman Straub

Composite Sample Data

Sample	Time	Color Description

NJS 04/20/94

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
med BRN	Sandy silt, v moist.

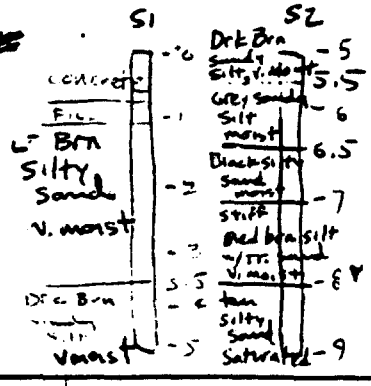
Analysis	PRESERV:
VOA (8260)	Cool 4°C
TPH (8015)	↓
TPH (5050)/TPH (9071)	↓
Metals/CN	↓

Observations / Notes

Sample 03-SO-02-0305 @ 1555

RECOVERY: S1 - 3.6'/4.0'
S2 - 4.0/4.0'

S1 - 0 ppm HNU
S2 - 0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-2-13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 3

NUS Source No. 03-SO-02 Source Location 03-SO-02

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 7-9'

Sample Date & Time: 4/20/94 @ 1605

Sampled By: NJ STRAUB

Signature(s): Kenneth Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
med BRN	SILT w/ TRACE Sand, saturated

Analysis	Preserv:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH(3050)/TPH(9071)	↓
Metals/CN	↓

Observations / Notes

Sample 3-SO-02-0709, -MS @ 1605

RECOVERY: 4.0'/4.0'

0ppm HNU

Boring log see 03-SO-02-0305

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 3

NUS Source No. 03-50-02 Source Location 03-50-02

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	
Depth Sampled: 7-9'	
Sample Date & Time: 4/20/94 @ 1605	
Sampled By: NJ STRAUB	
Signature(s): Norman Straub	

Composite Sample Data

Sample	Time	Color Description

NJS 4/20/94

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
med BRN	SILT w/TR Sand, saturated

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015, 3050/9071)	↓
Metals/CN	↓

Observations / Notes

Sample 3-50-02-0709-MS @ 1605

Matrix Spike Sample

See 03-50-02-0709 for DETAILS

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-098783 13-08/01/94

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 3

NUS Source No. 03-SO-03 Source Location 3-SO-03

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 3-5'

Sample Date & Time: 4/19/94 @ 2110

Sampled By: NJ STRAUB

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

AS 04/19/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
LT BRN	Sandy Silt, moist

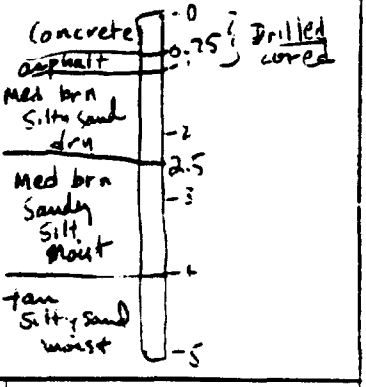
Analysis	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	
TPH(3050)/TPH(9071)	
METALS/CN	

Observations / Notes

Sample 3-SO-03-0305 @ 2110

RECOVERY: 4.0/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 3

NUS Source No. 03-SO-04 Source Location 3-SO-04

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	
Depth Sampled: 3-5'	
Sample Date & Time: 4/20/94 @ 0950	
Sampled By: NJ STRAUB	
Signature(s): Norman Straub	

Composite Sample Data

Sample	Time	Color Description

NJS 4/20/94

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
DRK BRN	SILT w/ TRACE Sand, moist

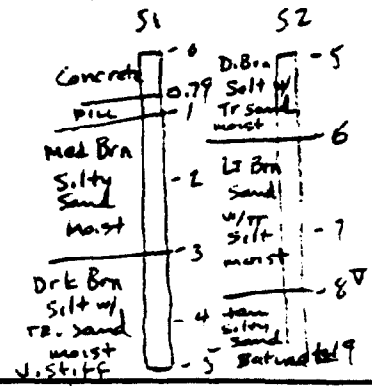
Analysis	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH(3050)/TPH(9071)	↓
Metals/CN	↓

Observations / Notes

Sample B-SO-04-0305 @ 0950

RECOVERY:
S1 - 3.8/4.0
S2 - 4.0/4.0

S1 - 0 ppm HNU
S2 - 0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 3

NUS Source No. 3-SO-04 Source Location 3-SO-04

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	Composite Sample Data		
	Sample	Time	Color Description
Depth Sampled: 7-9			
Sample Date & Time: 4/20/94 @ 1000			
Sampled By: NJ STRAUB			
Signature(s): Norman Straub			
Type of Sample			
[x] Low Concentration			
[ ] High Concentration			
[x] Grab			
[ ] Composite			
[ ] Grab - Composite			

Sample Data	
Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
LT BRN	Sandy Silt, v. moist

Analysis:	Preserv:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH(3050)/TPH(9071)	↓
Metals/CN	↓

Observations / Notes

Sample 3-SO-04-0709 @ 1000

See description for 3-SO-04-0705

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 04-SO-01 Source Location 04-SO-01

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	
Depth Sampled: 3-5'	
Sample Date & Time: 04/11/94 @ 1720	
Sampled By: NJ STRAUB	
Signature(s): Norman Straub	

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04/11/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)

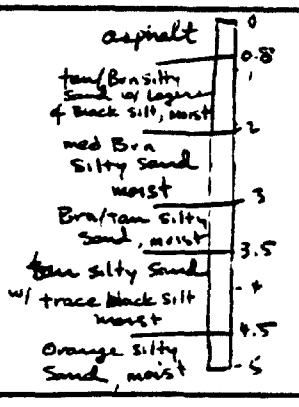
Analysis	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH (3050)/TPH (9071)	↓
METALS/CN	↓

Observations / Notes

Sample 04-SO-01-0305 @ 1720

RECOVERY: 4.0/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 4

NUS Source No. 04-SO-02 Source Location 04-SO-02

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	Composite Sample Data		
	Sample	Time	Color Description
Depth Sampled: 3-5'			
Sample Date & Time: 04/11/94 @ 1840			
Sampled By: N J STRAUB			
Signature(s): Norman Straub			

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color _____ Description: (Sand, Clay, Dry, Moist, Wet, etc.)

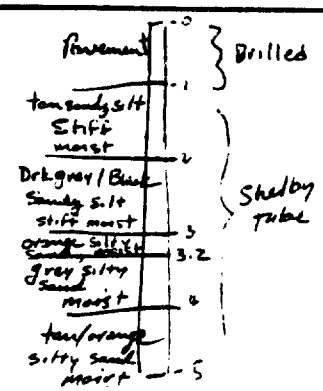
Analysis	Preserv:
VOA (8260)	COOL 4°C
TPH (8015)	
TPH(3050)/TPH(9071)	
METALS/CN	

Observations / Notes

Sample 04-SO-02-0305 @ 1840

RECOVERY: 4.0/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- ☐ Surface Soil
- ☒ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon / Pond
- ☐ Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 04-SO-03 Source Location 04-SO-03

Sample Method: GEOPROBE SHELBY TUBE (2ø)/SS Trowel	Composite Sample Data		
	Sample	Time	Color Description
Depth Sampled: 3-5'			
Sample Date & Time: 04/11/94 @ 2020			
Sampled By: N J STRAUB			
Signature(s): Norman Straub			
Type of Sample: ☒ Low Concentration ☐ High Concentration ☒ Grab ☐ Composite ☐ Grab - Composite			

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
tan	Silty sand, moist

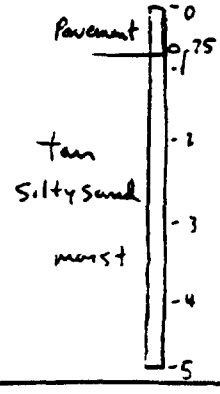
Analysis:	Preserv:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH (3050)/TPH (9071)	↓
METALS/CN	↓

Observations / Notes

Sample 04-SO-03-0305 COLLECTED @ 2020

RECOVERY: 4.0/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 04-SO-04 Source Location 04-SO-04

Sample Method:	GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel
Depth Sampled:	3-5'
Sample Date & Time:	04/11/94 @ 1930
Sampled By:	NJ STRAUB
Signature(s):	Norman Straub

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04/11/94

Sample Data

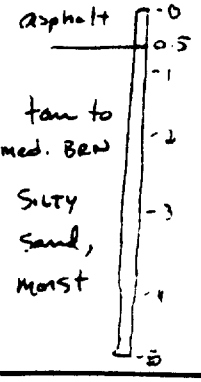
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
tan/med Brn	SILTY Sand, MOIST

Analysis	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH(3050)/TPH(9071)	↓
METALS/CN	↓

Observations / Notes

Sample 04-SO-04-0305
COLLECTED @ 1930
DUPLICATE of 04-SO-16-0305
RECOVERY: 4.0/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 04-SO-04 Source Location 04-SO-04

	Composite Sample Data		
Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SSTrowel	Sample	Time	Color Description
Depth Sampled: 3-5'			
Sample Date & Time: 04/11/94 @ 1930			
Sampled By: N J STRAUB			
Signature(s): Norman Straub			
Type of Sample			
[x] Low Concentration			
[ ] High Concentration			
[x] Grab			
[ ] Composite			
[ ] Grab - Composite			

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
tan/med Brn	SILTY Sand, MOIST

Analysis	Preserv.
VOA (8260)	cool 4°C
TPH (8015)	
TPH(3050)/TPH(9071)	
METALS/CN	

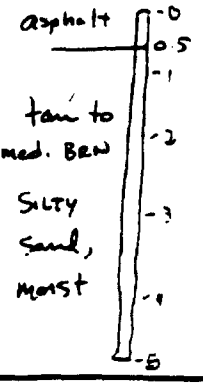
Observations / Notes

Sample 04-SO-16-0305 COLLECTED @ 1930 (noted as 1935 on label & COC)

DUPLICATE of 04-SO-04-0305

RECOVERY: 4.0/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

HALLIBURTON NUS
Environmental Corporation

SAMPLE LOG SHEET

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Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 4-SO-05 Source Location 4-SO-05

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 3-5'

Sample Date & Time: 04/14/94 @ 1215

Sampled By: NJ STRAUB

Signature(s): [signature]

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 4/14/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
tan/med Brn	Silty Sand, moist

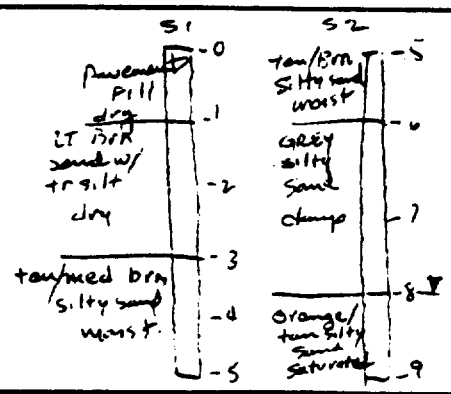
Analysis	PRESERV.
VOA (8260)	cool 4°C
TPH (8015)	↓
TPH (3050)/TPH (9071)	↓
METALS/CN	↓

Observations / Notes

Sample 4-SO-05-0305 @ 1215

RECOVERY: S1 - 3.8'/4.0'
S2 - 4.0/4.0'

Monitoring S1 - 0 ppm HNU
S2 - 0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-9.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 4

NUS Source No. 04-SO-05 Source Location 04-SO-05

Sample Method:	Composite Sample Data		
GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	Sample	Time	Color Description
Depth Sampled: 7-9'			
Sample Date & Time: 04/14/94 @ 1230			
Sampled By: NJ Strand			
Signature(s): NJ Strand			
Type of Sample			
[x] Low Concentration			
[ ] High Concentration			
[x] Grab			
[ ] Composite			
[ ] Grab - Composite			

Sample Data	
Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
Orange/tan	Silty Sand, Saturated.

Analysis	Preserv.
VOA (8260)	cool 4°C
TPH (8015)	↓
TPH/3050/TPH (9071)	↓
METALS/CN	↓

Observations / Notes

#-SO-05-0708 @ 1230

See Sample logsheet for 04-SO-05-0305 for details

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3 13-08/01/94

HALLIBURTON NUS
Environmental Corporation

SAMPLE LOG SHEET

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 4-50-06 Source Location 4-50-06

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 3-5'

Sample Date & Time: 4/14/94 @ 1250

Sampled By: NJ Straub

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

04/14/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
tan	silty Sand, moist

Analysis	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH (3050)/TPH (9071)	↓
Metals/CN	↓

Observations / Notes

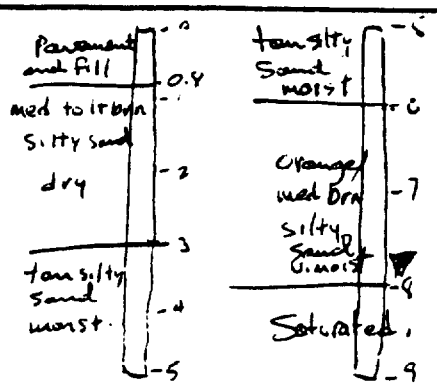
4-50-06-0305 @ 1250

RECOVERY: S1 - 4.0/4.0'

S2 - 4.0/4.0

S1 - 0 ppm HNU

S2 - 0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3 13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 4-SO-06 Source Location 4-SO-06

Sample Method:	GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel
Depth Sampled:	7-9'
Sample Date & Time:	4/14/94 @ 1305
Sampled By:	NJ STRAUB
Signature(s):	[signature]

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04/14/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
orange/brn	Sand w/ TRACE SILT, V. MOIST

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH (3050)/TPH (9071)	↓
METALS/CN	↓

Observations / Notes

4-SO-06-0709 @ 1305

See sample logsheet for 04-SO-06-0305 for details

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

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HALLIBURTON NUS
Environmental Corporation

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- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 4

NUS Source No. 04-SO-05/-06 Source Location -04-SO-05/-06

Sample Method: GEOPROBE SHELBY TUBE (2φ)/SS Trowel	Composite Sample Data		
	Sample	Time	Color Description
Depth Sampled: 1-5'	04-SO-05-0105	1215	LT TO MED BRN, Sand w/ TR. SILT, DRY
	04-SO-06-0105	1250	Tan to MED BRN, Silty Sand, MOIST
Sample Date & Time: 04/14/94 @ 1340			
Sampled By: NE STRAUB			
Signature(s): [signature]			

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
LT BRN	SILTY Sand, MOIST

Analysis:	Preserv:
RCRA CHARACTERISTICS (TCLP, ICR)	COOL 4°C

Observations / Notes

Sample 4-SO-05/06-0105 @ 1340

See 4-SO-05-0305 and 4-SO-06-0305 for details

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 4

NUS Source No. 04-SO-05/-06 Source Location 04-SO-05/-06

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 5-9'

Sample Date & Time: 04/14/94 @ 1355

Sampled By: NJ STRAUB

Signature(s): [signature]

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Analysis:	PRESERV:
RCRA CHARACTERISTICS	COOL 4°C
(TCLP, ICR)	

Composite Sample Data

Sample	Time	Color Description
04-SO-05-0509	1230	tan to grey silty sand, damp → sat
04-SO-06-0509	1305	tan, orange, brn, silty sand, moist → sat

[initials] 04/14/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
tan	Silty Sand, damp

Observations / Notes

Sample 4-SO-05/06-0509 @ 1355

See sample logsheet for samples 04-SO-05-0505 and 04-SO-06-0505 for details.

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 04-SO-07 Source Location 04-SO-07

Sample Method: GEOPROBE SHELBY TUBE (2ø)/SS Trowel	
Depth Sampled: 1.5-2.5'	
Sample Date & Time: 4/20/94 @ 1130	
Sampled By: NJS TRAUB	
Signature(s): Norman Straub	

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
tan/brn	Silty Sand, damp

Analysis:	Preserv:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH (3550)/TPH (9071)	↓
Metals/CN	↓

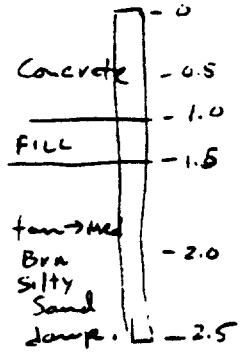
Observations / Notes

Sample 04-SO-07-1525 @ 1130

Refusal @ 2.5' BGS

Recovery: 2.0/4.0

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-8.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 4-50-08 Source Location 4-50-08

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	
Depth Sampled: 3-5'	
Sample Date & Time: 4/21/94 @ 1715	
Sampled By: NJ STRAUB	
Signature(s): Norman Straub	

Composite Sample Data

Sample	Time	Color Description

NJS 4/21/94

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color: tan/orange Description: (Sand, Clay, Dry, Moist, Wet, etc.) Silty sand, moist

Analysis	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	
TPH (8050)/TPH (9071)	
Metals/CN	

Observations / Notes

Sample 4-50-08-0305 @ 1715

RECOVERY: 4.0 NJS /4.0

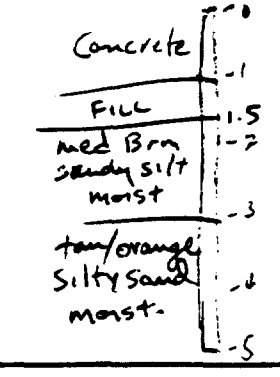
0 ppm HNU

Concrete 0 – 1

FILL 1.5

med Brn sandy silt moist 1.5 – 3

tan/orange silty sand moist 3 – 5



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

Page 1 of 1

Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 4-SO-09 Source Location 4-SO-09

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	Composite Sample Data		
	Sample	Time	Color Description
Depth Sampled: 3-5'			
Sample Date & Time: 4/21/94 @ 1700			
Sampled By: NJ STRAUB			
Signature(s): [signature]			

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color: tan

Description. (Sand, Clay, Dry, Moist, Wet, etc.): silty sand, moist

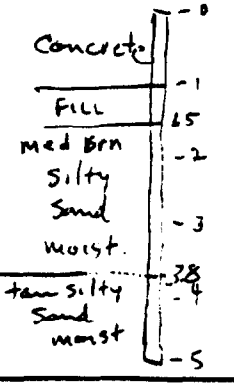
Analysis:	Preserv:
VOA 8260	COOL 4°C
TPH (8015)	↓
TPH 3050/TPH (9071)	
Metals/CN	

Observations / Notes

Sample 4-SO-09-0305 @ 1700

RECOVERY: 3.8'/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-8 13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page ____ of ____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 4

NUS Source No. 4-SO-10 Source Location 4-SO-10

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	
Depth Sampled: 3-5'	
Sample Date & Time: 4/21/94 @ 1600	
Sampled By: NJ STRAUB	
Signature(s): Norma Straub	

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

4/21/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
lt Brown	silty sand, moist

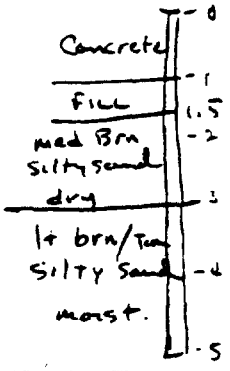
Analysis	PRESERV:
VOA (8260)	Cool 4°C
TPH (8015)	↓
TPH (3050) / TPH (9071)	↓
Metals / CN	↓

Observations / Notes

Sample 4-SO-10-0305 @ 1600

RECOVERY: 3.9'/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

Page 1 of 1

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 4-SO-11 Source Location 4-SO-11

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	
Depth Sampled: 3-5'	
Sample Date & Time: 4/21/94 @ 1625	
Sampled By: NJ STRAUB	
Signature(s): [signature]	

Composite Sample Data

Sample	Time	Color Description

NJS 4/21/94

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color: med Brn/grey

Description: (Sand, Clay, Dry, Moist, Wet, etc.) silty sand, v. moist

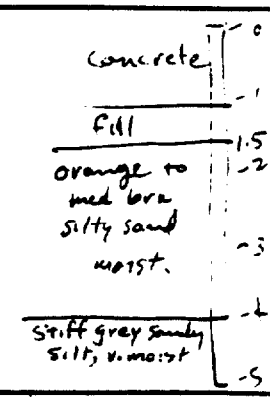
Analysis:	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	
TPH (3050) / TPH (9071)	
Metal / CN	

Observations / Notes

Sample 4-SO-11-0305 @ 1625

RECOVERY: 4.0'/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

Page 1 of 1

Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE

NUS Source No. 04-SO-12 Source Location 04-SO-12

Sample Method:	GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel
Depth Sampled:	3-5'
Sample Date & Time:	04/21/94 @ 1150
Sampled By:	NJ STRAUB
Signature(s):	[signature]

Composite Sample Data

Sample	Time	Color Description

NJS 4/21/94

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
grey	silty sand, v. moist

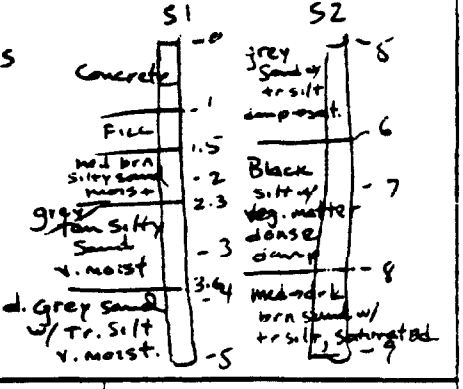
Analysis	PRESERV:
VOA	COOL 4°C
TPH	↓
TPH(3050)/TPH(9071)	↓
Metals/CN	↓

Observations / Notes

Sample 4-SO-12-0305, -MS @ 1150

RECOVERY: S1 - 3.5'/4.0'
S2 - 4.0/4.0

0 ppm HNu



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of ____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE

NUS Source No. 4-SO-12 Source Location 4-SO-12

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	
Depth Sampled: 7-9	
Sample Date & Time: 4/21/94 @ 1230	
Sampled By: NJ STRAUB	
Signature(s): Norman Straub	

Composite Sample Data

Sample	Time	Color Description

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color: Med/DRK BRN Description: (Sand, Clay, Dry, Moist, Wet, etc.) Sandy Silt, Wet

Analysis	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH (3050)/TPH (9071)	↓
Metals/CN	↓

Observations / Notes

Sample 4-SO-12-0709 @ 1230

Duplicate of 4-SO-17-0709 (noted on 1220 on COC and label)

See 04-SO-12-0305 for details

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

Page 1 of 1

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE

NUS Source No. 4-SO-12 Source Location 4-SO-12

Sample Method:	Composite Sample Data		
GEOPROBE SHELBY TUBE (2ø)/SS Trowel	Sample	Time	Color Description
Depth Sampled: 7-9'			
Sample Date & Time: 4/21/94 @ 1230			
Sampled By: NJ STRAUB			
Signature(s): [signature]			

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
med/DRK Brn	Sandy Silt, wet

Analysis	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	
~~TPH (3550)~~ TPH (907)	
Metals/CN	

Observations / Notes

Sample 4-SO-17-0909 @ 1230 (NOTED AS 1220 on COC and label)

DUPLICATE of 4-SO-12-0709

See 4-SO-12-0305 for boring detail.

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

Page 1 of 1

- ☐ Surface Soil
- ☒ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon / Pond
- ☐ Other _____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 4

NUS Source No. 4-SO-13 Source Location 4-SB-13

Sample Method: GEOPROBE SHELBY TUBE (2Ø)/SS Trowel	
Depth Sampled: 3-5'	
Sample Date & Time: 4/13/94 @ 1620	
Sampled By: NJ STRAUB / AF CULMONE	
Signature(s): Norman Straub	

Composite Sample Data

Sample	Time	Color Description

NJS 4/13/94

Type of Sample

- ☒ Low Concentration
- ☐ High Concentration
- ☒ Grab
- ☐ Composite
- ☐ Grab - Composite

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
Black	Silty sand, moist

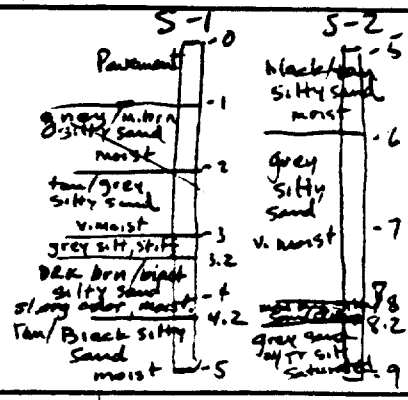
Analysis:	Preserv:
VOA (8260)	Cool 4°C
TPH (8015)	
TPH (3550)/TPH (9071)	
Metals/CN	

Observations / Notes

Sample 4-SO-13-0305 @ 1620

RECOVERY: S-1 - 4/4'
S-2 - 3.0/4.0

S-1: 0 ppm HNu
S-2: 0 ppm HNu



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 4-50-13 Source Location 4-50-13

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 7-9'

Sample Date & Time: 4/13/94 @ 1630

Sampled By: NJ STRAUB / AF CALMONE

Signature(s): Norman Straub

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 4/13/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
GREY	Silty sand, wet

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
Metals/CN	↓
TPH (3050)/TPH (9071)	↓

Observations / Notes

Sample 4-50-13-0709@1630

0 ppm HNU

see sample log sheet for 4-50-13-0505 for boring detail

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 4-SO-13 Source Location 4-SO-13

Sample Method: GEOPROBE SHELBY TUBE (2Ø)/SS Trowel

Depth Sampled: 1-9'

Sample Date & Time: 4/13/94 @ 1645

Sampled By: NJ STRAUB / AF CULMONE

Signature(s): Norm Straub /

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [ ] Composite
- [x] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 4/13/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
BLACK/GREY	SILTY Sand, U. moist.

Analysis:	Preserv:
TCLP	COOL 4°C
TCR	↓

Observations / Notes

Sample 4-SO-13-0109 @ 1645

COLLECTED OVER ENTIRE 1-9' INTERVAL

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-S13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

Page 1 of 1

- ☐ Surface Soil
- ☒ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon / Pond
- ☐ Other _____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 04-SO-14 Source Location 04-SO-14

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel	
Depth Sampled: 3-5'	
Sample Date & Time: 4/21/94 @ 1430	
Sampled By: NJS Frank	
Signature(s): [signature]	
Type of Sample: ☒ Low Concentration ☐ High Concentration ☒ Grab ☐ Composite ☐ Grab - Composite	

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
med Brn	Silty Sand, moist

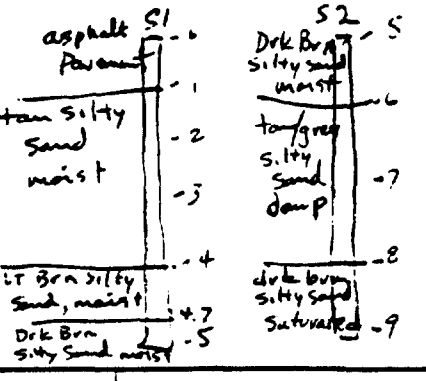
Analysis:	Preserv:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH(3550)/TPH(9071)	
Metals/CN	↓

Observations / Notes

Sample 4-SO-14-0306 @ 1430

RECOVERY: 3.5/4

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

Page 1 of 1

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 4

NUS Source No. 04-S014 Source Location 04-SO-14

Sample Method:	GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel
Depth Sampled:	7-9'
Sample Date & Time:	4/21/94 @ 1440
Sampled By:	NJ STRAUB
Signature(s):	Norman Straub

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

AJS 04/21/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Lm/grey	Silty sand, Saturated

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH (3070)/TPH (9071)	↓
METALS/CN	↓

Observations / Notes

Sample 04-SO-14-0709
@ 1440
Duplicate of 04-SO-18-0709
(labeled 1445 on label & COC)

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 04-50-14 Source Location 04-50-14

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 7-9'

Sample Date & Time: 04/21/94 @ 1440

Sampled By: NJ STRAUB

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

04/21/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
brn/grey	Silty Sand, saturated

Analysis:	PRESERV:
VOA (8260)	Cool 4°C
TPH (8015)	
TPH(3050)/TPH(9071)	
METALS/CN	

Observations / Notes

Sample 04-50-18-0709 collected @ 1440 (labeled as 1445 on label and LOC)

Duplicate of 04-50-14-0709

See 04-50-14-0305 sample logsheet for details

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94 SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 4-SO-15 Source Location 4-SO-15

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 3-5

Sample Date & Time: 4/21/94 @ 1505

Sampled By: NJ STRAUR

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 4/21/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Med Brn	Silty Sand, moist

Analysis	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	
TPH (3050)/TPH (9071)	
METALS/CN	

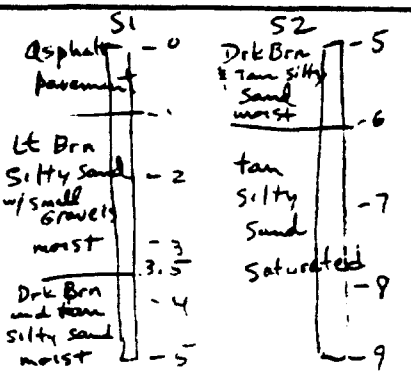
Observations / Notes

Sample 4-SO-15-0305 @ 1505

Recovery: 2.8/4.0

S1: Asphalt pavement 0 – 1; Lt Brn Silty Sand w/small Gravels moist 2 – 3; 3.5; Drk Brn and tan silty sand moist 4 – 5

S2: Drk Brn & Tan silty Sand moist 5 – 6; tan silty Sand saturated 7 – 8; 9



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3 13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of ____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 04-SO-15 Source Location 04-SO-15

Sample Method:	GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel
Depth Sampled:	7-9'
Sample Date & Time:	4/21/94 @ 1520
Sampled By:	NJ STRAUB
Signature(s):	[signature]

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
tan	silty sand, saturated

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH (3050)/TPH (9071)	↓
METALS/CN	↓

Observations / Notes

Sample 4-SO-15-0709 @ 1520

See 04-SO-15-0305 Sample logsheet for details

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3 13-08/01/94

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 4

NUS Source No. 04-S014 Source Location 04-SO-14

Sample Method:	GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel
Depth Sampled:	7-9'
Sample Date & Time:	4/21/94 @ 1440
Sampled By:	NJ STRAUB
Signature(s):	Norman Straub

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04/21/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Hn/grey	Silty sand, Saturated

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH (3070)/TPH (9071)	↓
METALS/CN	↓

Observations / Notes

Sample 04-SO-14-0709 @ 1440

Duplicate of 04-SO-12-0709 (labeled 1445 on label & COC)

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.T3-0870194

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 4

NUS Source No. 04-SO-14 Source Location 04-SO-14

Sample Method: GEOPROBE SHELBY TUBE (2Ø)/SS Trowel

Depth Sampled: 7-9'

Sample Date & Time: 04/21/94 @ 1440

Sampled By: NJ STRAUB

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data		
Sample	Time	Color Description

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
brn/grey	Silty Sand, saturated

Analysis:	Preserv:
VOA (8260)	Cool 4°C
TPH (8015)	
TPH(3050)/TPH(9071)	
METALS/CN	

Observations / Notes

Sample 04-SO-18-0709 collection @ 1440 (labeled as 1445 on label and COC)

Duplicate of 04-SO-14-0709

See 04-SO-14-0305 sample logsheet for details

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

NES0878-3.13-08/01/94

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Case # _____

By _____

- ☐ Surface Soil
- ☐ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon / Pond
- ☒ Other Concrete Chip

Project Site Name MCAS CHERRY POINT -CTO165 Project Site Number Site 4

NUS Source No. 04-CC-01 Source Location 04-CC-01

Sample Method.	Composite Sample Data		
COLD CHISEL / SS TROWEL	Sample	Time	Color Description
Depth Sampled: 0-1/4"			
Sample Date & Time: 04/14/94 @ 1200			
Sampled By: AFCULMONE / CWMEYER			
Signature(s)			
Type of Sample			
☒ Low Concentration			
☐ High Concentration			
☒ Grab			
☐ Composite			
☐ Grab - Composite			

Sample Data

Color: GREY-WHITE Description. (Sand, Clay, Dry, Moist, Wet, etc.): CONCRETE CHIPS, DRY

Analysis	Preserv.
RCRA CHARACTERISTICS (TCLP ONLY)	COOL 4°C.

Observations, Notes

Sample COLLECTED FROM CHIPS REMOVED FROM CONCRETE FLOORING IN haz waste storage area near BUILDING 423.

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

☐ Surface Soil
☐ Subsurface Soil
☐ Sediment
☐ Lagoon / Pond
☒ Other Concrete Chip

Project Site Name MCAS CHERRY POINT - CT0165 Project Site Number Site 4

NUS Source No. 04-CC-02 Source Location 04-CC-02

Sample Method: COLD CHISEL / SS TROWEL	Composite Sample Data: Sample / Time / Color Description
Depth Sampled: 0-1/4"	
Sample Date & Time: 04/14/94 @ 1200	
Sampled By: AFCULMONE / CWMEYER	
Signature(s):	04/14/94

Type of Sample
- ☒ Low Concentration
- ☐ High Concentration
- ☒ Grab
- ☐ Composite
- ☐ Grab - Composite

Sample Data

Color: GREY-WHITE Description: (Sand, Clay, Dry, Moist, Wet, etc.) CONCRETE CHIPS, DRY

Analysis	PRESERV:
RCRA CHARACTERISTICS (TCLP ONLY)	cool 4°C.

Observations/Notes

Sample COLLECTED FROM CHIPS REMOVED FROM CONCRETE FLOORING IN Haz waste storage area near BUILDING 245.

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- ☐ Surface Soil
- ☒ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon / Pond
- ☐ Other _____

Page 1 of 1

Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number Site 5

NUS Source No. 05-SO-01 Source Location 05-SO-01

Sample Method: GEOPROBE SHELBY TUBE

Depth Sampled: 3-5'

Sample Date & Time: 04/07/94 @ 1010

Sampled By: NJ STRAUB

Signature(s): Norman Straub

Type of Sample
- ☒ Low Concentration
- ☐ High Concentration
- ☒ Grab
- ☐ Composite
- ☐ Grab - Composite

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
MED BRN/ORANGE	MED BROWN TO ORANGE SANDY SILT

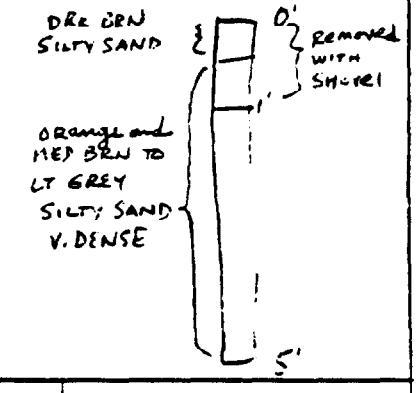
Analysis	Preserv.
VOA	Cool 4°C
Metals/CN	↓
TPH (8015)	
TPH (8030)/TPH	

Observations / Notes

Sample 05-SO-01-0204 collected @ 1010

RECOVERY: 4.0/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

NUS ☒ Surface Soil
☒ Subsurface Soil
☐ Sediment
☐ Lagoon / Pond
☐ Other _____

Page 1 of 1
Case # _____
By _____

Project Site Name MCAS CHERRY POINT-CT0165 Project Site Number Site 5
NUS Source No. 05-SO-02 Source Location 05-SO-02

Sample Method: GEOPROBE SHELBY TUBE-2"Ø	
Depth Sampled: 3-5'	
Sample Date & Time: 04/07/94 @ 1125	
Sampled By: NJ STRAUR	
Signature(s): [signature]	

Type of Sample
☒ Low Concentration
☐ High Concentration
☒ Grab
☐ Composite
☐ Grab - Composite

Composite Sample Data

Sample	Time	Color Description

[signature] 04/07/94

Sample Data

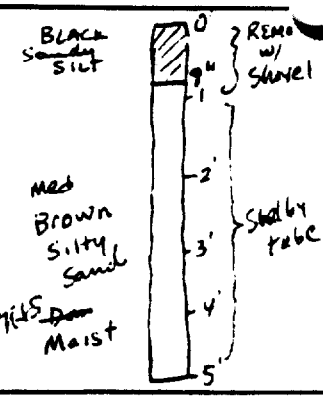
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Med. Brn	Silty Sand Moist

Analysis	PRESERV:
VOAS (5260)	COOL 4°C
Metals/CN	↓
TPH (8015)	↓
TPH (5050)/TPH (7071)	↓

Observations / Notes
Sample 05-SO-02-0305
COLLECTED 1125

RECOVERY: 3.5'/4'

0 PPM HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS Cherry Point - CTO165 Project Site Number Site 5

NUS Source No. 05-SO-03 Source Location 05-SO-03

Sample Method:	GEOPROBE SHELBY TUBE - 2" Ø
Depth Sampled:	3-5'
Sample Date & Time:	04/07/94 @ 1145
Sampled By:	NJ STRAUB
Signature(s):	Norman Straub

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04/07/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
Brn	Silty Sand, Moist

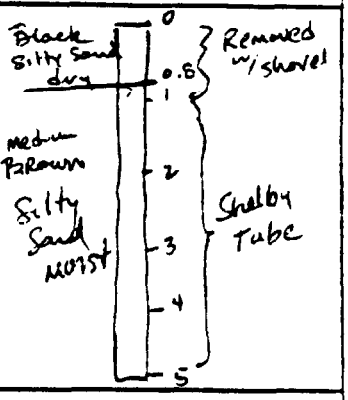
Analysis	Preserv:
VOA	Cool 4°C
Metals/CN	↓
TPH (8260)	↓
TPH (5030)/TPH (9071)	↓

Observations / Notes

Sample 05-SO-03-0305
COLLECTED @ 1145

RECOVERY: 3.7'/4

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name: MCAS CHERRY POINT - CTO 165 Project Site Number: Site 5

NUS Source No.: 5-SO-04 Source Location: 5-SO-04

Sample Method:	GEOPROBE SHELBY TUBE - 2"Ø
Depth Sampled:	3-5'
Sample Date & Time:	04/07/94 @ 1440
Sampled By:	NJ STRAUB
Signature(s):	Norman Straub

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04/07/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Med Brn	Silty Sand, moist

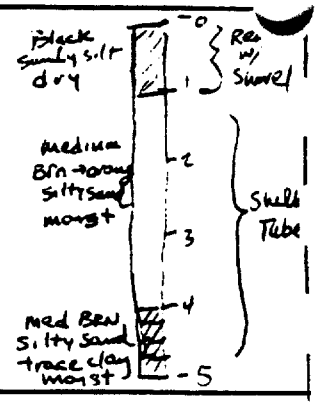
Analysis:	PRESERV:
VOA (8260)	cool 4°C
Metals/CN	↓
TPH (8015)	↓
TAH (8030)/TPH (9071)	↓

Observations / Notes

Sample 5-SO-04-0305
COLLECTED @ 1440

RECOVERY: 3.1'/4

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name: MCAS CHERRY POINT - CTO165 Project Site Number: SITE 5

NUS Source No.: 5-SO-05 Source Location: 5-SO-05

Sample Method: GEOPROBE SHELBY TUBE - 2" Ø

Depth Sampled: 3-5'

Sample Date & Time: 04/07/94 @ 1455

Sampled By: NJ STRAUB

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
Med Brown	Silty Sand w/ Trace clay, moist

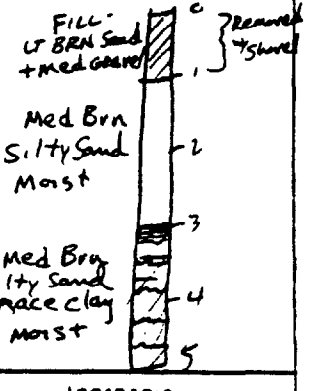
Analysis:	Preserv:
VOA (8260)	COOL 4°C
Metals/CN	↓
TPH (8015)	
TPH (3550)/TPH (8071)	↓

Observations / Notes

Sample 5-SO-05-0305 COLLECTED @ 1455

RECOVERY: 3.5'/4'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT-CT0165 Project Site Number SITE 5

NUS Source No. 5-SO-06 Source Location 5-SO-06

Sample Method:	GEOPROBE SHELBY TUBE (2"ϕ)-SS Trowel
Depth Sampled:	3-5'
Sample Date & Time:	04-07-94 @ 1710
Sampled By:	NJ STRAUB
Signature(s):	Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04-07-94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
tan/orange	silty sand, moist

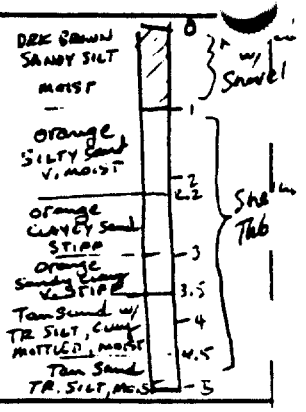
Analysis:	PRESERV:
VOA	Cool 4°C
Metals/CN	↓
TPH (8015)	↓
TPH(8050)/TPH(9071)	↓

Observations / Notes

Sample 5-SO-6-0305
COLLECTED @ 1710

RECOVERY: 4.0'/4.0'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-0870 1/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # _____

By _____

Project Site Name MCAS CHERRY POINT-CTO166 Project Site Number ~~5-50-07~~ THIS SITE

NUS Source No. 5-50-07 Source Location 5-50-07

Sample Method: (2"Ø) GEOPROBE SHELBY TUBE -SS TROWEL	Composite Sample Data		
	Sample	Time	Color Description
Depth Sampled: 3-5'			
Sample Date & Time: 04/07/94 @ 1730			
Sampled By: NJ STRAUB			
Signature(s): Norman Straub			
Type of Sample: [x] Low Concentration [ ] High Concentration [x] Grab [ ] Composite [ ] Grab - Composite			

Sample Data	
Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
Tan	Sand w/ TRACE Clay, MOIST

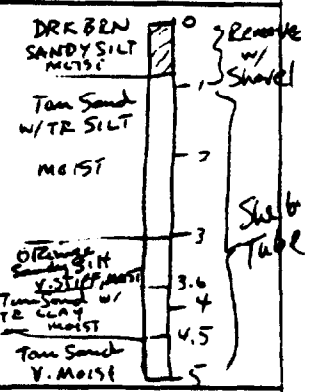
Analysis:	Preserv:
VOA (8260)	Cool 4°C
Metals/CN	
TPH (8015)	
TPH(8020)/TPH(9071)	

Observations / Notes

Sample 5-50-07-0305 COLLECTED @ 1730

Recovery: 4'/4'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number Site 5

NUS Source No. 5-SO-08 Source Location 5-SO-08

Sample Method: (2") GEOPROBE SHELBY TUBE - SS TROWEL

Depth Sampled: 3-5'

Sample Date & Time: 4/8/94 @ 1505

Sampled By: NJ STRAUB

Signature(s): [signature]

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

4/8/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
Orange	Silty Sand, moist

Analysis:	PRESERV:
VOA (8260)	COOL 4°C
Metals/CN	↓
TPH (8015)	
TPH (3050)/TPH (9071)	

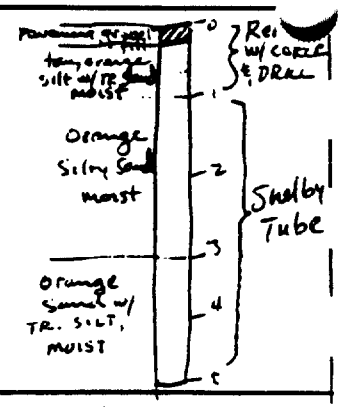
Observations / Notes

Sample 5-SO-08-0305 COLLECTED @ 1505

Duplicate of 5-SO-12-0305

RECOVERY: 4'/4'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name: MCAS CHERRY POINT - CT0165 Project Site Number: SITE 5

NUS Source No.: 5-SO-08 Source Location: 5-SO-08

Sample Method: (2") GEOPROBE SHELBY TUBE / SS TROWEL	
Depth Sampled: 3-5'	
Sample Date & Time: 4/8/94 @ 1506	
Sampled By: NJ STRAUB	
Signature(s): [signature]	

Composite Sample Data

Sample	Time	Color Description

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Orange	Silty sand, moist

Analysis	Preserv:
VOA (8260)	cool 4°C
Metal/CN	
TPH (8015)	
TPH (3050)/TPH (9071)	

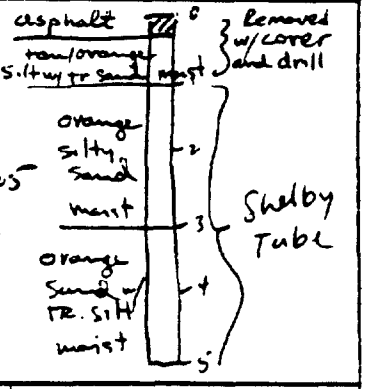
Observations / Notes

Sample 5-SO-12-0305 COLLECTED @ 1506

Duplicate Sample @ 5-SO-08-0305

RECOVERY: 4.0/4'

0 ppm HNU



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name: MCAS Cherry Point - CTO165 Project Site Number: Site 5

NUS Source No.: 5-SO-09 Source Location: 5-SO-09

Sample Method: (2"Ø) GeoProbe Shelby Tube / SS Trowel	Composite Sample Data
Depth Sampled: 3-5'	Sample / Time / Color Description
Sample Date & Time: 4/8/94 @ 1605	
Sampled By: NJ Straub	
Signature(s):	4/8/94
Type of Sample: [x] Low Concentration; [ ] High Concentration; [x] Grab; [ ] Composite; [ ] Grab - Composite	Sample Data
	Color: tan; Description: Silty Sand, moist

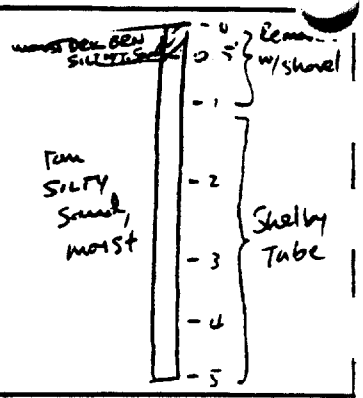
Analysis:	Preserv:
VOA (8260)	Cool 4°C
Metals/CN	↓
TPH (8015)	
TPH(8050)/TPH(9071)	↓

Observations / Notes

Sample 5-SO-09-0305 collected @ 1605

Recovery: 3.0'/4'

0 ppm HNU.



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 5

NUS Source No. E-SO-10 Source Location 05-SO-10

Sample Method: Hand driven Split Spoon ~~[illegible]~~ (2"Ø)/SS Trowel

Depth Sampled: 3-5'

Sample Date & Time: 4/14/94 @ 0930

Sampled By: NJ STRAUB

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

AJS 4/14/94

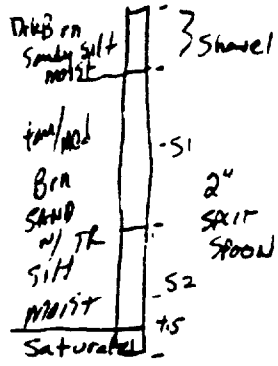
Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
tan/med brn	Sand w/ trace silt, moist

Analysis:	PRESERV:
VOA (8260)	Cool 4°C
TPH (8015)	
TPH (5050)/TPH (9071)	
METALS/CN	

Observations / Notes

5-SO-10-0305 @ 0930



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number SITE 5

NUS Source No. 5-SO-11 Source Location 05-SO11

Sample Method: SPLIT SPOON ~~Geoprobe Shelby Tube~~ (2"Ø)/SS Trowel

Depth Sampled: 3-5'

Sample Date & Time: 4/13/94 @ 1130

Sampled By: NJ STRAUB

Signature(s): Norman Straub

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description

NJS 04/14/94

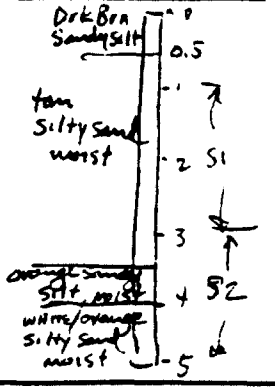
Sample Data

Color: orange/white Description: (Sand, Clay, Dry, Moist, Wet, etc.) Sand w/ TR. SILT, moist

Analysis	PRESERV:
VOA (8260)	COOL 4°C
TPH (8015)	↓
TPH (3050)/TPH (9071)	↓
Metals/CN	↓

Observations / Notes

5-SO-11-0305 @ 1130



	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name: MCAS CHERRY POINT-CTO165 ~~05-SO-15 COMP~~ NJS

Project Site Number: Site 5

NUS Source No.: 5-SO-01 THRU 5-SO-05

Source Location: 5-SO-01 THRU 5-SO-05

Sample Method: Shovel / SS trowel

Depth Sampled: 0-1'

Sample Date & Time: 04/07/94 @ 1545

Sampled By: NJ STRAUB

Signature(s): Norma Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- NJS ~~[x]~~ Grab
- [x] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description
05-SO-01-0001	0950	BLACK SANDY SILT, DRY
05-SO-02-0001	1055	" " " "
05-SO-03-0001	1115	" " " "
05-SO-04-0001	1405	" " " "
05-SO-05-0001	1420	LT. GREY " FILL, "

NJS 04/07/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
BLACK	Sandy Silt, Dry

Analysis	Preserv:
Semivolatiles (OLM)	Cool 4°C
Pesticides (OLM)	↓
PCBs (OLM)	↓

Observations / Notes

Composite sample collected from surficial 1 foot of soil at each location. Sample dug up with Shovel and grabbed with stainless steel trowel. Stored in 1 gal ziplock bag on ice until all five grabs were obtained.

Sample ~~#~~ 5-SO-15-COMP COLLECTED @ 1545

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 5

NUS Source No. 5-SO-06 THRU 5-SO-11 Source Location 5-SO-06 THRU 5-SO-11

Sample Method: Shovel / SS TROWEL

Depth Sampled: 0-1

Sample Date & Time: 04-08-94 @ 1625

Sampled By: NJ STRAUB

Signature(s): Norman Straub

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [x] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description
5-SO-08-0001	1315	TAN Sand w/ small GRAVELS, MOIST
5-SO-09-0001	1350	MED BRN SILT w/ TRACE SAND MOIST
5-SO-06-0001	1410	Tan/orange Sand w/ TR SILT, DRY
5-SO-07-0001	1415	DRK BRN SILTY sand, DRY
5-SO-10-0001	1418	DRK → MED BRN SILTY Sand, MOIST
5-SO-11-0001	1420	MED BRN-ORANGE Sandy SILT, MOIST

4/8/94

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
MED BRN	Sandy Silt, moist

Analysis:	Preserv:
BNAs (TCL)	cool 4°C
TCL Pesticides	↓
TCL PCBs	↓

Observations / Notes

Sample 5-SO-0611-comp collected @ 1625

0 ppm HNU

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

SAMPLE LOG SHEET

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HALLIBURTON NUS
Environmental Corporation

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Case # _____

By _____

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number SITE 5

NUS Source No. 05-SO-10/11 Source Location 05-SO-10/11

Sample Method: GEOPROBE SHELBY TUBE (2"Ø)/SS Trowel

Depth Sampled: 1-5'

Sample Date & Time: 04/04/94 @ 1145

Sampled By: NJ STRAUB

Signature(s): Maureen Strauf

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [x] Composite
- [ ] Grab - Composite

Composite Sample Data

Sample	Time	Color Description
05-SO-10-0105	0930	tan - Med Brn Sand w/ TR SILT, MOIST
05-SO-11-0105	1040	tan Sand w/ TRACE SILT, MOIST

04/04/94

Sample Data

Color	Description. (Sand, Clay, Dry, Moist, Wet, etc.)
tan	Sand w/ TRACE Silt, Moist

Analysis:	PRESERV:
RCRA CHARACTERISTIC	COOL 4°C
(TCLP, ICR)	

Observations / Notes

Composite Sample COLLECTED FROM 1-5' Interval FROM both locations.

	Organic	Inorganic
Traffic Report #		
Tag #		
AB #		
Date Shipped		
Time Shipped		
Lab		
Volume		

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HALLIBURTON NUS
Environmental Corporation

- ☐ Monitoring Well Data
- ☐ Domestic Well Data
- ☒ Other well point

Page 1 of ____

Case # ____

By ____

Project Site Name MCAS Cherry Point - CTO 165 Project Site Number Site 1

NUS Source No. 01-MW1A Source Location 01-MW1A

Total Well Depth: 17.91 BCR	Purge Data					
Well Casing Size & Depth: 1.27	Volume	pH	S.C.	Temp. (°C)	Color & Turbidity	
1/2" STEEL (~~5.14~~ mL/cm)	0 (0846)	8.44	0.295	18.8	SL. TAN	23 NTU
Static Water Level: 15.94 BCR	30 (0859)	5.25	0.295	19.3	COLORLESS	0 NTU
One Casing Volume: 0.~~078~~ L	49 (0900)	5.23	0.297	19.6	COLORLESS	0 NTU
Start Purge (hrs.): 0846	70 (0906)	5.16	0.298	19.7	COLORLESS	0 NTU
End Purge (hrs.): 0906						
Total Purge Time (min.): 20						
Total Amount Purged ~~(gal.)~~: 5.37 L						
Monitor Reading: NA						
Purge Method: PERISTALTIC PUMP						
Sample Method: PERISTALTIC PUMP			mS/cm			
Depth Sampled: 16-18'						
Sample Date & Time: 04/23/94 @ 0906	Sample Data					
	pH	S.C.	Temp. (°C)	Color & Turbidity		
Sampled By: NJ Straub / CWMeyer	5.16	0.298	19.7	COLORLESS	0 NTU	

Signature(s): Norman Straub

Observations / Notes: $Q = \frac{800\ ml}{3\ min\ 0\ sec} = 267\ mL/min$

ORP = +159 mV

DO: 1.54 mg/L

BCR = BELOW CASING RISER

Type of Sample

- ☒ Low Concentration
- ☐ High Concentration
- ☒ Grab
- ☐ Composite
- ☐ Grab - Composite

Analysis:	Preservative		Organic	Inorganic
VOA (8260)	COOL 4°C, HCl	Traffic Report #		
TPH (8015)	, HCl	Tag #		
TPH (3050)				
TPH (9071)	, H_2SO_4	AB #		
TCL Semivolatiles		Date Shipped		
TCL Pesticides		Time Shipped		
TCL PCBs		Lab		
Metals	, HNO_3			
Cyanide	, NaOH	Volume		
COD				

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- ☐ Monitoring Well Data
- ☐ Domestic Well Data
- ☒ Other well point

Page 1 of 1

Case #

By

Project Site Name MCAS CHERRY POINT - CTO165 Project Site Number Site 2

NUS Source No. O2-MW2A Source Location O2-MW2A

Total Well Depth: 18' BGS	Purge Data				
Well Casing Size & Depth: ½" STEEL	Volume	pH	S.C.	Temp. (°C)	Color & Turbidity
	0 (1042)	6.62	0.492	18.6	GREY, CLOUDY / HIGH (995 NTU)
Static Water Level: 10.91 BGS	10 (1052)	6.57	0.423	19.3	SL GREY / 60 NTU
One Casing Volume: 0.274 L	19 (1102)	6.34	0.399	18.8	COLORLESS / 10 NTU
Start Purge (hrs.): 1042	30 (1114)	6.35	0.376	18.9	COLORLESS / 9 NTU
End Purge (hrs.):		~~6.8~~ NS			
Total Purge Time (min.):					
Total Amount Purged ~~(gal.)~~: L					
Monitor Reading: NA					
Purge Method: PERISTALTIC PUMP					
Sample Method: PERISTALTIC PUMP			mS/cm		
Depth Sampled: 16-18'					
Sample Date & Time: 04/23/94 @ 1115	Sample Data				
	pH	S.C.	Temp. (°C)	Color & Turbidity	
Sampled By: N.J. STRAUB / C.W. Meyer	6.27	0.363	18.8	COLORLESS / 8 NTU	

Signature(s): Norman Straub

Type of Sample
- ☒ Low Concentration
- ☐ High Concentration
- ☒ Grab
- ☐ Composite
- ☐ Grab - Composite

Observations / Notes:

$Q = \frac{1000 \text{ mL}}{3 \text{ min } 50 \text{ sec}} = 261 \text{ mL/min}$

ORP = +169 mV

DO = 1.04 mg/L

Analysis:	Preservative		Organic	Inorganic
VOA	COOL 4°C, HCl	Traffic Report #		
TPH (8015)	, HCl	Tag #		
TPH (3050)				
TPH (9071)	, H_2SO_4	AB #		
TCL Semivolatiles		Date Shipped		
TCL Pesticides		Time Shipped		
TCL PCBS		Lab		
Metals	, HNO_3			
Cyanide	, NaOH	Volume		
COD	↓			

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

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- ☐ Monitoring Well Data
- ☐ Domestic Well Data
- ☒ Other Well point

Case # _____

By _____

Project Site Name MCAS Cherry Point - CTO 165 Project Site Number Site 3

NUS Source No. 03-MW3A Source Location 03-MW3A

	Purge Data				
Total Well Depth: 18.40' BGS					
Well Casing Size & Depth: 1/2" STEEL	Volume	pH	S.C.	Temp. (°C)	Color & Turbidity
	0 (1222)	4.96	0.223	20.2	SL. orange / 60 NTU
Static Water Level: 9.45' BGS	6 (1229)	4.94	0.190	20.2	SL. Tan / 15 NTU
One Casing Volume: 0.346 L	12 (1235)	4.93	0.195	20.3	COLORLESS / 9 NTU
Start Purge (hrs.): 1222	15 (1238)	4.91	0.195	20.1	COLORLESS / 8 NTU
End Purge (hrs.):					
Total Purge Time (min.):					
Total Amount Purged (gal.):					
Monitor Reading: NA					
Purge Method: PERISTALTIC PUMP					
Sample Method: PERISTALTIC PUMP			mS/cm		
Depth Sampled: 16-18					

Sample Date & Time: 04/23/94 @ 1245	Sample Data			
	pH	S.C.	Temp. (°C)	Color & Turbidity
Sampled By: NJ Strauss / CW Meyer	5.02	0.200	20.3	COLORLESS / 5 NTU

Signature(s): [signature]

Type of Sample
- ☒ Low Concentration
- ☐ High Concentration
- ☒ Grab
- ☐ Composite
- ☐ Grab - Composite

Observations / Notes:

$Q = \frac{1\ L}{3\ min/3\ sec} = 0.310\ L/min$

ORP = +165 mV

DO = 0.78 mg/L

Analysis:	Preservative		Organic	inorganic
VOA (8260)	COOL 4°C, HCl	Traffic Report #		
TPH (8015)	↑, HCl	Tag #		
TPH (3050)				
TPH (9071)	, H_2SO_4	AB #		
TCL Semivolatiles		Date Shipped		
TCL Pesticides		Time Shipped		
TCL PCBs		Lab		
Metals	, HNO_3			
Cyanide	, NaOH	Volume		
COD	↓			

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HALLIBURTON NUS
Environmental Corporation

- ☐ Monitoring Well Data
- ☐ Domestic Well Data
- ☒ Other Well point

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Case #

By

Project Site Name MCAS CHERRY POINT - CTO 165 Project Site Number Site 4

NUS Source No. 04-MW4A Source Location 04-MW4A

Total Well Depth: 15.2' BGS	Purge Data					
Well Casing Size & Depth: 1/2" STEEL	Volume	pH	S.C.	Temp. (°C)	Color & Turbidity	
	0 (1945)	5.52	0.287	22.2	SL. TAN	/ 91 NTU
Static Water Level: 3.25' BGS	20 (2000)	5.34	0.280	22.2	SL. TAN	/ 250 NTU
One Casing Volume: 0.268 L	30 (2008)	5.29	0.282	22.2	SLIGHT TAN	/ 24 NTU
Start Purge (hrs.): 1944	40 (2015)	5.17	0.289	22.0	CLOUDY TAN	/ 28 NTU
End Purge (hrs.): 2030	60 (2030)	5.14	0.296	21.9	COLORLESS	/ 3 NTU
Total Purge Time (min.): 46						
Total Amount Purged (~~gal.~~): 16.5 L						
Monitor Reading: NA						
Purge Method: PERISTALTIC PUMP						
Sample Method: PERISTALTIC PUMP						
Depth Sampled: 13-15' BGS						
Sample Date & Time: 04/23/94 @ 2030	Sample Data					
	pH	S.C.	Temp. (°C)	Color & Turbidity		
Sampled By: NJ STRAUB / CWMEYER	5.12	0.296	22.2	COLORLESS / 2 NTU		
Signature(s): Norman Straub	Observations / Notes: $Q = \frac{1\,L}{2\,min\ 47\,sec} = 359\ ml/min$					

Type of Sample

- ☒ Low Concentration
- ☐ High Concentration
- ☒ Grab
- ☐ Composite
- ☐ Grab - Composite

DO = 0.82 mg/L

ORP = +202 mV

Analysis:	Preservative		Organic	Inorganic
VOA (8260)	2 ooz 4°C, HCl	Traffic Report #		
TPH (8015)	, HCl	Tag #		
TPH (3050)				
TPH (9071)	, H_2SO_4	AB #		
TCL Semivolatiles		Date Shipped		
TCL Pesticides		Time Shipped		
TCL PCBs		Lab		
TAL Metals	, HNO_3			
Cyanide	, NaOH	Volume		
COD				

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- ☐ Monitoring Well Data
- ☐ Domestic Well Data
- ☒ Other Well point

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Case #

By

Project Site Name MCAS CHERRY POINT-CTO165 Project Site Number Site 4

NUS Source No. 04-MW4B Source Location 04-MW4B

	Purge Data				
Total Well Depth: 15.2' BGS					
Well Casing Size & Depth: ½" STEEL	Volume	pH	S.C.	Temp. (°C)	Color & Turbidity
	0 (1825)	6.31	0.639	23.2	DRK GRCY / 96 NTU
Static Water Level: 8.47' BGS	23 (1842)	6.30	0.626	23.1	LT WHITE / 17 NTU
One Casing Volume: 0.260 L	31 (1848)	6.30	0.624	23.0	COLORLESS / 9 NTU
Start Purge (hrs.): 1825					COLORLESS / 7 NTU
End Purge (hrs.): 1900					
Total Purge Time (min.): 35					
Total Amount Purged (~~gal.~~): L					
Monitor Reading: NA					
Purge Method: PERISTALTIC PUMP					
Sample Method: PERISTALTIC PUMP					
Depth Sampled: 13-15' BGS					

Sample Date & Time: 04/23/94 @ 1900	Sample Data			
	pH	S.C.	Temp. (°C)	Color & Turbidity
Sampled By: NJ STRAUB / CW Meyer	6.24	0.638	22.6	COLORLESS / 1 N

Signature(s): Norma Straub

Observations / Notes: $Q = \frac{1\ L}{2\ min\ 49\ sec} = 355\ ml/min$

ORP = +142 mV
DO = 0.38 mg/L

Type of Sample
- ☒ Low Concentration
- ☐ High Concentration
- ☒ Grab
- ☐ Composite
- ☐ Grab - Composite

Analysis:	Preservative			Organic	Inorganic
VOA (8260)	COOL 4°C, HCl		Traffic Report #		
TPH (8015)	, HCl		Tag #		
TPH (3050)					
TPH (9071)	, H_2SO_4		AB #		
TCL Semivolatiles			Date Shipped		
TCL Pesticides			Time Shipped		
TCL PCBs			Lab		
TAL Metals	, HNO_3				
Cyanide	, NaOH		Volume		
COD	↓				

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- ☐ Monitoring Well Data
- ☐ Domestic Well Data
- ☒ Other Well Point

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Case #

By

Project Site Name MBAS CHERRY POINT - CT0165 Project Site Number Site 4

NUS Source No. 04-MW4C- Source Location 04-MW4C

	Purge Data				
Total Well Depth: 15.2'					
Well Casing Size & Depth: ½" STEEL	Volume	pH	S.C.	Temp. (°C)	Color & Turbidity
	0 (1355)	6.24	0.338	21.7	Tan/orange / 360 NTU
Static Water Level: 8.64' BGS	14 (1405)	6.16	0.329	20.6	" / 999 NTU
One Casing Volume: 0.253 L	28 (1415)	6.18	0.322	20.3	" / 999 NTU
Start Purge (hrs.): 1355	41 (1425)	6.20	0.305	20.8	" / 547 NTU
End Purge (hrs.): 1445	55 (1435)	6.23	0.310	20.2	SL. Tan / 18 NTU
Total Purge Time (min.): 50	69 (1445)	6.25	0.313	20.5	COLORLESS / 8 NTU
Total Amount Purged ~~(gal.)~~: 17.4 L					
Monitor Reading: NA					
Purge Method: PERISTALTIC PUMP					
Sample Method: PERISTALTIC PUMP					
Depth Sampled: 13-15'					

Sample Date & Time: 04/23/94 @ 1445	Sample Data			
	pH	S.C.	Temp. (°C)	Color & Turbidity
Sampled By: NJ STEARNS / CW Meyer	6.29	0.331	20.9	COLORLESS / 1 NTU

Signature(s): Norman Stearns

Observations / Notes: lots of sand/silt removed initially.

$Q = \frac{1\ L}{2\ min\ 52\ sec} = 349\ ml/min$

Duplicate (04-GW-MW4D-001) and MS/MSD collected

ORP = +169 mV

DO = 2.97 mg/L

Type of Sample
- ☒ Low Concentration
- ☐ High Concentration
- ☒ Grab
- ☐ Composite
- ☐ Grab - Composite

Analysis:	Preservative			Organic	Inorganic
VOA (8260)	COOL 4°C, HCl		Traffic Report #		
TPH (8015)	, HCl		Tag #		
TPH (3050)					
TPH (9071)	, H_2SO_4		AB #		
TCL Semivolatile			Date Shipped		
TCL Pesticides			Time Shipped		
TCL PCBs			Lab		
Metals	, HNO_3				
Cyanide	, NaOH		Volume		
COD					

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- ☐ Monitoring Well Data
- ☐ Domestic Well Data
- ☐ Other _____

Page _____ of _____

Case # _____

By _____

Project Site Name _____ Project Site Number _____

NUS Source No. _____ Source Location _____

Total Well Depth:	Purge Data				
Well Casing Size & Depth:	Volume	pH	S.C.	Temp. (°C)	Color & Turbidity
Static Water Level:					
One Casing Volume:					
Start Purge (hrs.):					
End Purge (hrs.):					
Total Purge Time (min.):					
Total Amount Purged (gal.):					
Monitor Reading:					
Purge Method:					
Sample Method:					
Depth Sampled:					
Sample Date & Time:	Sample Data				
	pH	S.C.	Temp. (°C)	Color & Turbidity	
Sampled By:					

Signature(s):

Observations / Notes:
Matrix Spike Sample
04-GW-MW4C-001-MS COLLECTED.
See Sample Logsheet for 04-GW-MW4C-001
for purge information.

Type of Sample
- ☐ Low Concentration
- ☐ High Concentration
- ☐ Grab
- ☐ Composite
- ☐ Grab - Composite

Analysis:	Preservative		Organic	Inorganic
		Traffic Report #		
		Tag #		
		AB #		
		Date Shipped		
		Time Shipped		
		Lab		
		Volume		

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- ☐ Monitoring Well Data
- ☐ Domestic Well Data
- ☐ Other _____

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Case # _____

By _____

Project Site Name _____ Project Site Number Site 4

NUS Source No. 04-MW4C Source Location 04-MW4C

Total Well Depth:	Purge Data				
Well Casing Size & Depth:	Volume	pH	S.C.	Temp. (°C)	Color & Turbidity
Static Water Level:					
One Casing Volume:					
Start Purge (hrs.):					
End Purge (hrs.):					
Total Purge Time (min.):					
Total Amount Purged (gal.):					
Monitor Reading:					
Purge Method:					
Sample Method:					
Depth Sampled:					

Sample Date & Time:	Sample Data			
	pH	S.C.	Temp. (°C)	Color & Turbidity
Sampled By:				

Signature(s):

Observations / Notes:
Duplicate Sample
04-GW-MW4D-001 COLLECTED.
See Sample 04-GW-MW4C-001 FOR Purge information

Type of Sample
- ☐ Low Concentration
- ☐ High Concentration
- ☐ Grab
- ☐ Composite
- ☐ Grab - Composite

Analysis:	Preservative		Organic	Inorganic
		Traffic Report #		
		Tag #		
		AB #		
		Date Shipped		
		Time Shipped		
		Lab		
		Volume		

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SAMPLE LOG SHEET

HALLIBURTON NUS
Environmental Corporation

- ☐ Monitoring Well Data
- ☐ Domestic Well Data
- ☑ Other Well point

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Case # _____

By _____

Project Site Name MCAS CHERRY POINT-CTO165 Project Site Number SITE 5

NUS Source No. 05-GW-MW5A Source Location 05-GW-MW5A

Total Well Depth: 18' BGS	Purge Data				
Well Casing Size & Depth: 1/2" STEEL	Volume	pH	S.C.	Temp. (°C)	Color & Turbidity
	0 (1625)	5.03	0.101	16.7	COLORLESS, 3NTU
Static Water Level: 16.9 BGS	60 (1633)	5.00	0.091	16.5	COLORLESS 0 NTU
One Casing Volume: 0.042 L					
Start Purge (hrs.): 1625					
End Purge (hrs.): 1635					
Total Purge Time (min.): 10					
Total Amount Purged ~~(gal)~~: 3.2 L					
Monitor Reading: NA					
Purge Method: PERISTALTIC PUMP					
Sample Method: PERISTALTIC PUMP			mS/cm		
Depth Sampled: 16-18'					
Sample Date & Time: 4/22/94 @ 1635	Sample Data				
	pH	S.C.	Temp. (°C)	Color & Turbidity	
Sampled By: NJ STRAUB	4.95	0.0860	16.5	COLORLESS 0 NTU	

Signature(s): Norman Straub

Type of Sample
- ☒ Low Concentration
- ☐ High Concentration
- ☒ Grab
- ☐ Composite
- ☐ Grab - Composite

Observations / Notes:

$Q = \frac{1040 \text{ mL}}{3 \text{ min } 15 \text{ sec}} = 320 \text{ mL/m}$

DO = 5.52 mg/L

Analysis:	Preservative			Organic	Inorganic
VOA	COOL 4°C	HCl	Traffic Report #		
TPH (8015)		HCl	Tag #		
TPH (8050)					
TPH (9071)		H_2SO_4	AB #		
TCL Semivolatiles			Date Shipped		
TCL Pesticides			Time Shipped		
TCL PCBs			Lab		
Metals		HNO_3			
Cyanide		NaOH	Volume		
COD					

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SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

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Case # NA

By _____

CofC # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 01-SB07-0-12" Source Location 01-SB08-0-12"

Sample Method: Auger Stainless Steel Trowel	Composite Sample Data		
	Sample	Time	Color / Description
Depth Sampled: 0 - 12"			
Sample Date & Time: 7/6/94 1737			
Sampled By: Charles Mayer			
Signature(s): Charles Mayer			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Grey / Black	Sandy Top Soil with Rocks + Gravel

Analysis:	
TCL Volatiles	
TCL Semivolatiles	
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	
Asbestos	
Dioxins	
Oil & Grease	
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNU readings above background using HNU N6617. The sample was a grey to black sandy soil from 0-6". From 6" to 12" became very rocky and gravelly. Samples were shipped 7/7/94 to Pace Inc.

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

C or C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 01-SB08-0-12" Source Location 01-SB08-0-12"

Sample Method:	Composite Sample Data		
Auger Stainless Steel Trowel	Sample	Time	Color / Description
Depth Sampled: 0-12"			
Sample Date & Time: 7/6/94 1737			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample (✓ If Collected)

- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
dark Grey	sandy silt to sand

Analysis:	
TCL Volatiles	
TCL Semivolatiles	
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	
Asbestos	
Dioxins	
Oil & Grease	
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were NO HNu readings above background using HNu N6617. The sample was a dark grey sandy silt to 6". From 6" to 12" the soil changed to a brownish tan sand with small pebbles. Samples were shipped 7/7/94 to Pace Inc

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

CofC # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 161)

NUS Source No. 01-SB09-0-12" Source Location 01-SB09-0-12"

Sample Method: Auger Stainless Steel Trowel	Composite Sample Data		
	Sample	Time	Color / Description
Depth Sampled: 0-12"			
Sample Date & Time: 7/6/94 1743			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
dark grey to Black	Sandy silt and sand

Analysis:	✓ If Collected
TCL Volatiles	
TCL Semivolatiles	
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	
Asbestos	
Dioxins	
Oil & Grease	
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N6617. The sample was a dark grey to black sandy silt to 6". The soil changed to a yellowish Tan sand with pebbles. Samples were shipped 7/7/94 to Pace Inc.

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

CofC # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 01-5810-0-12" Source Location 01-5810-0-12"

Sample Method: Auger Stainless Steel Trowel	Composite Sample Data		
	Sample	Time	Color / Description
Depth Sampled: 0-12"			
Sample Date & Time: 7/6/94 1754			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Blackish Gray / Yellowish Tan	Sandy Loam, Sand

Analysis:	
TCL Volatiles	
TCL Semivolatiles	
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	
Asbestos	
Dioxins	
Oil & Grease	
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N6617. The sample was a black to grey sandy loam from 0 to 4". From 4" to 12" the soil color and texture changed to a yellowish tan sand with small pebbles. The samples were shipped on 7/6/94 to Pace Inc

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 01-SB06-0-12" Source Location 01-SB06-0-12

Sample Method: Auger stainless steel Trowel	Composite Sample Data		
	Sample	Time	Color / Description
Depth Sampled: 0-12"			
Sample Date & Time: 7/6/94 1820			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Grey, Orange, Yellow, Grey/Black	Sand

Analysis:	✓
TCL Volatiles	
TCL Semivolatiles	
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	
Asbestos	
Dioxins	
Oil & Grease	
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N6617. The sample was a grey sand from 0 to 1" from 1" to 6" was an orange to yellow sand and from 6" to 12" was a grey to black sand. The samples were shipped 7/7/94 to Pace Inc

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 161)

NUS Source No. 01-SB04-0-12" Source Location 01-SB04-0-12"

Sample Method: Auger stainless Steel Trowel	Composite Sample Data		
	Sample	Time	Color / Description
Depth Sampled: 0-12"			
Sample Date & Time: 7/6/94 1822			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color: brown, black, gray	Description: (Sand, Clay, Dry, Moist, Wet, etc.) sandy loam, sand

Analysis:	
TCL Volatiles	
TCL Semivolatiles	
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	
Asbestos	
Dioxins	
Oil & Grease	
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNU readings above background using HNU N6617. The sample was dark brown to black sandy loam from 0 to 2". From 2" to 12" was a gray sand. The samples were shipped 7/7/94 to Pace Inc

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1.

Case # NA

By _____

CofC # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 01-SB03-0-12" Source Location 01-SB03-0-12

Sample Method: Auger Stainless Steel Trowel	Composite Sample Data		
	Sample	Time	Color / Description
Depth Sampled: 0-12"			
Sample Date & Time: 7/6/94 1834			
Sampled By: Scott Richmond			
Signature(s): Charles Pieper For Scott Richmond			

Type of Sample
- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [ ] Composite
- [ ] Grab - Composite

✓ If Collected

Sample Data	
Color: very tan orange brown	Description: (Sand, Clay, Dry, Moist, Wet, etc.) sand, gravelly sand, sand

Analysis:	✓
TCL Volatiles	
TCL Semivolatiles	
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	
Asbestos	
Dioxins	
Oil & Grease	
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNU readings above background using HNU N6617. From 0 to 1" is a grey sand. From 1" to 4" tan orange gravelly sand. From 4" to 12" was a light grey sand. The samples were shipped 7/7/94 to Pace Inc

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

Page 1 of 1

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 01-SB02-0-12" Source Location 01-SB02-0-12"

Sample Method: Auger Stainless Steel Trowel	Composite Sample Data		
	Sample	Time	Color / Description
Depth Sampled: 0-12			
Sample Date & Time: 7/6/94 1843			
Sampled By: Scott Richmond			
Signature(s): Charles Morgan for Scott Richmond			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
white to grey orange Brown Tan	Sand Slag sand

Analysis:	
TCL Volatiles	
TCL Semivolatiles	
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	
Asbestos	
Dioxins	
Oil & Grease	
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N6617. The sample was white to grey sand from 0 to 0.5". From 0.5" to 12" the sample was a mixture of slagg orange brown tan sands. The samples were shipped to Pace Inc.

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

CofC # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 01-SB01-0-12 Source Location 01-SB01-0-12"

Sample Method: Auger Stainless Steel Trowel	Composite Sample Data		
	Sample	Time	Color / Description
Depth Sampled: 0 to 12"			
Sample Date & Time: 7/7/94 0750			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color: Grey Yellow Tannish Yellow	Description: (Sand, Clay, Dry, Moist, Wet, etc.) gravelly sand, sand

Analysis:	
TCL Volatiles	✓
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	✓
Asbestos	
Dioxins	
Oil & Grease	✓
TPH Low	✓
TPH High	✓
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNU readings above background using HNU N6617. The sample was a grey gravelly sand from 0 to 0.5". From 0.5" to 8" the soil was a tannish yellow gravelly sand. From 8" to 12" was a yellowish tan to orange sand. The samples were shipped 7/8/94 to Pace Inc.

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 01-SB05-0-12" Source Location 01-SB05-0-12"

Sample Method: Auger stainless Steel Trowel

Depth Sampled: 0-12"

Sample Date & Time: 7/7/94 0825

Sampled By: Charles Meyer

Signature(s): Charles Meyer

Composite Sample Data

Sample	Time	Color / Description

Type of Sample (✓ If Collected)

- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color: ~~Grey to Black~~ Black Yellow

Description: (Sand, Clay, Dry, Moist, Wet, etc.) sands

Analysis:	✓
TCL Volatiles	✓
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	✓
Asbestos	
Dioxins	
Oil & Grease	✓
TPH Low	✓
TPH High	✓
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N6617. The sample was a grey to black fine sand, from 0 to 4". From 4" to 10" was mixed black and yellow sands. From 10" to 12" was an orange hard packed sand. The samples were shipped 7/8/94 to Pace Inc

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

Page 1 of 1

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 01-5813-0-12 Source Location 01-5813-0-12

Sample Method:	Composite Sample Data		
Auger Stainless Steel Trowel	Sample	Time	Color / Description
Depth Sampled: 0-12"			
Sample Date & Time: 7/7/94 0905			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample (✓ If Collected)

- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Dark grey to light grey	course grey sand small pebbles and large gravel.

Analysis:	✓
TCL Volatiles	✓
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	✓
Asbestos	
Dioxins	
Oil & Grease	✓
TPH Low	✓
TPH High	✓
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N6617. From 0 to 12" the soil was a mixture of dark grey to light grey course sand with small pebbles and larger gravel mixed in. The samples were shipped on 7/8/94 to Pace Inc.

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

Page 1 of 1

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 02-SB01-0-12" Source Location 02-SB01-0-12"

Sample Method: Auger Stainless Steel Trowel	Composite Sample Data		
	Sample	Time	Color / Description
Depth Sampled: 0-12"			
Sample Date & Time: 7/7/94 1152			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color: Light Gray / Dark Gray	Description: (Sand, Clay, Dry, Moist, Wet, etc.) Fine Sands

Analysis:	
TCL Volatiles	✓
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	✓
Asbestos	
Dioxins	
Oil & Grease	✓
TPH Low	✓
TPH High	✓
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNU readings above background using HNU N6617. The sample from 0 to 12" was a light grey to dark grey fine sand mixed evenly throughout the soil horizon. The sample was shipped to Pace Inc on 7/8/94.

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

CofC # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 161)

NUS Source No. 02-SB02-0-14" Source Location 02-SB02-0-14

Sample Method:	Composite Sample Data		
Auger Stainless Steel Trowel	Sample	Time	Color / Description
Depth Sampled: 0-14			
Sample Date & Time: 7/7/94 1207			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Black dark grey orange	Asphalt, sand, sand

Analysis:	
TCL Volatiles	✓
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	✓
Asbestos	
Dioxins	
Oil & Grease	✓
TPH Low	✓
TPH High	✓
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N6617. The sample from 0 to 2" was asphalt. From 2 to 6" was a dark grey to black gravelly sand. From 6 to 14" was a light tan to orange sand. Samples were shipped to Pace Inc 7/8/94.

DUP#	
MS/MSD	✓

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

C or C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 02-SB03-0-14" Source Location 02-SB03-0-14

Sample Method:	Composite Sample Data		
Auger Stainless Steel Trowel	Sample	Time	Color / Description
Depth Sampled: 0-12"			
Sample Date & Time: 7/7/94 1232			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Grey Tan	Coarse Sand Sand

Analysis:	
TCL Volatiles	
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	
Asbestos	
Dioxins	
Oil & Grease	
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N 6617. From 0 to 2" was asphalt. From 2" to 8" was a grey gravelly sandy material. From 8" to 14" the soil was a coarse tan to orange sand. The sample was shipped on 7/8/94 to Pace Inc.

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 02-SB04-0-12" Source Location 02-SB04-0-12"

Sample Method:	Composite Sample Data		
Auger Stainless Steel Trowel	Sample	Time	Color / Description
Depth Sampled: 0-12"			
Sample Date & Time: 7/7/94 1257			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Gray Black Tan	Fine Sands, Pebbles

Analysis:	
TCL Volatiles	
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	
Asbestos	
Dioxins	
Oil & Grease	
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNU readings above background using HNU N 6617. The sample from 0"to8" consited of a grey to black fine sand with gravel. From 8" to 12" the soil changed to a light tan to dark tan almost orange fine sand with pebbles. The samples were shipped to Pace Inc 7/8/94.

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 02-SB05-0-16" Source Location 02-SB05-0-16"

Sample Method:	Composite Sample Data		
Auger Stainless Steel Trowel	Sample	Time	Color / Description
Depth Sampled: 0-16"			
Sample Date & Time: 7/7/94 1327			
Sampled By: Scott Richmond			
Signature(s): Charles Meyer For Scott Richmond			

Type of Sample (✓ If Collected)

- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Grey, Orange, Black	Asphalt hard packed gravel coarse sand fine sand

Analysis:	
TCL Volatiles	
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	
Asbestos	
Dioxins	
Oil & Grease	
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNU readings above background using HNU N6617. The sample from 0 to 2" was asphalt from 2" to 4" was a grey hard packed gravel. From 4" to 10" was an orange to tan coarse sand and from 10" to 16" was a fine black sand. The samples were shipped 7/8/94 to Pace Inc

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 02-SB06-0-16" Source Location 02-SB06-0-16"

Sample Method:	Composite Sample Data		
Auger Stainless Steel Trowel	Sample	Time	Color / Description
Depth Sampled: 0-16".			
Sample Date & Time: 7/7/94 1347			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Gray white to Gray	Fine to Coarse Grained Sand Fine Grained Sand

Analysis:	
TCL Volatiles	✓
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	✓
Asbestos	
Dioxins	
Oil & Grease	✓
TPH Low	✓
TPH High	✓
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNU readings above background using HNU N6617. The sample from 0" to 10" was a fine to coarse grained grey sand From 10" to 16" the sand became a fine grained white to grey sand. The samples were shipped on 7/8/94 to Pace Inc

DUP #	02-SB07-0-16"
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page ✓ of ✓

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 02-SB07-0-16" Source Location 02-SB07-0-16"

Sample Method:	Composite Sample Data		
Auger Stainless Steel Trowel	Sample	Time	Color / Description
Depth Sampled: 0-16"			
Sample Date & Time: 7/7/94 1347			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Grey, white to tan/brown	Fine to coarse grained sand, Fine Grained Sand

Analysis:	
TCL Volatiles	✓
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	✓
Asbestos	
Dioxins	
Oil & Grease	✓
TPH Low	✓
TPH High	✓
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N6617. The sample from 0 to 10" was a fine to coarse grained grey sand from 10" to 16" the sand became a fine grained white to grey sand. The samples were shipped on 7/8/94 to Pace Inc

DUP #	02-SB06 0-16
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 04-SB15-0-14" Source Location 04-SB15-0-14"

Sample Method:	Composite Sample Data		
Auger Stainless Steel Trowel	Sample	Time	Color / Description
Depth Sampled: 0-14"			
Sample Date & Time: 7/8/94 0823			
Sampled By: Charles Meyer			
Signature(s):			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Tan Orange	Asphalt coarse grained sand Fine grained sand

Analysis:	
TCL Volatiles	✓
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	✓
Asbestos	
Dioxins	
Oil & Grease	✓
TPH Low	✓
TPH High	✓
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNU readings above background using HNU N6617. The sample from 0 to 2" was asphalt. From 2 to 8" the soil was a coarse grained tan sand with gravel and pebbles mixed in. From 8 to 14" the soil changed to a fine grained orange to tan sand. The samples were shipped 7/8/94 to Pace Inc.

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 04-SB12-13-25" Source Location 04-SB12-13-25"

Sample Method:	Composite Sample Data		
Auger Stainless Steel Trowel	Sample	Time	Color / Description
Depth Sampled: 13" to 25"			
Sample Date & Time: 7/8/94 0824			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Grey Black Orange Tan	coarse grained sand with bits of gravel Fine grained sand

Analysis:	✓ If Collected
TCL Volatiles	✓
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	✓
Asbestos	
Dioxins	
Oil & Grease	✓
TPH Low	✓
TPH Hight	✓
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N6617. From 0 to 13" there was a concrete core. From 13" to 18" was a very coarse grained sand with small bits of gravel grey in color. From 18" to 19" was a fine grained black sand. From 19" to 23" was a fine grained orange to sand with clay lenses. From 23" to 25" was a grey to white sand.

DUP #	04-SB16-13"-25"
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 04-SB16-13"-25" Source Location 04-SB16-13"-25"

Sample Method:	Composite Sample Data		
Auger & stainless steel Trowel	Sample	Time	Color / Description
Depth Sampled: 13" - 25"			
Sample Date & Time: 7/8/94 0845			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Grey Black Orange Tan	Coarse grained sand with bits of Gravel Fine grained sand.

Analysis:	
TCL Volatiles	✓
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	✓
Asbestos	
Dioxins	
Oil & Grease	✓
TPH Low	✓
TPH High	✓
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N6617. From 0 to 13" there was a concrete core. From 13 to 18" was a very coarse grained sand with small bits of gravel grey in color. From 18" to 19" was a fine grained black sand and from 19 to 23" was a fine grained orange to tan sand with clay lenses. From 23" to 25" was a grey to white sand.

DUP #	04-SB12 13-25
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Page 1 of 1

Case # NA

By _____

CofC # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 04-SB10-14"-26" Source Location 04-SB10-14"-26"

Sample Method:	Composite Sample Data		
Auger Stainless Steel Trowel	Sample	Time	Color / Description
Depth Sampled: 14" to 26"			
Sample Date & Time: 7/8/94 1013			
Sampled By: Charles Meyer			
Signature(s): Charles Meyer			

Type of Sample	✓ If Collected
[x] Low Concentration	
[ ] High Concentration	
[ ] Grab	
[ ] Composite	
[ ] Grab - Composite	

Sample Data	
Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
tan grey orange to black	Fine gravel coarse grained sand and gravel.

Analysis:	
TCL Volatiles	✓
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	✓
Asbestos	
Dioxins	
Oil & Grease	✓
TPH Low	✓
TPH High	✓
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N6617. The sample from 0 to 14" was a concrete core. From 14" to 17" the soil was a light grey very fine gravel. From 17" to 23" was very coarse grained orange to tan sand with gravel mixed in. From 23" to 26" was a grey to black coarse grained sand. The samples were shipped 7/8/94 to Pace Inc.

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

Page 1 of 1

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # NA

By _____

CofC # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 03-SB04-10"-22" Source Location 03-SB04-10"-22"

Sample Method:	Composite Sample Data		
Auger Stainless Steel Trowel	Sample	Time	Color / Description
Depth Sampled: 10"-22"			
Sample Date & Time: 7/8/94 1056			
Sampled By: Scott Richmond			
Signature(s): [illegible] For Scott Richmond			

Type of Sample (✓ If Collected)

- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Tan Brown	Sand Fine Grained Sand

Analysis:	✓
TCL Volatiles	
TCL Semivolatiles	
TCL Pesticides / PCBs	
TAL Metals / Cyanide	✓
Asbestos	
Dioxins	
Oil & Grease	
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNU readings above background using HNU N6617. From 0 to 10" was a concrete core. From 10" + 18" was a tan sand and gravel. From 18" to 22" was a brown Fined grained sand. The samples were shipped 7/8/94 to PACC Inc

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

Page 1 of 1

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 03-0-1" con Source Location 03-0-1" con

Sample Method:	Composite Sample Data		
Cold chisel hammer	Sample	Time	Color / Description
Depth Sampled: 0-1"			
Sample Date & Time: 7/8/94 1145			
Sampled By: Scott Richmond			
Signature(s): Charles [illegible] For Scott Richmond			

Type of Sample (✓ If Collected)

- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
white	Fine to coarse grained concrete

Analysis:	✓
TCL Volatiles	
TCL Semivolatiles	
TCL Pesticides / PCBs	
TAL Metals / Cyanide	
Asbestos	
Dioxins	
Oil & Grease	
TCLP Organic / Inorganic	✓
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N6617. The sample was collected by breaking up concrete along the proposed steam line. The sample was a fine to coarse grained concrete. The samples were shipped on 7/8/94 to Pace Inc.

DUP#	
MS/MSD	

CP-00878-3.13-08/01/94

SAMPLE LOG SHEET

Halliburton NUS CORPORATION

Page 1 of 1

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Lagoon / Pond
- [ ] Other _____

Case # NA

By _____

C of C # _____

Project Site Name CHERRY PT, MCAS Project Site Number 1449 (CTO 165)

NUS Source No. 05-5803-0-12" Source Location 05-5803-0-12"

Sample Method:	Composite Sample Data		
Auger Stainless Steel Trowel	Sample	Time	Color / Description
Depth Sampled: 0-12"			
Sample Date & Time: 7/8/94 1212			
Sampled By: Scott Richmond			
Signature(s): [illegible] for Scott Richmond			

Type of Sample (✓ If Collected)

- [x] Low Concentration
- [ ] High Concentration
- [ ] Grab
- [ ] Composite
- [ ] Grab - Composite

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Black Orange	Top soil, coarse grained sand

Analysis:	✓
TCL Volatiles	✓
TCL Semivolatiles	✓
TCL Pesticides / PCBs	✓
TAL Metals / Cyanide	✓
Asbestos	
Dioxins	
Oil & Grease	✓
TPH Low	✓
TPH High	✓
Eh	
TOC	
Grain Size Distribution	
pH	
Moisture Content	
Permeability	
Atterberg Limits	
Specific Gravity	
Organic Content	
CEC	

Observations / Notes

There were no HNu readings above background using HNu N6617. The first 2" of soil was a black top soil. From 2" to 3" was a tan coarse grained sand. From 3" to 8" was an orange coarse grained sand. From 8" to 12" was coarse grained black sand. The samples were shipped 7/8/94 to Pace Inc.

DUP#	
MS/MSD	

APPENDIX B

BORING LOGS

BORING LOG

HNUS CORPORATION

~~CP-00878-3 13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 01-SO-01

PROJECT NO.: 1454 DATE: 04/10/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENESS	REMARKS
			0.3'		V HARD	-	ASPHALT PVMNT		
	1.0					BRN/BLK	SILTY SAND		MOIST
						M. BRN	" "		"
	2.0								
	3.0								
			4.0'						
	4.0								
						M. BRN	SILTY SAND		V. MOIST
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

REC: 4.0/4.0'

BORING 01-SO-01

PAGE 1 : 1

BORING LOG

HNUS CORPORATION

CP-00878-3 13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 01-SO-02

PROJECT NO.: 1454 DATE: 04/10/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS CODE	REMARKS
						D. GREY	SILTY SAND		DRY
	1.0					M. BRN	" "		MOIST
						DARK TO	SANDY SILT		V. MOIST, V. STIFF
	2.0					MEDIUM GRAY	" "		
						M. BRN	" "		MOIST
	3.0		4.0'						
	4.0					BLK	CHARRED MATL W/S. SILT		MOIST
						M. BRN	SILTY SAND		"
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

BORING 01-SO-02

PAGE 1 of 1

BORING LOG

HNUS CORPORATION

CP-00878-3.13 08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 01-SO-03

PROJECT NO.: 1454 DATE: 04/10/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR BROKENESS	REMARKS
						M.BRN	Silty sand w/sm gravels		DRY
	1.0					Tan	Silty sand w/small		DRY
							FILL GRAVEL		
	2.0								
						Tan	Silty Sand		moist
	3.0					or.	Silty sand		"
	4.0					orange/gray	" "		"
	5.0					Orange	" "		"

REMARKS 0 ppm HNU

RECOVERY - 3.3'/4.0'

BORING 01-SO-03

PAGE 1 : 1

BORING LOG

HNUS CORPORATION

~~CP 00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 01-SO-04

PROJECT NO.: 1454 DATE: 04/10/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CLASS	REMARKS
					0.3'	orange	Silty Sand		DRY
	1.0					tan	" "		moist
					Stiff	orange	Sandy silt		moist
	2.0								
	3.0		4.0'						
	4.0				3.8'				
					loose	or/tan	Silty Sand		moist
	5.0			TD=5.0'					

REMARKS 0 ppm HNU

REC. - 3.8'/4.0'

BORING 01-SO-04

PAGE 1 of 1

BORING LOG

HNUS CORPORATION

CP-00878-3 13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 01-SO-05

PROJECT NO.: 1454 DATE: 04/10/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY, CONSISTENCY OR ROCK HARDNESS	MATERIAL DESCRIPTION: COLOR	MATERIAL DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENESS	REMARKS
						tan	Sand w/ TR. BLK SILT		MOIST
	1.0								
	2.0					LT BRN	Sand w/ TR. SILT		MOIST
	3.0		4.0'						
					stiff	M. BRN	Sandy silt		MOIST
	4.0								
					loose	LT BRN	sand w/ TR SILT		V. MOIST
	5.0			TD=5.0'					

REMARKS 0ppm HNU

RECOVERY - 4.0'/4.0'

BORING 01-SO-05

PAGE 1 of 1

BORING LOG HNUS CORPORATION

~~CP-00878-3 13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 01-SO-06

PROJECT NO.: 1454 DATE: 04/10/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENESS	REMARKS
						BRN	SILTY sand w/ SM GRAVEL		moist
	1.0					or/tan	Silty sand		"
					1.8'				
	2.0					orange	Sandy silt		"
	3.0		4.0'						
	4.0								
						orange	silty sand		moist
	5.0			TD=5.0'					

REMARKS 0 ppm HNU

REC. 4.0'/4.0'

BORING 01-SO-06

PAGE 1

BORING LOG

HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 01-SO-07

PROJECT NO.: 1454 DATE: 04/10/94 DRILLER: A.F. CILMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CODES	REMARKS
						DBRN/BLK	Sandy Silt		Vi MOIST
	1.0								
	2.0					GREY	Silty Sand		MOIST
						orange	Sandy Silt		moist
	3.0		4.0'						
	4.0								
	5.0			TD=5.0					

REMARKS 0 ppm HNU

REC. 4.0/4.0'

BORING 01-SO-07

PAGE 1 : 1

BORING LOG

HNUS CORPORATION

CP-00878-3 13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165

BORING NO.: 01-SO-08/15

PROJECT NO.: 1454

DATE: 04/10/94

DRILLER: A.F. CULMONE

ELEVATION:

FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS CODE	REMARKS
						BLK	SILT w/ TR Sand		Saturated
	1.0								
					Stiff	orange	Sandy Silt		moist
	2.0								
						tan/orange	Silty Sand		moist
	3.0		4.0'						
	4.0								
						tan	Sand w/ TR. Silt		moist
	5.0			TD=5.0					

REMARKS 2 ppm HNU

REC. 3.7/4.0'

BORING 01-SO-08/15

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BORING LOG

HNUS CORPORATION

CP-00878-3 13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 01-SO-09

PROJECT NO.: 1454 DATE: 04/10/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENESS	REMARKS
						BLK	silt w/ TR. sand		V. moist
	1.0								
					stiff	orange	silty sand		moist
	2.0								
	3.0		4.0'						
						tan/gray	silty sand		V. moist
	4.0								
					stiff	orange	sandy silt		moist
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

REC 3.7/4.0'

BORING 01-SO-09

PAGE 1 of 1

BORING LOG

HNUS CORPORATION

CP-00878-3.13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 01-S010

PROJECT NO.: 1454 DATE: 04/10/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENESS	REMARKS
						Med to Drk	Silt		moist
	1.0				0.8	Brn			
						Med Brn to tan	Sand w/ TR. Silt		
	2.0								
	3.0		4.0'						
					stiff		Sandy silt		moist
	4.0				3.8	tan	Sand w/ tr silt		moist
					4.3	tan	Silty sand		v. moist
	5.0			TD=5.0'	4.8				

REMARKS 0 ppm HNU

REC 3.7/4.0

BORING 01-S010

PAGE 1 of

BORING LOG

HNUS CORPORATION

~~CP-00878-S.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 01-SO-11

PROJECT NO.: 1454 DATE: 04/10/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CLASS	REMARKS
					0.5	BLK	ASPHALT PAVEMENT		
	1.0					GREY	GRAVEL FILL		DRY
					V.STIFF	LT BRN/GREY	Sandy clay, well mottled		moist
	2.0								
	3.0								
					Stiff	~~orange~~ mottled	Silty Sand		moist
	4.0								
					4.3	tan	Silty Sand		moist
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

REC. 4.0/4.0'

BORING 01-SO-11

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BORING LOG — HNUS CORPORATION

CP-00878-3 13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 — BORING NO.: 01-SO-12/16

PROJECT NO.: 1454 — DATE: 04/10/94 — DRILLER: A.F. CULMONE

ELEVATION: — FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CONDITIONS	REMARKS
					0.25	—	ASPHALT		3-4" THICK
	1.0				0.9	GREY	GRAVEL FILL OVER CHARRED mat'l.		DRY
						tan/grey	Silty sand		moist
	2.0				Stiff	grey to orange	Sandy silt		moist
	3.0								
	4.0								
					Loose	orange/Brn	Silty Sand		moist
	5.0			TD=5.0					

REMARKS: 0 ppm

REC: 4.0/4.0

BORING 01-SO-12

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BORING LOG

HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 01-SO-13

PROJECT NO.: 1454 DATE: 04/10/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY, CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	BOREHOLE CONDITIONS	REMARKS
						BLK	ASPHALT PAVEMENT		
	1.0					tan/gray	Silty Sand		moist
	2.0								
	3.0								
						m. brn	silty sand w/gravels		v. moist
	4.0					med to dark Brn	silty sand		v. moist
	5.0			TD=5.0'					

REMARKS 0 ppm HNU

REC: 3.5/4.0'

BORING 01-SO-13

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BORING LOG — HNUS CORPORATION

CP:000878-3 13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 — BORING NO.: 01-SO-14

PROJECT NO.: 1454 — DATE: 04/10/94 — DRILLER: A.F. CULMONE

ELEVATION: — FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY, CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						BLK	ASPHALT PAVEMENT		
	1.0					GREY	FILL matl - casts, etc		DRY
	2.0					orange	silty sand		moist
	3.0		4.6'						
						grey	Sand w/ tr silt		V. moist
	4.0				3.8				
					Stiff	orange	Sandy silt		moist
	5.0			TD=5.0					

REMARKS: 0 ppm HNu

REC: 3.5/4.0'

BORING 01-SO-14

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BORING LOG

HNUS CORPORATION

CP-008/8-3.13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165

BORING NO.: 02-SO-01

PROJECT NO.: 1454

DATE: 04/12/94

DRILLER: A.F. CULMONE

ELEVATION:

FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR ROD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR ROD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CLASS	REMARKS
						tan/	silty sandy fill w/		Dry
	1.0					grey	gravels, etc		
	2.0								moist
						med to	Sandy silt		moist
	3.0		4.0'			drk			
						Brn			
	4.0								
	5.0			TD=5.0'		tan	silty Sand		moist

REMARKS 0 ppm HNU

REC: 3.0/4.0'

BORING 02-SO-01

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BORING LOG

HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 02-SO-02/07

PROJECT NO.: 1454 DATE: 04/12/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CONSTITUENTS	REMARKS
						BLK	Asphalt Pvment		6-7" THICK
	1.0			0.6					DRY
						tan	silty sand		
	2.0								moist
						orange/ Brn	Sandy silt		moist
	3.0		4.0'			tan/ Lt Brn	Silty Sand		moist
	4.0								
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

REC: 4.0/4.0'

BORING 02-SO-0 4

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BORING LOG

HNUS CORPORATION

CP-00878-3.13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 02-SO-03

PROJECT NO.: 1454 DATE: 04/12/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CONSTITUENTS	REMARKS
						BLK	ASPHALT PAVEMENT		
	1.0				0.75'				
						med to Dark Brn	Silty sand		moist
	2.0								
	3.0		4.0						
						tan	Silty sand		V. moist
	4.0								
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

REC: 4.0/4.0'

BORING 02-SO-03

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BORING LOG — HNUS CORPORATION

CP-00878-3 13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 — BORING NO.: 02-SO-04

PROJECT NO.: 1454 — DATE: 04/12/94 — DRILLER: A.F. CULMONE

ELEVATION: — FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR ROD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR ROD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS CODE	REMARKS
						tan	silty sand		DRY
	1.0								
						"	" "		moist
	2.0								
						grey	silty sand		v. moist
	3.0		4.0'						
	4.0			▽?					
						grey	silty sand		saturated
	5.0			TD=5.0					

REMARKS: 0 ppm HNu

REC: 4.0/4.0'

BORING 02-SO-04

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BORING LOG

HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 02-SO-05

PROJECT NO.: 1454 DATE: 04/12/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/Ft) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CLASS	REMARKS
						BLK	ASPHALT PAVEMENT		9" THICK
	1.0				0.75				
						Brn/Blk	Silt w/ TR Sand		V. MOIST
	2.0					Drk Brn	Sandy Silt		damp
	3.0					grey/orange	Silty sand		damp
	4.0								
						grey	silty sand		damp
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

REC: 4.0/4.0'

BORING 02-SO-05

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BORING LOG HNUS CORPORATION

CP-00878-3 13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 02-SO-06

PROJECT NO.: 1454 DATE: 04/12/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENESS	REMARKS
						tan	Sandy silt		dry
	1.0								
						tan	" "		moist
	2.0								
						med Brn	silty sand		moist
	3.0								
	4.0								
						tan	silty sand		moist
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

REC: 4.0'/4.0'

BORING 02-S[illegible]

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BORING LOG

HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - STO 165 BORING NO.: 03-SO-01/07

PROJECT NO.: 1454 DATE: 04/20/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENESS	REMARKS
							Concrete		8" THICK
	1.0				0.75		FILL - casts, etc		
					stiff	med brn	silt w/ TR sand		moist
	2.0								
					plastic	med brn/orange	Sandy silt		moist
	3.0		4.0'						
	4.0				loose	med to lt brn	silty sand		moist
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

REC: 4.0'/4.0'

BORING 03-SO-01/

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BORING LOG — HNUS CORPORATION

CP:00878-3 13:08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 — BORING NO.: 03-SO-02

PROJECT NO.: 1454 — DATE: 04/20/94 — DRILLER: A F CULMONE

ELEVATION: — FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: 8.0' BGS

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft) OR SCREENED INTERVAL	SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CLASS	REMARKS
							Concrete		9" THICK
	1.0				GTS		FILL - coal, etc.		
						LT BRN	Silty Sand		v. moist
	2.0								
	3.0		S1						
	4.0					DK BRN	Sandy silt		v. moist
	5.0								
	6.0					GREY	Sandy silt		moist
	7.0		S2			BLK	Silty Sand		moist
					stiff	MBrn	Silt w/ TR Sand		v. moist
	8.0								
						tan	Silty Sand		Saturated
	9.0			TD=9.0'					

REMARKS: S1 - 0 ppm HNU - REC: 3.0/4.0'

S2 - 0 ppm HNU - REC 4.0/4.0'

BORING 03-SO-02

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BORING LOG

CP-00878-3.13-08/01/94

HNUS CORPORATION

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 03-SO-03

PROJECT NO.: 1454 DATE: 04/20/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR ROD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR ROD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS CODE	REMARKS
							Concrete		9" THICK
	1.0					~~BLK~~	FILL - asphalt		
						Med Brn	Silty Sand		dry
	2.0								
	3.0		S1			Med Brn	Sandy Silt		moist
	4.0								
						tan	Silty Sand		moist
	5.0			TD=5.0					

REMARKS 0 ppm HNU

REC 4.0/4.0

BORING 03-SO-03

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BORING LOG

HNUS CORPORATION

~~CP 00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 03-SO-64

PROJECT NO.: 1454 DATE: 04/20 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: 8.0' BGS

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
							Concrete		9" THICK
	1.0			@.75			FILL - coals, etc		
						Med Brn	Silty Sand		moist
	2.0								
	3.0		S1						
					Stiff	Dark Brn	Silt w/ TR. Sand		moist
	4.0								
	5.0								
	6.0								
						LT Brn	Sand w/ TR SILT		moist
	7.0		S2						
	8.0								
						tan	Silty Sand		Saturated
	9.0			TD=9.0'					

REMARKS S1 - 0 ppm HNu S2 - 0 ppm HNu

REC: 3.8/4.0' REC: 4.0/4.0'

BORING 03-SO-64

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BORING LOG

HNUS CORPORATION

~~CP 00878 3.13 08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 04-SO-01

PROJECT NO.: 1454 DATE: 04/11/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS CONCRETE	REMARKS
						Blk	ASPHALT		
	1.0				FS				
						Tan/Fin	SILTY Sand w/ Layers		MOIST
	2.0						of black silt		
						M. Brn	SILTY SAND		MOIST
	3.0								
						Brn/tan	SILTY Sand		MOIST
	4.0					tan	SILTY Sand W/TR. Black Silt		MOIST
	5.0			TD=5.0		Orange	SILTY Sand		MOIST

REMARKS 0 ppm HNU

REC: 4.0/4.0'

BORING 04-SO-01

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BORING LOG **HNUS CORPORATION**

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 04-SO-02

PROJECT NO.: 1454 DATE: 04/11/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENESS	REMARKS
						BLK	ASPHALT		
	1.0								
					Stiff	tan	Sandy silt		moist
	2.0								
					Stiff	~~dark grey~~ tan	Sandy silt		moist
	3.0								
						orange	Silty Sand		moist
	4.0					grey	Silty Sand		moist
						tan/orange	Silty Sand		moist
	5.0			TD=5.0					

REMARKS 0 ppm HNU

REC: 4.0/4.0

BORING 04-SO-02

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BORING LOG

HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 04-S0-03

PROJECT NO.: 1454 DATE: 04/11/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CONSTITUENTS	REMARKS
							ASPHALT		9" THICK
	1.0				0.75				
						Tan	Silty Sand		MOIST
	2.0								
	3.0		S1						
	4.0								
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

REC 4.0/4.0'

BORING 04-S0-03

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BORING LOG

HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 04-50-04/16

PROJECT NO.: 1454 DATE: 04/11/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENESS	REMARKS
						BLK	ASPHALT		6' THICK
	1.0					tan to	Silty Sand		MOIST
						med			
	2.0					Brn			
	3.0								
	4.0								
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

REC: 4.0'/4.0'

BORING 04-50-[illegible]

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BORING LOG

HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 04-SO-05

PROJECT NO.: 1454 DATE: 04/11/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: 8.0 ft BGS

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Blk	Asphalt Pavement and		12" THICK
	1.0						small gravels		
						LT BRN	Sand w/ TR SILT		dry
	2.0								
	3.0		S1						
						tan/	SiHy Sand		dry
	4.0					Med brn			
	5.0								
	6.0								
						GRey	SILTY Sand		damp
	7.0		S2						
	8.0								
						orange tan	SiHy sand		Saturated
	9.0			TD=9.0'					

REMARKS S1 - 0 ppm HNU S2 - 0 ppm HNU

REC 3.8/4.0' REC 4.0/4.0'

BORING 04-SO-05

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BORING LOG HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 04-SO-06

PROJECT NO.: 1454 DATE: 04/14/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: 8.0 ft BGS

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						BLK	ASPHALT		10" THICK
	1.0			0.8			FILL - GRAVEL		
						Med to H Brn	Silty sand		dry
	2.0								
	3.0		S1						
						tan	Silty sand		moist
	4.0								
	5.0								
	6.0								
						orange to Med Brn	Silty sand		V. moist
	7.0		S2						
	8.0			▼					
									Saturated
	9.0			TD=9.0'					

REMARKS S1 - 0 ppm HNu S2 - 0 ppm HNu

REC: 4.0/4.0' REC: 4.0/4.0

BORING 04-SO-06

PAGE 1 of 1

BORING LOG

HNUS CORPORATION

~~CP 00878 3.13 08/01/94~~

PROJECT: MCAS CHERRY POINT - IT 165 BORING NO.: 04-SO-07

PROJECT NO.: 1454 DATE: DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA:

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS CODE	REMARKS
							Concrete		12" THICK
	1.0								
						grey	FILL - caste, etc		
	2.0					tan to	Silty Sand		damp
						red Brn			refusal @ 25'
	3.0								

REMARKS 0 ppm HNu

LEC: 20/4.0

BORING 04-SO-07

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BORING LOG

HNUS CORPORATION

CP-00878-3-13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 04-SO-08

PROJECT NO.: 1454 DATE: 04/21/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
							Concrete		12" THICK
	1.0								
						Grey	FILL - coarts, etc		
	2.0					Med	Silty Sand		moist
						Brn			
	3.0		S1						
						tan/	Silty Sand		moist
	4.0					orange			
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

REC 4.0/4.0

BORING 04-SO-08

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BORING LOG

HNUS CORPORATION

CP-00878-3 13-08/01/94

PROJECT: MCAS CHERRY POINT - STO 105 BORING NO.: 04-SO-09

PROJECT NO.: 1454 DATE: 04/21/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CLASS	REMARKS
							Concrete		12 THICK
	1.0								
						olive	FILL - cans, etc		
	2.0					Med Brn	SILTY Sand		moist
	3.0								
	4.0				3.8'				
						tan	Silty Sand		moist
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

3.8/4.0'

BORING CU-SO-09

PAGE 1 : 1

BORING LOG

HNUS CORPORATION

~~CP-00878-S 13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 04-SO-10

PROJECT NO.: 1454 DATE: 04/21/94 DRILLER: A F CILMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	UNIFIED SOIL CLASSIFICATION	REMARKS
							Concrete		12" THICK
	1.0								
						GREY	FILL - coarse, etc		
	2.0					MED BRN	Silty Sand		MOIST
	3.0								
						H brn to tan	Silty Sand		MOIST
	4.0								
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

BZC: 3.9/4.0

BORING 04-SO-10

PAGE 1

BORING LOG

HNUS CORPORATION

CP-00878-3 13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 04-SO-11

PROJECT NO.: 1454 DATE: 04/21/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENESS	REMARKS
							Concrete		12" THICK
	1.0								
						grey	Fill - Casts, etc		
	2.0					orange to medbrn	Silty Sand		moist
	3.0								
			S1						
	4.0								
					stiff	grey	sandy silt		V. moist
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

REC: 4.0/4.0

BORING 04-SO-11

PAGE 1 of 1

BORING LOG — HNUS CORPORATION

~~CP-00878-3 13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 — BORING NO.: 04-SO-12/17

PROJECT NO.: 1454 — DATE: — DRILLER: A.F. CULMONE

ELEVATION: — FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: ~8.0 ft BGS

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
							Concrete		12" THICK
	1.0								
						GREY	FILL - CASTS, etc		
	2.0					med Brn	Silty Sand		MOIST
					2.3	grey to tan	Silty Sand		V. MOIST
	3.0								
					3.6	D. GREY	Sand w/ TR SILT		V. MOIST
	4.0								
	5.0								
	6.0								
						BLK	SILT w/ VEG. MATER (ROOTS, WOOD, etc)		damp
	7.0								
	8.0					med to dk Brn	Sand w/ TR SILT		saturated
	9.0			TD=9.0'					

REMARKS: S1 - 0 ppm HNU S2 - 0 ppm HNU

REC: 3.5/4.0 REC: 4.0/4.0

BORING 04-SO-12

PAGE 1

BORING LOG

HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - TO 165 BORING NO.: 04-SO-13

PROJECT NO.: 1454 DATE: 04/13/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA:

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CODE	REMARKS
							Concrete		12" THICK
	1.0								
						grey	silty sand		MOIST
	2.0					med brn			
						tan/grey	silty sand		V. MOIST
	3.0		S1						
				3.2	Stiff	grey	silt		moist, stiff
	4.0					D. BRN/BLK	silty sand (*)		MOIST, STRONG ODO
				4.2					
	5.0					tan/BLK	silty sand		MOIST
	6.0								
			S2			grey	silty sand		V. MOIST
	7.0								
	8.0			8.2		med Brn	silty sand		damp
						grey	sand w/ TR. SILT		saturated
	9.0			TD=9'					
							HOLE COLLAPSE @ 8'		

REMARKS S1 - 0 ppm HNu S2 - 0 ppm HNu

REC: 4.0/4.0' REC: 3.0/4.0'

BORING 04-SO-13

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BORING LOG HNUS CORPORATION

CP-00878-3 13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 04-SO-14/15

PROJECT NO.: 1454 DATE: 04/21/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: ~6.0' BGS

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENESS	REMARKS
							Concrete		12" THICK
	1.0								
						tan	silty sand		moist
	2.0								
	3.0								
	4.0								
						LT BRN	silty sand		moist
	5.0				4.7				
						DRK BRN	silty sand		moist
	6.0								
						tan/grey	silty sand		damp
	7.0								
	8.0			▼					
						drk BRN	silty sand		saturated
	9.0			TD=9.0'					

REMARKS 0 ppm HNu

REC: 3.5'/4.0'

BORING 04-S

PAGE 1

BORING LOG

HNUS CORPORATION

CP 00878 3.13 08/01/94

PROJECT: MCAS CHERRY POINT - [illegible]

BORING NO.: 04-SO-15

PROJECT NO.: 1454

DATE: 04/21/94

DRILLER: A.F. CULMONE

ELEVATION:

FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: ~7.0 ft BGS

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	MATERIAL DESCRIPTION: COLOR	MATERIAL DESCRIPTION: MATERIAL CLASSIFICATION	USCS	BROKENESS	REMARKS
						BLK	ASPHALT PAVEMENT			
	1.0									
						LT BRN	Silty Sand w/small			moist
	2.0						gravels			
	3.0		S1							
	4.0					Drk BRN	Silty sand			moist
	5.0									
	6.0					Med tan				
						tan	silty sand			Saturated
	7.0		S2							
	8.0									
	9.0			TD=9.0'						

REMARKS

S1 - REC: 2.8/4 S2 - REC 4.0/4.0

BORING 04-SO-1[illegible]

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BORING LOG — HNUS CORPORATION

CP-00878-3.13 08/01/94

PROJECT: MCAS CHERRY POINT - SITE 16S — BORING NO.: 05-SO-01

PROJECT NO.: 1454 — DATE: 04/07/94 — DRILLER: A.F. GILMONE

ELEVATION: — FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR ROD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						DRK BRN	SILTY Sand		dry
	1.0				V. DENSE	~~ORANGE~~	SILTY Sand		moist
						MED BRN			
	2.0								
	3.0		S1						
	4.0								
	5.0			TD=5.0'		LT GREY			

REMARKS: 0 ppm HNU

REC: 4.0/4.0

BORING 05-SO-1

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BORING LOG

HNUS CORPORATION

~~CP-00878-S.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - STD 165 BORING NO.: 05-SO-02

PROJECT NO.: 1454 DATE: 04/07/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR 200	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						BLK	Sandy silt		
	1.0				0.7				
						Med Brn	Silty Sand		Moist
	2.0								
	3.0								
	4.0								
	5.0			TD=5.0'					

REMARKS 0 ppm HNu

Rec: 5.5' 4.0

BORING 05-SO-02

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BORING LOG

HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 05-SO-03

PROJECT NO.: 1454 DATE: 04/07/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						BLK	Silty Sand		dry
	1.0					med BRN	Silty Sand		moist
	2.0								
	3.0								
	4.0								
	5.0			TD=5.0					

REMARKS 0 ppm HNU

REC 3.7/4.0'

BORING 05-SO-03

PAGE 1 of 1

BORING LOG

HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 05-SO-04

PROJECT NO.: 1454 DATE: 04/07/94 DRILLER: A F CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY, CONSISTENCY OR ROCK HARDNESS	MATERIAL DESCRIPTION: COLOR	MATERIAL DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENESS	REMARKS
						BLK	Sandy Silt		dry
	1.0								
						med Brn	Silty Sand		moist
	2.0								
	3.0		S1						
	4.0					orange			
						med Brn	Silty sand w/ TR clay		moist
	5.0			TD=5.0					

REMARKS 0 ppm HNu

REC: 3.1'/4.0'

BORING 05-SO-04

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BORING LOG — HNUS CORPORATION

CP-008/8-3.13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 — BORING NO.: 05-SO-05

PROJECT NO.: 1454 — DATE: — DRILLER: A.F. CULMONE

ELEVATION: — FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA:

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS CODE	REMARKS
						LT BRN	FILL - GRAVEL w/ BRN Sand		dry
	1.0								
						med BRN	Silty Sand		MOIST
	2.0								
	3.0		S1			med BRN	silty sand w/ TR CLAY		MOIST
	4.0								
	5.0								

REMARKS: 0 ppm HNu

REC: 3.5/4.0'

BORING 05-SO-

PAGE 1

BORING LOG

HNUS CORPORATION

~~CP-00878-3 13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 05-SO-06

PROJECT NO.: 1454 DATE: 04/07/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY, CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						DRK BRN	Sandy Silt		moist
	1.0								
						orange	Silty Sand		vi moist
	2.0								
					2.2 STIFF	orange	SILTY Sand		
	3.0		S1						
					V. STIFF		CLAYEY Sand		
	4.0					tan	Sand w/ TR SILT and mottled clays		MOIST
	5.0					tan	Sand w/ TR SILT		moist
				TD=5.0'					

REMARKS 0 ppm HNu

REC: 40/4.0

BORING 05-SO-06

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BORING LOG — HNUS CORPORATION

CP-00878-3 13-08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 — BORING NO.: 05-S0-07

PROJECT NO.: 1454 — DATE: 04/07/94 — DRILLER: A.F. CULMONE

ELEVATION: — FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CLASS	REMARKS
						DRK BRN	Sandy silt		moist
	1.0								
						tan	Sand w/ TR SILT		moist
	2.0								
	3.0								
					V. STIFF	orange	Sandy silt		moist
	4.0				3.0				
						tan	Sand w/ TR CLAY		moist
	5.0					tan	Sand		v. moist
				TD=5.0					

REMARKS: 0 ppm HNu

REC: 4.0/4.0'

BORING 05-S0-07

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BORING LOG

HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 05-SO-08/12

PROJECT NO.: 1454 DATE: 04/08/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY, CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK CLASS	REMARKS
							ASPHALT and GRAVELS		
	1.0					tan/orange	Silt w/ TR Sand		MOIST
						orange	Silty Sand		MOIST
	2.0								
	3.0								
						orange	Sand w/ TR SILT		MOIST
	4.0								
	5.0								
				TD=5.0					

REMARKS 0 ppm HNu

REC: 4.0/4.0

BORING 05-SO-08/12

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BORING LOG

HNUS CORPORATION

CP-00878-3 13:08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 05-SO-04

PROJECT NO.: 1454 DATE: 04/08/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth,ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY, CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS CODE	REMARKS
						DBL BRN	SILT w/ TR Sand		MOIST
	1.0					tan	silty sand		MOIST
	2.0								
	3.0		S1						
	4.0								
	5.0								
				TD=5.0					

REMARKS 0 ppm HNu

REC: 3.0/4.0'

BORING 05-SO-04

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BORING LOG

HNUS CORPORATION

~~CP-00878-3.13-08/01/94~~

PROJECT: MCAS CHERRY POINT - CTO 165 BORING NO.: 05-S0-10

PROJECT NO.: 1454 DATE: 04/14/94 DRILLER: A.F. CULMONE

ELEVATION: FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS CODE	REMARKS
						D. BRN	Sandy Silt		moist
	1.0								
						tan	Sand w/ TR SILT		moist
	2.0								
	3.0								
									vmoist
	4.0								
				?		med Brn			damp
	5.0								saturated

REMARKS

BORING

PAGE

BORING LOG — HNUS CORPORATION

CP 00878 3.12 08/01/94

PROJECT: MCAS CHERRY POINT - CTO 165 — BORING NO.: 05-SO-11

PROJECT NO.: 1454 — DATE: 04/14/94 — DRILLER: A.F. CULMONE

ELEVATION: — FIELD GEOLOGIST: N J STRAUB

WATER LEVEL DATA: NA

(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.) OR SCREENED INTERVAL	MATERIAL DESCRIPTION: SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	BORE HOLE CONDITIONS	REMARKS
						D.BRN	Sandy Silt		
	1.0					tan	Silty Sand		moist
	2.0								
	3.0		S1						
	4.0					orange	Sandy Silt		moist
						white and orange	Silty Sand		moist
	5.0								
				TD=5.0					

REMARKS

REC: 4.0/4.0

BORING 05-SO-1

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APPENDIX C

ANALYTICAL DATABASE

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

R - The data are unusable.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may not accurately reflect the IDL in the sample matrix.

CLIENT ID:	01-SO-01-0305	01-SO-02-0305	01-SO-03-0305	01-SO-04-0305	01-SO-05-0305	01-SO-06-0305	01-SO-07-0305	01-SO-08-0305	01-SO-15-0305
LABORATORY ID:	041209	041210	041211	041212	041510	041213	041214	041215	041216
Acetone	28 U	30 U	29 U	28 U	210 U	30 U	29 U	29 U	28 U
Benzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Bromobenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Bromochloromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Bromodichloromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Bromoform	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Bromomethane	11 U	12 U	12 U	11 U	11 U	12 U	12 U	12 U	11 U
2-Butanone	28 U	30 U	29 U	28 U	28 U	30 U	29 U	29 U	28 U
n-Butylbenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
sec-Butylbenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
tert-Butylbenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Carbon Disulfide	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Carbon Tetrachloride	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Chlorobenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Chloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Chloroform	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Chloromethane	11 U	12 U	12 U	11 U	11 U	12 U	12 U	12 U	11 U
2-Chlorotoluene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
4-Chlorotoluene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dibromochloromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dibromo-3-chloropropane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dibromoethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dibromomethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dichlorobenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,3-Dichlorobenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,4-Dichlorobenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichlorodifluoromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,1-Dichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,1-Dichloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dichloroethene (cis)	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dichloroethene (trans)	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dichloropropane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,3-Dichloropropane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
2,2-Dichloropropane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,1-Dichloropropene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
cis-1,3-Dichloropropene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
trans-1,3-Dichloropropene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Ethylbenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Hexachlorobutadiene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
2-Hexanone	28 U	30 U	29 U	28 U	28 U	30 U	29 U	29 U	28 U
Isopropylbenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
p-Isopropyltoluene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Methylene_Chloride	11 U	12 U	12 U	11 U	11 U	12 U	12 U	12 U	11 U
4-Methyl-2-pentanone	28 U	30 U	29 U	28 U	28 U	30 U	29 U	29 U	28 U
Naphthalene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
n-Propylbenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Styrene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,1,1,2-Tetrachloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,1,2,2-Tetrachloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Tetrachloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Toluene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,2,3-Trichlorobenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,2,4-Trichlorobenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,1,1-Trichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,1,2-Trichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Trichloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Trichlorofluoromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,2,3-Trichloropropane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,2,4-Trimethylbenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
1,3,5-Trimethylbenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Vinyl Chloride	11 U	12 U	12 U	11 U	11 U	12 U	12 U	12 U	11 U
Xylene (total)	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U

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CLIENT ID:	01-SO-09-0305	01-SO-10-0305	01-SO-11-0305	01-SO-12-0305	01-SO-16-0305	01-SO-13-0305	01-SO-14-0305	01-SO-01-0001	01-SB-05-0001
LABORATORY ID:	041217	041201	041202	041203	041204	041205	041206	40830-058	40830-059
Acetone	28 U	29 U	29 U	35 U	30 U	29 U	28 U	30 U	29
Benzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Bromobenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Bromochloromethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Bromodichloromethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Bromoform	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Bromomethane	11 U	12 U	12 U	14 U	12 U	11 U	11 U	12 U	11
2-Butanone	28 U	29 U	29 U	35 U	30 U	29 U	28 U	30 U	28
n-Butylbenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
sec-Butylbenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
tert-Butylbenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Carbon Disulfide	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Carbon Tetrachloride	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Chlorobenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Chloroethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Chloroform	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Chloromethane	11 U	12 U	12 U	14 U	12 U	11 U	11 U	12 U	11
2-Chlorotoluene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
4-Chlorotoluene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Dibromochloromethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,2-Dibromo-3-chloropropane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,2-Dibromoethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Dibromomethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,2-Dichlorobenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,3-Dichlorobenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,4-Dichlorobenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Dichlorodifluoromethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,1-Dichloroethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,2-Dichloroethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,1-Dichloroethene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,2-Dichloroethene (cis)	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,2-Dichloroethene (trans)	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,2-Dichloropropane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,3-Dichloropropane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
2,2-Dichloropropane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,1-Dichloropropene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
cis-1,3-Dichloropropene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
trans-1,3-Dichloropropene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Ethylbenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Hexachlorobutadiene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
2-Hexanone	28 U	29 U	29 U	35 U	30 U	29 U	28 U	30 U	28
Isopropylbenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
p-Isopropyltoluene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Methylene_Chloride	11 U	12 U	8.4 U	10 U	8.6 U	8.1 U	7.8 U	20 U	18
4-Methyl-2-pentanone	28 U	29 U	29 U	35 U	30 U	29 U	28 U	30 U	28
Naphthalene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
n-Propylbenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Styrene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,1,1,2-Tetrachloroethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,1,2,2-Tetrachloroethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Tetrachloroethene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Toluene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,2,3-Trichlorobenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,2,4-Trichlorobenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,1,1-Trichloroethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,1,2-Trichloroethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Trichloroethene	6 U	6 U	6 U	7 U	6 U	3.3 J	6 U	6 U	6
Trichlorofluoromethane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,2,3-Trichloropropane	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,2,4-Trimethylbenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
1,3,5-Trimethylbenzene	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6
Vinyl Chloride	11 U	12 U	12 U	14 U	12 U	11 U	11 U	12 U	11
Xylene (total)	6 U	6 U	6 U	7 U	6 U	6 U	6 U	6 U	6

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CLIENT ID:		01-SB-13-0001		02-SO-01-0305		02-SO-02-0305		02-SO-07-0305		02-SO-03-0305		02-SO-04-0305		02-SO-05-0305		02-SO-06-0305	
LABORATORY ID:		40830-060		041401		041402		041403		041406		041407		041404		041405	
Acetone	U	35	U	110	U	29	U	28	U	30	U	53	U	28	U	26	U
Benzene	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
Bromobenzene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
Bromochloromethane	U	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U
Bromodichloromethane	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
Bromoform	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
Bromomethane	U	11	U	13	U	11	U	11	U	12	U	11	U	11	U	10	U
2-Butanone	U	28	U	33	U	29	U	28	U	30	U	27	U	28	U	26	U
n-Butylbenzene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
sec-Butylbenzene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
tert-Butylbenzene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
Carbon Disulfide	U	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U
Carbon Tetrachloride	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
Chlorobenzene	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
Chloroethane	U	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U
Chloroform	U	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U
Chloromethane	U	11	U	13	U	11	U	11	U	12	U	11	U	11	U	10	U
2-Chlorotoluene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
4-Chlorotoluene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
Dibromochloromethane	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
1,2-Dibromo-3-chloropropane	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
1,2-Dibromoethane	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
Dibromomethane	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
1,2-Dichlorobenzene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
1,3-Dichlorobenzene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
1,4-Dichlorobenzene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
Dichlorodifluoromethane	U	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U
1,1-Dichloroethane	U	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U
1,2-Dichloroethane	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
1,1-Dichloroethene	U	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U
1,2-Dichloroethene (cis)	U	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U
1,2-Dichloroethene (trans)	U	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U
1,2-Dichloropropane	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
1,3-Dichloropropane	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
2,2-Dichloropropane	U	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U
1,1-Dichloropropene	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
cis-1,3-Dichloropropene	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
trans-1,3-Dichloropropene	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
Ethylbenzene	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
Hexachlorobutadiene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
2-Hexanone	U	28	U	33	U	29	U	28	U	30	UJ	27	U	28	U	26	U
Isopropylbenzene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
p-Isopropyltoluene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
Methylene_Chloride	U	19	U	24	U	11	U	11	U	12	U	11	U	11	U	10	U
4-Methyl-2-pentanone	U	28	U	33	U	29	U	28	U	30	UJ	27	U	28	U	26	U
Naphthalene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
n-Propylbenzene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
Styrene	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
1,1,1,2-Tetrachloroethane	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
1,1,2,2-Tetrachloroethane	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
Tetrachloroethene	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
Toluene	U	6	U	9.1		6	U	6	U	6	UJ	6	U	6	U	5	U
1,2,3-Trichlorobenzene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
1,2,4-Trichlorobenzene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
1,1,1-Trichloroethane	U	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U
1,1,2-Trichloroethane	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
Trichloroethene	U	6	U	7	U	6	U	6	U	6	UJ	6	U	6	U	5	U
Trichlorofluoromethane	U	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U
1,2,3-Trichloropropane	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
1,2,4-Trimethylbenzene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
1,3,5-Trimethylbenzene	U	6	U	7	UJ	6	U	6	U	6	UJ	6	U	6	U	5	U
Vinyl Chloride	U	11	U	13	U	11	U	11	U	12	U	11	U	11	U	10	U
Xylene (total)	U	6	U	6.9		6	U	6	U	6	UJ	6	U	6	U	5	U

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CLIENT ID:	02-SB-01-0001	02-SB-02-0001	02-SB-06-0001	02-SB 07-0001	03-SO-01-0305	03-SO-07-0305	03-SO-02-0305	03-SO-02 0709	03-SO 03-0305
LABORATORY ID:	40830-061	40830-062	40830-063	40830-064	042106	042107	042104	042105	042101
Acetone	29 U	30 U	27 U	77 U	50 U	70 U	38 U	29 U	27 U
Benzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Bromobenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Bromochloromethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Bromodichloromethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Bromoform	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Bromomethane	11 U	11 U	11 U	11 U	11 U	11 U	11 U	12 U	11 U
2-Butanone	28 U	27 U	27 U	28 U	28 U	28 U	28 U	29 U	27 U
n-Butylbenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
sec-Butylbenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
tert-Butylbenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Carbon Disulfide	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Carbon Tetrachloride	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Chlorobenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Chloroethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Chloroform	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Chloromethane	11 U	11 U	11. U	11 U	11 U	11 U	11 U	12 U	11 U
2-Chlorotoluene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
4-Chlorotoluene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Dibromochloromethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,2-Dibromo-3-chloropropane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,2-Dibromoethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Dibromomethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,2-Dichlorobenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,3-Dichlorobenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,4-Dichlorobenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Dichlorodifluoromethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,1-Dichloroethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,2-Dichloroethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,1-Dichloroethene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,2-Dichloroethene (cis)	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,2-Dichloroethene (trans)	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,2-Dichloropropane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,3-Dichloropropane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
2,2-Dichloropropane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,1-Dichloropropene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
cis-1,3-Dichloropropene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
trans-1,3-Dichloropropene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Ethylbenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Hexachlorobutadiene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
2-Hexanone	28 U	27 U	27 U	28 U	28 U	28 U	28 U	29 U	27 U
Isopropylbenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
p-Isopropyltoluene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Methylene_Chloride	19 U	18 U	19 U	13 U	11 U	12 U	11 U	12 U	11 U
4-Methyl-2-pentanone	28 U	27 U	27 U	28 U	28 U	28 U	28 U	29 U	27 U
Naphthalene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
n-Propylbenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Styrene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,1,1,2-Tetrachloroethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,1,2,2-Tetrachloroethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Tetrachloroethene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Toluene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,2,3-Trichlorobenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,2,4-Trichlorobenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,1,1-Trichloroethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,1,2-Trichloroethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Trichloroethene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Trichlorofluoromethane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,2,3-Trichloropropane	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,2,4-Trimethylbenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
1,3,5-Trimethylbenzene	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U
Vinyl Chloride	11 U	11 U	11 U	11 U	11 U	11 U	11 U	12 U	11 U
Xylene (total)	6 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U	5 U

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CLIENT ID:	03-SO-04-0305	03-SO-04-0709	04-SO-01-0305	04-SO-02-0305	04-SO-04-0305	04-SO-16-0305	04-SO-03-0305	04-SO-05-0305	04-SO-05-0709
LABORATORY ID:	042102	042103	041301	041302	041303	041304	041305	041515	041516
Acetone	37 U	29 U	30 U	28 U	30 U	26 U	27 U	28 U	29 U
Benzene	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Bromobenzene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
Bromochloromethane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Bromodichloromethane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Bromoform	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Bromomethane	11 U	11 U	12 U	11 U	12 U	11 U	11 U	11 U	11 U
2-Butanone	28 U	28 U	30 U	28 U	30 U	26 U	27 U	28 U	29 U
n-Butylbenzene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
sec-Butylbenzene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
tert-Butylbenzene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
Carbon Disulfide	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Carbon Tetrachloride	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Chlorobenzene	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Chloroethane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Chloroform	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Chloromethane	11 U	11 U	12 U	11 U	12 U	11 U	11 U	11 U	11 U
2-Chlorotoluene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
4-Chlorotoluene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
Dibromochloromethane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,2-Dibromo-3-chloropropane	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
1,2-Dibromoethane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Dibromomethane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,2-Dichlorobenzene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
1,3-Dichlorobenzene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
1,4-Dichlorobenzene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
Dichlorodifluoromethane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,1-Dichloroethane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,2-Dichloroethane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,1-Dichloroethene	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,2-Dichloroethene (cis)	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,2-Dichloroethene (trans)	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,2-Dichloropropane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,3-Dichloropropane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
2,2-Dichloropropane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,1-Dichloropropene	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
cis-1,3-Dichloropropene	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
trans-1,3-Dichloropropene	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Ethylbenzene	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Hexachlorobutadiene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
2-Hexanone	28 U	28 U	30 U	28 U	30 U	26 U	27 U	28 U	29 U
Isopropylbenzene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
p-Isopropyltoluene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
Methylene_Chloride	13 U	11 U	12 U	11 U	12 U	12 U	11 U	18 U	19 U
4-Methyl-2-pentanone	28 U	28 U	30 U	28 U	30 U	26 U	27 U	28 U	29 U
Naphthalene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
n-Propylbenzene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
Styrene	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,1,1,2-Tetrachloroethane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,1,2,2-Tetrachloroethane	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
Tetrachloroethene	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Toluene	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,2,3-Trichlorobenzene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
1,2,4-Trichlorobenzene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
1,1,1-Trichloroethane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,1,2-Trichloroethane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Trichloroethene	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
Trichlorofluoromethane	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U
1,2,3-Trichloropropane	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
1,2,4-Trimethylbenzene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
1,3,5-Trimethylbenzene	6 U	6 U	6 U	6 UJ	6 U	5 U	5 U	6 U	6 U
Vinyl Chloride	11 U	11 U	12 U	11 U	12 U	11 U	11 U	11 U	11 U
Xylene (total)	6 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	6 U

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CLIENT ID:	04-SO-06-0305	04-SO-06-0709	04-SO-07-1525	04-SO-08-0305	04-SO-09-0305	04-SO-10-0305	04-SO-11-0305	04-SO-12-0305	04-SO-17-0709
LABORATORY ID:	041517	041518	042201	042213	042212	042210	042211	042202	042203
Acetone	26 U	32 U	39 U	28 U	28 U	25 U	26 U	56 U	79 U
Benzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Bromobenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
Bromochloromethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Bromodichloromethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Bromoform	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Bromomethane	10 U	13 U	12 U	11 U	11 U	10 U	10 U	11 U	26 U
2-Butanone	26 U	32 U	29 U	28 U	28 U	25 U	26 U	27 U	64 U
n-Butylbenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
sec-Butylbenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
tert-Butylbenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
Carbon Disulfide	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Carbon Tetrachloride	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Chlorobenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Chloroethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Chloroform	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Chloromethane	10 U	13 U	12 U	11 U	11 U	10 U	10 U	11 U	26 U
2-Chlorotoluene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
4-Chlorotoluene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
Dibromochloromethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,2-Dibromo-3-chloropropane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
1,2-Dibromoethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Dibromomethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,2-Dichlorobenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
1,3-Dichlorobenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
1,4-Dichlorobenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
Dichlorodifluoromethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,1-Dichloroethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,2-Dichloroethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,1-Dichloroethene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,2-Dichloroethene (cis)	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,2-Dichloroethene (trans)	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,2-Dichloropropane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,3-Dichloropropane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
2,2-Dichloropropane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,1-Dichloropropene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
cis-1,3-Dichloropropene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
trans-1,3-Dichloropropene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Ethylbenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Hexachlorobutadiene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
2-Hexanone	26 U	32 U	29 U	28 U	28 U	25 U	26 U	27 U	64 U
Isopropylbenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
p-Isopropyltoluene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
Methylene_Chloride	14 U	17 U	12 U	11 U	11 U	10 U	10 U	11 U	21 U
4-Methyl-2-pentanone	26 U	32 U	29 U	28 U	28 U	25 U	26 U	27 U	64 U
Naphthalene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
n-Propylbenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
Styrene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,1,1,2-Tetrachloroethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
1,1,2,2-Tetrachloroethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Tetrachloroethene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Toluene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,2,3-Trichlorobenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
1,2,4-Trichlorobenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
1,1,1-Trichloroethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,1,2-Trichloroethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Trichloroethene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
Trichlorofluoromethane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,2,3-Trichloropropane	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,2,4-Trimethylbenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U
1,3,5-Trimethylbenzene	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 UJ
Vinyl Chloride	10 U	13 U	12 U	11 U	11 U	10 U	10 U	11 U	26 UJ
Xylene (total)	5 U	6 U	6 U	6 U	6 U	5 U	5 U	6 U	13 U

CLIENT ID:	04-SO-12-0709	04-SO-13-0305	04-SO-13-0709	04-SO-14-0305	04-SO-14-0709	04-SO-18-0709	04-SO-15-0305	04-SO-15-0709	04-SB-15-0001
LABORATORY ID:	042204	041511	041512	042205	042206	042207	042208	042209	40830-066
Acetone	64 U	100 U	46 U	28 U	27 U	28 U	28 U	31 U	41 U
Benzene	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Bromobenzene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Bromochloromethane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Bromodichloromethane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Bromoform	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Bromomethane	21 U	11 U	11 U	11 U	11 U	11 U	11 U	12 U	11 U
2-Butanone	54 U	28 U	28 U	28 U	27 U	28 U	28 U	31 U	27 U
n-Butylbenzene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
sec-Butylbenzene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
tert-Butylbenzene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Carbon Disulfide	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Carbon Tetrachloride	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Chlorobenzene	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Chloroethane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Chloroform	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Chloromethane	21 U	11 U	11 U	11 U	11 U	11 U	11 U	12 U	11 U
2-Chlorotoluene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
4-Chlorotoluene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Dibromochloromethane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,2-Dibromo-3-chloropropane	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,2-Dibromoethane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Dibromomethane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,2-Dichlorobenzene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,3-Dichlorobenzene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,4-Dichlorobenzene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Dichlorodifluoromethane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,1-Dichloroethane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,2-Dichloroethane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,1-Dichloroethene	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,2-Dichloroethene (cis)	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,2-Dichloroethene (trans)	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,2-Dichloropropane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,3-Dichloropropane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
2,2-Dichloropropane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,1-Dichloropropene	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
cis-1,3-Dichloropropene	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
trans-1,3-Dichloropropene	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Ethylbenzene	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Hexachlorobutadiene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
2-Hexanone	54 U	28 U	28 U	28 U	27 U	28 U	28 U	31 U	27 U
Isopropylbenzene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
p-Isopropyltoluene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Methylene_Chloride	24 U	11 U	11 U	11 U	11 U	11 U	11 U	15 U	17 U
4-Methyl-2-pentanone	54 U	28 U	28 U	28 U	28 U	28 U	28 U	28 U	27 U
Naphthalene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
n-Propylbenzene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Styrene	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,1,1,2-Tetrachloroethane	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,1,2,2-Tetrachloroethane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Tetrachloroethene	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Toluene	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,2,3-Trichlorobenzene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,2,4-Trichlorobenzene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,1,1-Trichloroethane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,1,2-Trichloroethane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Trichloroethene	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Trichlorofluoromethane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,2,3-Trichloropropane	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,2,4-Trimethylbenzene	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
1,3,5-Trimethylbenzene	11 UJ	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U
Vinyl Chloride	21 UJ	11 U	11 U	11 U	11 U	11 U	11 U	12 U	11 U
Xylene (total)	11 U	6 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U

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CLIENT ID:	04-SB-12-0001	04-SB-10-0001	04-SB-16-0001	05-SO-01-0204	05-SO-02-0305	05-SO-03-0305	05-SO-04-0305	05-SO-05-0305	05-SO-06-0305
LABORATORY ID:	40830-067	40830-068	40830-069	040901	040902	040903	040904	040905	040906
Acetone	27 U	150 U	29 U	26 U	29 U	29 U	28 U	25 U	28 U
Benzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Bromobenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Bromochloromethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Bromodichloromethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Bromoform	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Bromomethane	11 U	11 U	11 U	11 U	12 U	12 U	11 U	10 U	11 U
2-Butanone	27 U	28 U	28 U	26 U	29 U	29 U	28 U	25 U	28 U
n-Butylbenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
sec-Butylbenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
tert-Butylbenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Carbon Disulfide	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Carbon Tetrachloride	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Chlorobenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Chloroethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Chloroform	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Chloromethane	11 U	11 U	11 U	11 U	12 U	12 U	11 U	10 U	11 U
2-Chlorotoluene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
4-Chlorotoluene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Dibromochloromethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,2-Dibromo-3-chloropropane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,2-Dibromoethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Dibromomethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,2-Dichlorobenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,3-Dichlorobenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,4-Dichlorobenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Dichlorodifluoromethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,1-Dichloroethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,2-Dichloroethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,1-Dichloroethene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,2-Dichloroethene (cis)	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,2-Dichloroethene (trans)	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,2-Dichloropropane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,3-Dichloropropane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
2,2-Dichloropropane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,1-Dichloropropene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
cis-1,3-Dichloropropene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
trans-1,3-Dichloropropene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Ethylbenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Hexachlorobutadiene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
2-Hexanone	27 U	28 U	28 U	26 U	29 U	29 U	28 U	25 U	28 U
Isopropylbenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
p-Isopropyltoluene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Methylene_Chloride	12 U	13 U	14 U	5.7 U	6.4 U	7.7 U	6.7 U	6.6 U	9.7 U
4-Methyl-2-pentanone	27 U	28 U	28 U	28 U	28 U	28 U	28 U	28 U	28 U
Naphthalene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
n-Propylbenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Styrene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,1,1,2-Tetrachloroethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,1,2,2-Tetrachloroethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Tetrachloroethene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Toluene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,2,3-Trichlorobenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,2,4-Trichlorobenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,1,1-Trichloroethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,1,2-Trichloroethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Trichloroethene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Trichlorofluoromethane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,2,3-Trichloropropane	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,2,4-Trimethylbenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
1,3,5-Trimethylbenzene	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U
Vinyl Chloride	11 U	11 U	11 U	11 U	12 U	12 U	11 U	10 U	11 U
Xylene (total)	5 U	6 U	6 U	5 U	6 U	6 U	6 U	5 U	6 U

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CLIENT ID:	05-SO-07-0305	05-SO-08-0305	05-SO-12-0305	05-SO-09-0305	05-SO-10-0305	05-SO-11-0305	05-SB-03-0001
LABORATORY ID:	040907	040908	040909	040910	041513	041514	40830-071
Acetone	31 U	28 U	28 U	27 U	27 U	25 U	27 U
Benzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Bromobenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Bromochloromethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Bromodichloromethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Bromoform	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Bromomethane	12 U	11 U	11 U	11 U	11 U	10 U	11 U
2-Butanone	31 U	28 U	28 U	27 U	27 U	25 U	27 U
n-Butylbenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
sec-Butylbenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
tert-Butylbenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Carbon Disulfide	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Carbon Tetrachloride	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Chlorobenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Chloroethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Chloroform	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Chloromethane	12 U	11 U	11 U	11 U	11 U	10 U	11 U
2-Chlorotoluene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
4-Chlorotoluene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Dibromochloromethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,2-Dibromo-3-chloropropane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,2-Dibromoethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Dibromomethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,2-Dichlorobenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,3-Dichlorobenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,4-Dichlorobenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Dichlorodifluoromethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,1-Dichloroethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,2-Dichloroethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,1-Dichloroethene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,2-Dichloroethene (cis)	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,2-Dichloroethene (trans)	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,2-Dichloropropane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,3-Dichloropropane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
2,2-Dichloropropane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,1-Dichloropropene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
cis-1,3-Dichloropropene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
trans-1,3-Dichloropropene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Ethylbenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Hexachlorobutadiene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
2-Hexanone	31 U	28 U	28 U	27 U	27 U	25 U	27 U
Isopropylbenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
p-Isopropyltoluene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Methylene_Chloride	8 U	6 U	5.9 U	9.2 U	11 U	17 U	18 U
4-Methyl-2-pentanone	31 U	28 U	28 U	27 U	27 U	25 U	27 U
Naphthalene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
n-Propylbenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Styrene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,1,1,2-Tetrachloroethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,1,2,2-Tetrachloroethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Tetrachloroethene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Toluene	6 U	6 U	6 U	5 U	5 U	3.9	6 U
1,2,3-Trichlorobenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,2,4-Trichlorobenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,1,1-Trichloroethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,1,2-Trichloroethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Trichloroethene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Trichlorofluoromethane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,2,3-Trichloropropane	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,2,4-Trimethylbenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
1,3,5-Trimethylbenzene	6 U	6 U	6 U	5 U	5 U	5 U	6 U
Vinyl Chloride	12 U	11 U	11 U	11 U	11 U	10 U	11 U
Xylene (total)	6 U	6 U	6 U	5 U	5 U	5 U	6 U

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SITE Cherry Point MCAS CTO 0165
CASE CHERR SDG CPT01
LABORATORY PACE INC - HAMPTON, NH

CP-00878-3.13-08/01/94

TCL SEMIVOLATILE LOW CONCENTRATION SOIL ANALYSES (ug/Kg)

Halliburton NUS ID			01-SO-0106-COMP	01-SO-0710-COMP	01-SO-1114-COMP	01-SO-01-0001	01-SO-05-0001	01-SO-13-0001
PACE ID			041218	041219	041207	40830-29	40830-30	40830-31
NALYTE	CRQL	MDL						
PHENOL	330	70	360 U	390 U	350 U	390 U	360 U	380 U
Bis(2-CHLOROETHYL)ETHER	330	69.7	360 U	390 U	350 U	390 U	360 U	380 U
2-CHLOROPHENOL	330	70.7	360 U	390 U	350 U	390 U	360 U	380 U
1,3-DICHLOROBENZENE	330	64	360 U	390 U	350 U	390 U	360 U	380 U
1,4-DICHLOROBENZENE	330	69	360 U	390 U	350 U	390 U	360 U	380 U
1,2-DICHLOROBENZENE	330	60	360 U	390 U	350 U	390 U	360 U	380 U
2-METHYLPHENOL	330	59.3	360 U	390 U	350 U	390 U	360 U	380 U
2,2'-OXYBIS(1-CHLOROPROPANE)	330	78	360 U	390 U	350 U	390 U	360 U	380 U
4-METHYLPHENOL	330	59.7	360 U	390 U	350 U	390 U	360 U	380 U
N-NITROSO-DI-N-PROPYLAMINE	330	57	360 U	390 U	350 U	390 U	360 U	380 U
HEXACHLOROETHANE	330	62	360 U	390 U	350 U	390 U	360 U	380 U
NITROBENZENE	330	55.7	360 U	390 U	350 U	390 U	360 U	380 U
ISOPHORONE	330	41	360 U	390 U	350 U	390 U	360 U	380 U
2-NITROPHENOL	330	83.7	360 U	390 U	350 U	390 U	360 U	380 U
2,4-DIMETHYLPHENOL	330	70.7	360 U	390 U	350 U	390 U	360 U	380 U
Bis(2-CHLOROETHOXY)METHANE	330	52	360 U	390 U	350 U	390 U	360 U	380 U
2,4-DICHLOROPHENOL	330	58.3	360 U	390 U	350 U	390 U	360 U	380 U
1,2,4-TRICHLOROBENZENE	330	60.3	360 U	390 U	350 U	390 U	360 U	380 U
NAPHTHALENE	330	64.7	360 U	390 U	350 U	390 U	360 U	380 U
4-CHLOROANILINE	330	65.3	360 U	390 U	350 U	390 U	360 U	380 U
HEXACHLOROBUTADIENE	330	64.7	360 U	390 U	350 U	390 U	360 U	380 U
4-CHLORO-3-METHYLPHENOL	330	47.7	360 U	390 U	350 U	390 U	360 U	380 U
2-METHYLNAPHTHALENE	330	52.7	360 U	390 U	350 U	390 U	360 U	380 U
HEXACHLOROCYCLOPENTADIENE	330	64.3	360 U	390 U	350 U	390 U	360 U	380 U
2,4,6-TRICHLOROPHENOL	330	36.3	360 U	390 U	350 U	390 U	360 U	380 U
2,4,5-TRICHLOROPHENOL	800	51.7	860 U	940 U	850 U	930 U	870 U	920 U
2-CHLORONAPHTHALENE	330	43	360 U	390 U	350 U	390 U	360 U	380 U
2-NITROANILINE	800	50	860 U	940 U	850 U	930 U	870 U	920 U
DIMETHYLPHTHALATE	330	22.3	360 U	390 U	350 U	390 U	360 U	380 U
ACENAPHTHYLENE	330	25	360 U	390 U	350 U	390 U	360 U	380 U
2,6-DINITROTOLUENE	330	53.7	360 U	390 U	350 U	390 U	360 U	380 U
3-NITROANILINE	800	69.7	860 U	940 U	850 U	930 U	870 U	920 U
ACENAPHTHENE	330	22	360 U	390 U	350 U	390 U	360 U	380 U
2,4-DINITROPHENOL	800	130	860 U	940 U	850 U	930 U	870 U	920 U
4-NITROPHENOL	800	127	860 U	940 U	850 U	930 U	870 U	920 U
DIBENZOFURAN	330	27.3	360 U	390 U	350 U	390 U	360 U	380 U
2,4-DINITROTOLUENE	330	45	360 U	390 U	350 U	390 U	360 U	380 U
DIETHYLPHTHALATE	330	20.3	360 U	390 U	350 U	390 U	360 U	380 U
-CHLOROPHENYL-PHENYLETHER	330	22.3	360 U	390 U	350 U	390 U	360 U	380 U
_UORENE	330	32	360 U	390 U	350 U	390 U	360 U	380 U
4-NITROANILINE	800	102	860 U	940 U	850 U	930 U	870 U	920 U
4,6-DINITRO-2-METHYLPHENOL	800	66	860 U	940 U	850 U	930 U	870 U	920 U
N-NITROSODIPHENYLAMINE	330	24.7	360 U	390 U	350 U	390 U	360 U	380 U
4-BROMOPHENYL-PHENYLETHER	330	23.3	360 U	390 U	350 U	390 U	360 U	380 U
HEXACHLOROBENZENE	330	36.7	360 U	390 U	350 U	390 U	360 U	380 U
PENTACLOROPHENOL	800	128	860 U	940 U	850 U	930 U	870 U	920 U
PHENANTHRENE	330	32.3	360 U	390 U	350 U	390 U	360 U	380 U
ANTHRACENE	330	28.7	360 U	390 U	350 U	390 U	360 U	380 U
CARBAZOLE	330	N/A	360 U	390 U	350 U	390 U	360 U	380 U
DI-N-BUTYLPHTHALATE	330	28.3	360 U	390 U	350 U	390 U	360 U	380 U
FLUORANTHENE	330	36.7	360 U	390 U	350 U	390 U	360 U	380 U
PYRENE	330	25.3	360 U	390 U	350 U	390 U	360 U	380 U
BUTYLBENZYLPHTHALATE	330	32.3	360 U	390 U	350 U	390 U	360 U	380 U
3,3'-DICHLOROBENZIDINE	330	114	360 U	390 U	350 U	390 U	360 U	380 U
BENZO(A)ANTHRACENE	330	27.7	360 U	390 U	350 U	390 U	360 U	380 U
CHRYSENE	330	14.7	360 U	390 U	350 U	390 U	360 U	380 U
Bis(2-ETHYLHEXYL)PHTHALATE	330	27.3	360 U	390 U	350 U	390 U	360 U	340 J
DI-N-OCTYLPHTHALATE	330	48.3	360 U	390 U	350 U	390 U	360 U	380 U
BENZO(B)FLUORANTHENE	330	116	360 U	390 U	350 U	390 U	360 U	380 U
BENZO(K)FLUORANTHENE	330	199	360 U	390 U	350 U	390 U	360 U	380 U
BENZO(A)PYRENE	330	20	360 U	390 U	350 U	390 U	360 U	380 U
INDENO(1,2,3-CD)PYRENE	330	35.7	360 U	390 U	350 U	390 U	360 U	380 U
DIBENZ(A,H)ANTHRACENE	330	47	360 U	390 U	350 U	390 U	360 U	380 U
BENZO(G,H,I)PERYLENE	330	43.3	360 U	390 U	350 U	390 U	360 U	380 U

SITE Cherry Point MCAS CTO 0165
CASE CHERR SDG CPT01
LABORATORY PACE INC - HAMPTON, NH

CP-00878-3.13-08/01/94

TCL SEMIVOLATILE LOW CONCENTRATION SOIL A

Halliburton NUS ID 02-SO-0106-COMP
PACE ID 041408

ANALYTE	CRQL	MDL		
PHENOL	330	70	350	U
Bis(2-CHLOROETHYL)ETHER	330	69.7	350	U
2-CHLOROPHENOL	330	70.7	350	U
1,3-DICHLOROBENZENE	330	64	350	U
1,4-DICHLOROBENZENE	330	69	350	U
1,2-DICHLOROBENZENE	330	60	350	U
2-METHYLPHENOL	330	59.3	350	U
2,2'-OXYBIS(1-CHLOROPROPANE)	330	78	350	U
4-METHYLPHENOL	330	59.7	350	U
N-NITROSO-DI-N-PROPYLAMINE	330	57	350	U
HEXACHLOROETHANE	330	62	350	U
NITROBENZENE	330	55.7	350	U
ISOPHORONE	330	41	350	U
2-NITROPHENOL	330	83.7	350	U
2,4-DIMETHYLPHENOL	330	70.7	350	U
Bis(2-CHLOROETHOXY)METHANE	330	52	350	U
2,4-DICHLOROPHENOL	330	58.3	350	U
1,2,4-TRICHLOROBENZENE	330	60.3	350	U
NAPHTHALENE	330	64.7	350	U
4-CHLOROANILINE	330	65.3	350	U
HEXACHLOROBUTADIENE	330	64.7	350	U
4-CHLORO-3-METHYLPHENOL	330	47.7	350	U
2-METHYLNAPHTHALENE	330	52.7	350	U
HEXACHLOROCYCLOPENTADIENE	330	84.3	350	U
2,4,6-TRICHLOROPHENOL	330	36.3	350	U
2,4,5-TRICHLOROPHENOL	800	51.7	850	U
2-CHLORONAPHTHALENE	330	43	350	U
2-NITROANILINE	800	50	850	U
DIMETHYLPHTHALATE	330	22.3	350	U
ACENAPHTHYLENE	330	25	350	U
2,6-DINITROTOLUENE	330	53.7	350	U
3-NITROANILINE	800	69.7	850	U
ACENAPHTHENE	330	22	350	U
2,4-DINITROPHENOL	800	130	850	U
4-NITROPHENOL	800	127	850	U
DIBENZOFURAN	330	27.3	350	U
2,4-DINITROTOLUENE	330	45	350	U
DIETHYLPHTHALATE	330	20.3	350	U
4-CHLOROPHENYL-PHENYLETHER	330	22.3	350	U
FLUORENE	330	32	350	U
4-NITROANILINE	800	102	850	U
4,6-DINITRO-2-METHYLPHENOL	800	66	850	U
N-NITROSODIPHENYLAMINE	330	24.7	350	U
4-BROMOPHENYL-PHENYLETHER	330	23.3	350	U
HEXACHLOROBENZENE	330	36.7	350	U
PENTACLOROPHENOL	800	128	850	U
PHENANTHRENE	330	32.3	220	J
ANTHRACENE	330	28.7	350	U
CARBAZOLE	330	N/A	350	U
DI-N-BUTYLPHTHALATE	330	28.3	350	U
FLUORANTHENE	330	36.7	320	J
PYRENE	330	25.3	260	J
BUTYLBENZYLPHTHALATE	330	32.3	350	U
3,3'-DICHLOROBENZIDINE	330	114	350	U
BENZO(A)ANTHRACENE	330	27.7	130	J
CHRYSENE	330	14.7	150	J
Bis(2-ETHYLHEXYL)PHTHALATE	330	27.3	120	J
DI-N-OCTYLPHTHALATE	330	48.3	350	U
BENZO(B)FLUORANTHENE	330	116	120	J
BENZO(K)FLUORANTHENE	330	199	140	J
BENZO(A)PYRENE	330	20	130	J
INDENO(1,2,3-CD)PYRENE	330	35.7	350	U
DIBENZ(A,H)ANTHRACENE	330	47	350	U
BENZO(G,H,I)PERYLENE	330	43.3	350	U

SITE Cherry Point MCAS CTO 0165
CASE CHERR SDG CPT01
LABORATORY PACE INC. - HAMPTON, NH

CP-00878-3.13-08/01/94

TCL SEMIVOLATILE LOW CONCENTRATION SOIL ANALYSES (ug/Kg)

Halliburton NUS ID			01-SO-0106-COMP	01-SO-0710-COMP	01-SO-1114-COMP	01-SO-01-0001	01-SO-05-0001	01-SO-13-0001
PACE ID			041218	041219	041207	40830-29	40830-30	40830-31
ANALYTE	CRQL	MDL						
PHENOL	330	70	360 U	390 U	350 U	390 U	360 U	380 U
Bis(2-CHLOROETHYL)ETHER	330	69.7	360 U	390 U	350 U	390 U	360 U	380 U
2-CHLOROPHENOL	330	70.7	360 U	390 U	350 U	390 U	360 U	380 U
1,3-DICHLOROBENZENE	330	64	360 U	390 U	350 U	390 U	360 U	380 U
1,4-DICHLOROBENZENE	330	69	360 U	390 U	350 U	390 U	360 U	380 U
1,2-DICHLOROBENZENE	330	60	360 U	390 U	350 U	390 U	360 U	380 U
2-METHYLPHENOL	330	59.3	360 U	390 U	350 U	390 U	360 U	380 U
2,2'-OXYBIS(1-CHLOROPROPANE)	330	78	360 U	390 U	350 U	390 U	360 U	380 U
4-METHYLPHENOL	330	59.7	360 U	390 U	350 U	390 U	360 U	380 U
N-NITROSO-DI-N-PROPYLAMINE	330	57	360 U	390 U	350 U	390 U	360 U	380 U
HEXACHLOROETHANE	330	62	360 U	390 U	350 U	390 U	360 U	380 U
NITROBENZENE	330	55.7	360 U	390 U	350 U	390 U	360 U	380 U
ISOPHORONE	330	41	360 U	390 U	350 U	390 U	360 U	380 U
2-NITROPHENOL	330	83.7	360 U	390 U	350 U	390 U	360 U	380 U
2,4-DIMETHYLPHENOL	330	70.7	360 U	390 U	350 U	390 U	360 U	380 U
Bis(2-CHLOROETHOXY)METHANE	330	52	360 U	390 U	350 U	390 U	360 U	380 U
2,4-DICHLOROPHENOL	330	58.3	360 U	390 U	350 U	390 U	360 U	380 U
1,2,4-TRICHLOROBENZENE	330	60.3	360 U	390 U	350 U	390 U	360 U	380 U
NAPHTHALENE	330	64.7	360 U	390 U	350 U	390 U	360 U	380 U
4-CHLOROANILINE	330	65.3	360 U	390 U	350 U	390 U	360 U	380 U
HEXACHLOROBUTADIENE	330	64.7	360 U	390 U	350 U	390 U	360 U	380 U
4-CHLORO-3-METHYLPHENOL	330	47.7	360 U	390 U	350 U	390 U	360 U	380 U
2-METHYLNAPHTHALENE	330	52.7	360 U	390 U	350 U	390 U	360 U	380 U
HEXACHLOROCYCLOPENTADIENE	330	84.3	360 U	390 U	350 U	390 U	360 U	380 U
2,4,6-TRICHLOROPHENOL	330	36.3	360 U	390 U	350 U	390 U	360 U	380 U
2,4,5-TRICHLOROPHENOL	800	51.7	860 U	940 U	850 U	930 U	870 U	920 U
2-CHLORONAPHTHALENE	330	43	360 U	390 U	350 U	390 U	360 U	380 U
2-NITROANILINE	800	50	860 U	940 U	850 U	930 U	870 U	920 U
DIMETHYLPHTHALATE	330	22.3	360 U	390 U	350 U	390 U	360 U	360 U
ACENAPHTHYLENE	330	25	360 U	390 U	350 U	390 U	360 U	380 U
2,6-DINITROTOLUENE	330	53.7	360 U	390 U	350 U	390 U	360 U	380 U
3-NITROANILINE	800	69.7	860 U	940 U	850 U	930 U	870 U	920 U
ACENAPHTHENE	330	22	360 U	390 U	350 U	390 U	360 U	380 U
2,4-DINITROPHENOL	800	130	860 U	940 U	850 U	930 U	870 U	920 U
4-NITROPHENOL	800	127	860 U	940 U	850 U	930 U	870 U	920 U
DIBENZOFURAN	330	27.3	360 U	390 U	350 U	390 U	360 U	380 U
2,4-DINITROTOLUENE	330	45	360 U	390 U	350 U	390 U	360 U	380 U
DIETHYLPHTHALATE	330	20.3	360 U	390 U	350 U	390 U	360 U	380 U
4-CHLOROPHENYL-PHENYLETHER	330	22.3	360 U	390 U	350 U	390 U	360 U	380 U
FLUORENE	330	32	360 U	390 U	350 U	390 U	360 U	380 U
4-NITROANILINE	800	102	860 U	940 U	850 U	930 U	870 U	920 U
4,6-DINITRO-2-METHYLPHENOL	800	66	860 U	940 U	850 U	930 U	870 U	920 U
N-NITROSODIPHENYLAMINE	330	24.7	360 U	390 U	350 U	390 U	360 U	380 U
4-BROMOPHENYL-PHENYLETHER	330	23.3	360 U	390 U	350 U	390 U	360 U	380 U
HEXACHLOROBENZENE	330	36.7	360 U	390 U	350 U	390 U	360 U	380 U
PENTACLOROPHENOL	800	128	860 U	940 U	850 U	930 U	870 U	920 U
PHENANTHRENE	330	32.3	360 U	390 U	350 U	390 U	360 U	380 U
ANTHRACENE	330	28.7	360 U	390 U	350 U	390 U	360 U	380 U
CARBAZOLE	330	N/A	360 U	390 U	350 U	390 U	360 U	380 U
DI-N-BUTYLPHTHALATE	330	28.3	360 U	390 U	350 U	390 U	360 U	380 U
FLUORANTHENE	330	36.7	360 U	390 U	350 U	390 U	360 U	380 U
PYRENE	330	25.3	360 U	390 U	350 U	390 U	360 U	380 U
BUTYLBENZYLPHTHALATE	330	32.3	360 U	390 U	350 U	390 U	360 U	380 U
3,3'-DICHLOROBENZIDINE	330	114	360 U	390 U	350 U	390 U	360 U	380 U
BENZO(A)ANTHRACENE	330	27.7	360 U	390 U	350 U	390 U	360 U	380 U
CHRYSENE	330	14.7	360 U	390 U	350 U	390 U	360 U	380 U
Bis(2-ETHYLHEXYL)PHTHALATE	330	27.3	360 U	390 U	350 U	390 U	360 U	340 J
DI-N-OCTYLPHTHALATE	330	48.3	360 U	390 U	350 U	390 U	360 U	380 U
BENZO(B)FLUORANTHENE	330	116	360 U	390 U	350 U	390 U	360 U	380 U
BENZO(K)FLUORANTHENE	330	199	360 U	390 U	350 U	390 U	360 U	380 U
BENZO(A)PYRENE	330	20	360 U	390 U	350 U	390 U	360 U	360 U
INDENO(1,2,3-CD)PYRENE	330	35.7	360 U	390 U	350 U	390 U	360 U	380 U
DIBENZ(A,H)ANTHRACENE	330	47	360 U	390 U	350 U	390 U	360 U	380 U
BENZO(G,H,I)PERYLENE	330	43.3	360 U	390 U	350 U	390 U	360 U	380 U

SITE: Cherry Point MCAS, CTO 0165
CASE: CHERR, SDG: CPT01
LABORATORY: PACE INC. - HAMPTON, NH

CP-00878-3.13-08/01/94

TCL SEMIVOLATILE LOW CONCENTRATION SOIL A

Halliburton NUS ID: 02-SO-0106-COMP
PACE ID: 041408

ANALYTE	CRQL	MDL		
PHENOL	330	70	350	U
Bis(2-CHLOROETHYL)ETHER	330	69.7	350	U
2-CHLOROPHENOL	330	70.7	350	U
1,3-DICHLOROBENZENE	330	64	350	U
1,4-DICHLOROBENZENE	330	69	350	U
1,2-DICHLOROBENZENE	330	60	350	U
2-METHYLPHENOL	330	59.3	350	U
2,2'-OXYBIS(1-CHLOROPROPANE)	330	78	350	U
4-METHYLPHENOL	330	59.7	350	U
N-NITROSO-DI-N-PROPYLAMINE	330	57	350	U
HEXACHLOROETHANE	330	62	350	U
NITROBENZENE	330	55.7	350	U
ISOPHORONE	330	41	350	U
2-NITROPHENOL	330	83.7	350	U
2,4-DIMETHYLPHENOL	330	70.7	350	U
Bis(2-CHLOROETHOXY)METHANE	330	52	350	U
2,4-DICHLOROPHENOL	330	58.3	350	U
1,2,4-TRICHLOROBENZENE	330	60.3	350	U
NAPHTHALENE	330	64.7	350	U
4-CHLOROANILINE	330	65.3	350	U
HEXACHLOROBUTADIENE	330	64.7	350	U
4-CHLORO-3-METHYLPHENOL	330	47.7	350	U
2-METHYLNAPHTHALENE	330	52.7	350	U
HEXACHLOROCYCLOPENTADIENE	330	84.3	350	U
2,4,6-TRICHLOROPHENOL	330	36.3	350	U
2,4,5-TRICHLOROPHENOL	800	51.7	850	U
2-CHLORONAPHTHALENE	330	43	350	U
2-NITROANILINE	800	50	850	U
DIMETHYLPHTHALATE	330	22.3	350	U
ACENAPHTHYLENE	330	25	350	U
2,6-DINITROTOLUENE	330	53.7	350	U
3-NITROANILINE	800	69.7	850	U
ACENAPHTHENE	330	22	350	U
2,4-DINITROPHENOL	800	130	850	U
4-NITROPHENOL	800	127	850	U
DIBENZOFURAN	330	27.3	350	U
2,4-DINITROTOLUENE	330	45	350	U
DIETHYLPHTHALATE	330	20.3	350	U
4-CHLOROPHENYL-PHENYLETHER	330	22.3	350	U
FLUORENE	330	32	350	U
4-NITROANILINE	800	102	850	U
4,6-DINITRO-2-METHYLPHENOL	800	66	850	U
N-NITROSODIPHENYLAMINE	330	24.7	350	U
4-BROMOPHENYL-PHENYLETHER	330	23.3	350	U
HEXACHLOROBENZENE	330	36.7	350	U
PENTACLOROPHENOL	800	128	850	U
PHENANTHRENE	330	32.3	220	J
ANTHRACENE	330	28.7	350	U
CARBAZOLE	330	N/A	350	U
DI-N-BUTYLPHTHALATE	330	28.3	350	U
FLUORANTHENE	330	36.7	320	J
PYRENE	330	25.3	260	J
BUTYLBENZYLPHTHALATE	330	32.3	350	U
3,3'-DICHLOROBENZIDINE	330	114	350	U
BENZO(A)ANTHRACENE	330	27.7	130	J
CHRYSENE	330	14.7	150	J
Bis(2-ETHYLHEXYL)PHTHALATE	330	27.3	120	J
DI-N-OCTYLPHTHALATE	330	48.3	350	U
BENZO(B)FLUORANTHENE	330	116	120	J
BENZO(K)FLUORANTHENE	330	199	140	J
BENZO(A)PYRENE	330	20	130	J
INDENO(1,2,3-CD)PYRENE	330	35.7	350	U
DIBENZ(A,H)ANTHRACENE	330	47	350	U
BENZO(G,H,I)PERYLENE	330	43.3	350	U

SITE Cherry Point MCAS CTO 0165
CASE CHERR SDG CPT01
LABORATORY PACE INC - HAMPTON, NH

CP-00878-3.13-08/01/94

TCL SEMIVOLATILE LOW CONCENTRATION SOIL A

Halliburton NUS ID			02-SO-01-0001	02-SB-02-0001	02-SO-03-0001	02-SO-04-0001	02-SO-05-0001	02-SO-05-0001-RE
PACE ID			40830-32	40830-33	40830-34	40830-35	40830-36	40830-36RE
NALYTE	CRQL	MDL						
PHENOL	330	70	360 U	350 U	370 U	350 U	350 U	350 U
Bis(2-CHLOROETHYL)ETHER	330	69.7	360 U	350 U	370 U	350 U	350 U	350 U
2-CHLOROPHENOL	330	70.7	360 U	350 U	370 U	350 U	350 U	350 U
1,3-DICHLOROBENZENE	330	64	360 U	350 U	370 U	350 U	350 U	350 U
1,4-DICHLOROBENZENE	330	69	360 U	350 U	370 U	350 U	350 U	350 U
1,2-DICHLOROBENZENE	330	60	360 U	350 U	370 U	350 U	350 U	350 U
2-METHYLPHENOL	330	59.3	360 U	350 U	370 U	350 U	350 U	350 U
2,2'-OXYBIS(1-CHLOROPROPANE)	330	78	360 U	350 U	370 U	350 U	350 U	350 U
4-METHYLPHENOL	330	59.7	360 U	350 U	370 U	350 U	350 U	350 U
N-NITROSO-DI-N-PROPYLAMINE	330	57	360 U	350 U	370 U	350 U	350 U	350 U
HEXACHLOROETHANE	330	62	360 U	350 U	370 U	350 U	350 U	350 U
NITROBENZENE	330	55.7	360 U	350 U	370 U	350 U	350 U	350 U
ISOPHORONE	330	41	360 U	350 U	370 U	350 U	350 U	350 U
2-NITROPHENOL	330	83.7	360 U	350 U	370 U	350 U	350 U	350 U
2,4-DIMETHYLPHENOL	330	70.7	360 U	350 U	370 U	350 U	350 U	350 U
Bis(2-CHLOROETHOXY)METHANE	330	52	360 U	350 U	370 U	350 U	350 U	350 U
2,4-DICHLOROPHENOL	330	58.3	360 U	350 U	370 U	350 U	350 U	350 U
1,2,4-TRICHLOROBENZENE	330	60.3	360 U	350 U	370 U	350 U	350 U	350 U
NAPHTHALENE	330	64.7	360 U	350 U	370 U	350 U	350 U	350 U
4-CHLOROANILINE	330	65.3	360 U	350 U	370 U	350 U	350 U	350 U
HEXACHLOROBUTADIENE	330	64.7	360 U	350 U	370 U	350 U	350 U	350 U
4-CHLORO-3-METHYLPHENOL	330	47.7	360 U	350 U	370 U	350 U	350 U	350 U
2-METHYLNAPHTHALENE	330	52.7	360 U	350 U	370 U	350 U	350 U	350 U
HEXACHLOROCYCLOPENTADIENE	330	84.3	360 U	350 U	370 U	350 U	350 U	350 U
2,4,6-TRICHLOROPHENOL	330	36.3	360 U	350 U	370 U	350 U	350 U	350 U
2,4,5-TRICHLOROPHENOL	800	51.7	870 U	840 U	890 U	860 U	850 U	850 U
2-CHLORONAPHTHALENE	330	43	360 U	350 U	370 U	350 U	350 U	350 U
2-NITROANILINE	800	50	870 U	840 U	890 U	860 U	850 U	850 U
DIMETHYLPHTHALATE	330	22.3	360 U	350 U	370 U	350 U	350 U	350 U
ACENAPHTHYLENE	330	25	360 U	350 U	370 U	350 U	350 U	350 U
2,6-DINITROTOLUENE	330	53.7	360 U	350 U	370 U	350 U	350 U	350 U
3-NITROANILINE	800	69.7	870 U	840 U	890 U	860 U	850 U	850 U
ACENAPHTHENE	330	22	360 U	350 U	370 U	350 U	350 U	350 U
2,4-DINITROPHENOL	800	130	870 U	840 U	890 U	860 U	850 U	850 U
4-NITROPHENOL	800	127	870 U	840 U	890 U	860 U	850 U	850 U
DIBENZOFURAN	330	27.3	360 U	350 U	370 U	350 U	350 U	350 U
2,4-DINITROTOLUENE	330	45	360 U	350 U	370 U	350 U	350 U	350 U
DIETHYLPHTHALATE	330	20.3	360 U	350 U	370 U	350 U	350 U	350 U
-CHLOROPHENYL-PHENYLETHER	330	22.3	360 U	350 U	370 U	350 U	350 U	350 U
.UORENE	330	32	360 U	350 U	370 U	350 U	350 U	350 U
+-NITROANILINE	800	102	870 U	840 U	890 U	860 U	850 U	850 U
4,6-DINITRO-2-METHYLPHENOL	800	66	870 U	840 U	890 U	860 U	850 U	850 U
N-NITROSODIPHENYLAMINE	330	24.7	360 U	350 U	370 U	350 U	350 U	350 U
4-BROMOPHENYL-PHENYLETHER	330	23.3	360 U	350 U	370 U	350 U	350 U	350 U
HEXACHLOROBENZENE	330	36.7	360 U	350 U	370 U	350 U	350 U	350 U
PENTACLOROPHENOL	800	128	870 U	840 U	890 U	860 U	850 U	850 U
PHENANTHRENE	330	32.3	100 J	350 U	370 U	170 J	350 U	350 U
ANTHRACENE	330	28.7	360 U	350 U	370 U	350 U	350 U	350 U
CARBAZOLE	330	N/A	360 U	350 U	370 U	350 U	350 U	350 U
DI-N-BUTYLPHTHALATE	330	28.3	360 U	350 U	370 U	350 U	350 U	350 U
FLUORANTHENE	330	36.7	160 J	160 J	370 U	340 J	350 U	350 U
PYRENE	330	25.3	130 J	170 J	370 U	400	350 U	350 U
BUTYLBENZYLPHTHALATE	330	32.3	360 U	350 U	370 U	350 U	350 U	350 U
3,3'-DICHLOROBENZIDINE	330	114	360 U	350 U	370 U	350 U	350 U	350 U
BENZO(A)ANTHRACENE	330	27.7	360 U	100 J	370 U	170 J	350 U	350 U
CHRYSENE	330	14.7	360 U	100 J	370 U	220 J	350 U	350 U
Bis(2-ETHYLHEXYL)PHTHALATE	330	27.3	360 U	350 U	370 U	210 J	92 J	110 J
DI-N-OCTYLPHTHALATE	330	48.3	360 U	350 U	370 U	350 U	350 UJ	350 U
BENZO(B)FLUORANTHENE	330	116	56 J	94 J	370 U	160 J	350 UJ	350 U
BENZO(K)FLUORANTHENE	330	199	71 J	150 J	370 U	210 J	350 UJ	350 U
BENZO(A)PYRENE	330	20	61 J	120 J	370 U	190 J	350 UJ	350 U
INDENO(1,2,3-CD)PYRENE	330	35.7	360 U	350 U	370 U	83 J	350 UJ	350 U
DIBENZ(A,H)ANTHRACENE	330	47	360 U	350 U	370 U	350 U	350 UJ	350 U
BENZO(G,H,I)PERYLENE	330	43.3	360 U	350 U	370 U	99 J	350 UJ	350 U

SITE: Cherry Point MCAS, CTO 0165
CASE: CHERR, SDG: CPT01
LABORATORY: PACE INC - HAMPTON, NH

CP-00878-3.13-08/01/94

TCL SEMIVOLATILE LOW CONCENTRATION SOIL A

Halliburton NUS ID:			02-SO-06-0001	02-SO-07-0001	03-SO-0106-COMP	04-SO-0104-COMP	04-SO-0507-COMP	04-SO-0811-COMP
PACE ID:			40830-37	40830-38	042108	041306	042214	042217
ANALYTE	CRQL	MDL						
PHENOL	330	70	370 U	730 U	380 U	370 U	360 U	360 U
Bis(2-CHLOROETHYL)ETHER	330	69.7	370 U	730 U	380 U	370 U	360 U	360 U
2-CHLOROPHENOL	330	70.7	370 U	730 U	380 U	370 U	360 U	360 U
1,3-DICHLOROBENZENE	330	64	370 U	730 U	380 U	370 U	360 U	360 U
1,4-DICHLOROBENZENE	330	69	370 U	730 U	380 U	370 U	360 U	360 U
1,2-DICHLOROBENZENE	330	60	370 U	730 U	380 U	370 U	360 U	360 U
2-METHYLPHENOL	330	59.3	370 U	730 U	380 U	370 U	360 U	360 U
2,2'-OXYBIS(1-CHLOROPROPANE)	330	78	370 U	730 U	380 U	370 U	360 U	360 U
4-METHYLPHENOL	330	59.7	370 U	730 U	380 U	370 U	360 U	360 U
N-NITROSO-DI-N-PROPYLAMINE	330	57	370 U	730 U	380 U	370 U	360 U	360 U
HEXACHLOROETHANE	330	62	370 U	730 U	380 U	370 U	360 U	360 U
NITROBENZENE	330	55.7	370 U	730 U	380 U	370 U	360 U	360 U
ISOPHORONE	330	41	370 U	730 U	380 U	370 U	360 U	360 U
2-NITROPHENOL	330	83.7	370 U	730 U	380 U	370 U	360 U	360 U
2,4-DIMETHYLPHENOL	330	70.7	370 U	730 U	380 U	370 U	360 U	360 U
Bis(2-CHLOROETHOXY)METHANE	330	52	370 U	730 U	380 U	370 U	360 U	360 U
2,4-DICHLOROPHENOL	330	58.3	370 U	730 U	380 U	370 U	360 U	360 U
1,2,4-TRICHLOROBENZENE	330	60.3	370 U	730 U	380 U	370 U	360 U	360 U
NAPHTHALENE	330	64.7	370 U	730 U	380 U	370 U	360 U	360 U
4-CHLOROANILINE	330	65.3	370 U	730 U	380 U	370 U	360 U	360 U
HEXACHLOROBUTADIENE	330	64.7	370 U	730 U	380 U	370 U	360 U	360 U
4-CHLORO-3-METHYLPHENOL	330	47.7	370 U	730 U	380 U	370 U	360 U	360 U
2-METHYLNAPHTHALENE	330	52.7	370 U	730 U	380 U	370 U	360 U	360 U
HEXACHLOROCYCLOPENTADIENE	330	84.3	370 U	730 U	380 U	370 U	360 U	360 U
2,4,6-TRICHLOROPHENOL	330	36.3	370 U	730 U	380 U	370 U	360 U	360 U
2,4,5-TRICHLOROPHENOL	800	51.7	900 U	1800 U	910 U	900 U	860 U	880 U
2-CHLORONAPHTHALENE	330	43	370 U	730 U	380 U	370 U	360 U	360 U
2-NITROANILINE	800	50	900 U	1800 U	910 U	900 U	880 U	880 U
DIMETHYLPHTHALATE	330	22.3	370 U	730 U	380 U	370 U	360 U	360 U
ACENAPHTHYLENE	330	25	370 U	730 U	380 U	370 U	360 U	360 U
2,6-DINITROTOLUENE	330	53.7	370 U	730 U	380 U	370 U	360 U	360 U
3-NITROANILINE	800	69.7	900 U	1800 U	910 U	900 U	860 U	880 U
ACENAPHTHENE	330	22	370 UJ	100 J	380 U	370 U	360 U	360 U
2,4-DINITROPHENOL	800	130	900 U	1800 U	910 U	900 U	860 U	880 U
4-NITROPHENOL	800	127	900 U	1800 U	910 U	900 U	860 U	880 U
DIBENZOFURAN	330	27.3	370 U	730 U	380 U	370 U	360 U	360 U
2,4-DINITROTOLUENE	330	45	370 U	730 U	380 U	370 U	360 U	360 U
DIETHYLPHTHALATE	330	20.3	370 U	730 U	380 U	370 U	360 U	36[illegible]
4-CHLOROPHENYL-PHENYLETHER	330	22.3	370 U	730 U	380 U	370 U	360 U	3[illegible]
FLUORENE	330	32	370 UJ	110 J	380 U	370 U	360 U	3[illegible]
4-NITROANILINE	800	102	900 U	1800 U	910 U	900 U	860 U	86[illegible]
4,6-DINITRO-2-METHYLPHENOL	800	66	900 U	1800 U	910 U	900 U	860 U	880 U
N-NITROSODIPHENYLAMINE	330	24.7	370 U	730 U	380 U	370 U	360 U	360 U
4-BROMOPHENYL-PHENYLETHER	330	23.3	370 U	730 U	380 U	370 U	360 U	360 U
HEXACHLOROBENZENE	330	36.7	370 U	730 U	380 U	370 U	360 U	360 U
PENTACLOROPHENOL	800	128	900 U	1800 U	910 U	900 U	860 U	880 U
PHENANTHRENE	330	32.3	700	1300	380 U	370 U	360 U	360 U
ANTHRACENE	330	28.7	190 J	420 J	380 U	370 U	360 U	360 U
CARBAZOLE	330	N/A	82 J	110 J	380 U	370 U	360 U	360 U
DI-N-BUTYLPHTHALATE	330	28.3	370 U	730 U	380 U	370 U	360 U	360 U
FLUORANTHENE	330	36.7	1400	3700	380 U	370 U	360 U	360 U
PYRENE	330	25.3	1300	3400	380 U	370 U	360 U	360 U
BUTYLBENZYLPHTHALATE	330	32.3	80 J	730 UJ	380 U	370 U	360 U	360 U
3,3'-DICHLOROBENZIDINE	330	114	370 U	730 U	380 U	370 U	360 U	360 U
BENZO(A)ANTHRACENE	330	27.7	850	2600	380 U	370 U	360 U	360 U
CHRYSENE	330	14.7	850	2400	380 U	370 U	360 U	360 U
Bis(2-ETHYLHEXYL)PHTHALATE	330	27.3	700 J	770 J	380 U	370 U	360 U	360 U
DI-N-OCTYLPHTHALATE	330	48.3	370 U	730 U	380 U	370 U	360 U	360 U
BENZO(B)FLUORANTHENE	330	116	830 J	2900 J	380 U	370 U	360 U	360 U
BENZO(K)FLUORANTHENE	330	199	700 J	1400 J	380 U	370 U	360 U	360 U
BENZO(A)PYRENE	330	20	760	2400	380 U	370 U	360 U	360 U
INDENO(1,2,3-CD)PYRENE	330	35.7	300 J	970	380 U	370 U	360 U	360 U
DIBENZ(A,H)ANTHRACENE	330	47	98 J	370 J	380 U	370 U	360 U	360 U
BENZO(G,H,I)PERYLENE	330	43.3	280 J	960 J	380 U	370 U	360 U	360 U

SITE Cherry Point MCAS, CTO 0165
CASE CHERR SDG CPT01
LABORATORY PACE INC - HAMPTON, NH

CP-00878-3.13-08/01/94

TCL SEMIVOLATILE LOW CONCENTRATION SOIL A

Halliburton NUS ID:			04-SO-1215-COMP
PACE ID			042215
			FIELD DUPLI(
NALYTE	CRQL	MDL	
PHENOL	330	70	360 U
Bis(2-CHLOROETHYL)ETHER	330	69.7	360 U
2-CHLOROPHENOL	330	70.7	360 U
1,3-DICHLOROBENZENE	330	64	360 U
1,4-DICHLOROBENZENE	330	69	360 U
1,2-DICHLOROBENZENE	330	60	360 U
2-METHYLPHENOL	330	59.3	360 U
2,2'-OXYBIS(1-CHLOROPROPANE)	330	78	360 U
4-METHYLPHENOL	330	59.7	360 U
N-NITROSO-DI-N-PROPYLAMINE	330	57	360 U
HEXACHLOROETHANE	330	62	360 U
NITROBENZENE	330	55.7	360 U
ISOPHORONE	330	41	360 U
2-NITROPHENOL	330	83.7	360 U
2,4-DIMETHYLPHENOL	330	70.7	360 U
Bis(2-CHLOROETHOXY)METHANE	330	52	360 U
2,4-DICHLOROPHENOL	330	58.3	360 U
1,2,4-TRICHLOROBENZENE	330	60.3	360 U
NAPHTHALENE	330	64.7	360 U
4-CHLOROANILINE	330	65.3	360 U
HEXACHLOROBUTADIENE	330	64.7	360 U
4-CHLORO-3-METHYLPHENOL	330	47.7	360 U
2-METHYLNAPHTHALENE	330	52.7	360 U
HEXACHLOROCYCLOPENTADIENE	330	84.3	360 U
2,4,6-TRICHLOROPHENOL	330	36.3	360 U
2,4,5-TRICHLOROPHENOL	800	51.7	880 U
2-CHLORONAPHTHALENE	330	43	360 U
2-NITROANILINE	800	50	880 U
DIMETHYLPHTHALATE	330	22.3	360 U
ACENAPHTHYLENE	330	25	360 U
2,6-DINITROTOLUENE	330	53.7	360 U
3-NITROANILINE	800	69.7	880 U
ACENAPHTHENE	330	22	360 U
2,4-DINITROPHENOL	800	130	880 U
4-NITROPHENOL	800	127	880 U
DIBENZOFURAN	330	27.3	360 U
2,4-DINITROTOLUENE	330	45	360 U
DIETHYLPHTHALATE	330	20.3	360 U
-CHLOROPHENYL-PHENYLETHER	330	22.3	360 U
_UORENE	330	32	360 U
4-NITROANILINE	800	102	880 U
4,6-DINITRO-2-METHYLPHENOL	800	66	880 U
N-NITROSODIPHENYLAMINE	330	24.7	360 U
4-BROMOPHENYL-PHENYLETHER	330	23.3	360 U
HEXACHLOROBENZENE	330	36.7	360 U
PENTACLOROPHENOL	800	128	880 U
PHENANTHRENE	330	32.3	360 U
ANTHRACENE	330	28.7	360 U
CARBAZOLE	330	N/A	360 U
DI-N-BUTYLPHTHALATE	330	28.3	360 U
FLUORANTHENE	330	36.7	360 U
PYRENE	330	25.3	360 U
BUTYLBENZYLPHTHALATE	330	32.3	360 U
3,3'-DICHLOROBENZIDINE	330	114	360 U
BENZO(A)ANTHRACENE	330	27.7	360 U
CHRYSENE	330	14.7	360 U
Bis(2-ETHYLHEXYL)PHTHALATE	330	27.3	360 U
DI-N-OCTYLPHTHALATE	330	48.3	360 U
BENZO(B)FLUORANTHENE	330	116	360 U
BENZO(K)FLUORANTHENE	330	199	360 U
BENZO(A)PYRENE	330	20	360 U
INDENO(1,2,3-CD)PYRENE	330	35.7	360 U
DIBENZ(A,H)ANTHRACENE	330	47	360 U
BENZO(G,H,I)PERYLENE	330	43.3	360 U

SITE Cherry Point MCAS, CTO 0165
CASE CHERR, SDG CPT01
LABORATORY PACE INC. - HAMPTON, NH

CP-00878-3.13-08/01/94

TCL SEMIVOLATILE LOW CONCENTRATION SOIL A

Halliburton NUS ID			04-SO-1618-COMP	04-SO-10-0001	04-SO-12-0001	04-SO-15-0001	04-SO-16-0001	05-SO-15-COMP
PACE ID			042216	40830-42	40830-41	40830-40	40830-43	040911
			CATE SAMPLES					
ANALYTE	CRQL	MDL						
PHENOL	330	70	370 U	350 U	360 U	370 U	370 U	400 U
Bis(2-CHLOROETHYL)ETHER	330	69.7	370 U	350 U	360 U	370 U	370 U	400 U
2-CHLOROPHENOL	330	70.7	370 U	350 U	360 U	370 U	370 U	400 U
1,3-DICHLOROBENZENE	330	64	370 U	350 U	360 U	370 U	370 U	400 U
1,4-DICHLOROBENZENE	330	69	370 U	350 U	360 U	370 U	370 U	400 U
1,2-DICHLOROBENZENE	330	60	370 U	350 U	360 U	370 U	370 U	400 U
2-METHYLPHENOL	330	59.3	370 U	350 U	360 U	370 U	370 U	400 U
2,2'-OXYBIS(1-CHLOROPROPANE)	330	78	370 U	350 U	360 U	370 U	370 U	400 U
4-METHYLPHENOL	330	59.7	370 U	350 U	360 U	370 U	370 U	400 U
N-NITROSO-DI-N-PROPYLAMINE	330	57	370 U	350 U	360 U	370 U	370 U	400 U
HEXACHLOROETHANE	330	62	370 U	350 U	360 U	370 U	370 U	400 U
NITROBENZENE	330	55.7	370 U	350 U	360 U	370 U	370 U	400 U
ISOPHORONE	330	41	370 U	350 U	360 U	370 U	370 U	400 U
2-NITROPHENOL	330	83.7	370 U	350 U	360 U	370 U	370 U	400 U
2,4-DIMETHYLPHENOL	330	70.7	370 U	350 U	360 U	370 U	370 U	400 U
Bis(2-CHLOROETHOXY)METHANE	330	52	370 U	350 U	360 U	370 U	370 U	400 U
2,4-DICHLOROPHENOL	330	58.3	370 U	350 U	360 U	370 U	370 U	400 U
1,2,4-TRICHLOROBENZENE	330	60.3	370 U	350 U	360 U	370 U	370 U	400 U
NAPHTHALENE	330	64.7	370 U	350 U	360 U	370 U	370 U	400 U
4-CHLOROANILINE	330	65.3	370 U	350 U	360 U	370 U	370 U	400 U
HEXACHLOROBUTADIENE	330	64.7	370 U	350 U	360 U	370 U	370 U	400 U
4-CHLORO-3-METHYLPHENOL	330	47.7	370 U	350 U	360 U	370 U	370 U	400 U
2-METHYLNAPHTHALENE	330	52.7	370 U	350 U	360 U	370 U	370 U	400 U
HEXACHLOROCYCLOPENTADIENE	330	84.3	370 U	350 U	360 U	370 U	370 U	400 U
2,4,6-TRICHLOROPHENOL	330	36.3	370 U	350 U	360 U	370 U	370 U	400 U
2,4,5-TRICHLOROPHENOL	800	51.7	900 U	840 U	880 U	890 U	890 U	970 U
2-CHLORONAPHTHALENE	330	43	370 U	350 U	360 U	370 U	370 U	400 U
2-NITROANILINE	800	50	900 U	840 U	880 U	890 U	890 U	970 U
DIMETHYLPHTHALATE	330	22.3	370 U	350 U	360 U	370 U	370 U	400 U
ACENAPHTHYLENE	330	25	370 U	350 U	360 U	370 U	370 U	400 U
2,6-DINITROTOLUENE	330	53.7	370 U	350 U	360 U	370 U	370 U	400 U
3-NITROANILINE	800	69.7	900 U	840 U	880 U	890 U	890 U	970 U
ACENAPHTHENE	330	22	370 U	350 U	360 U	370 U	370 U	400 U
2,4-DINITROPHENOL	800	130	900 U	840 U	880 U	890 U	890 U	970 U
4-NITROPHENOL	800	127	900 U	840 U	880 U	890 U	890 U	970 U
DIBENZOFURAN	330	27.3	370 U	350 U	360 U	370 U	370 U	400 U
2,4-DINITROTOLUENE	330	45	370 U	350 U	360 U	370 U	370 U	400 U
DIETHYLPHTHALATE	330	20.3	370 U	350 U	360 U	370 U	370 U	400 U
4-CHLOROPHENYL-PHENYLETHER	330	22.3	370 U	350 U	360 U	370 U	370 U	400 U
FLUORENE	330	32	370 U	350 U	360 U	370 U	370 U	400 U
4-NITROANILINE	800	102	900 U	840 U	880 U	890 U	890 U	970 U
4,6-DINITRO-2-METHYLPHENOL	800	66	900 U	840 U	880 U	890 U	890 U	970 U
N-NITROSODIPHENYLAMINE	330	24.7	370 U	350 U	360 U	370 U	370 U	400 U
4-BROMOPHENYL-PHENYLETHER	330	23.3	370 U	350 U	360 U	370 U	370 U	400 U
HEXACHLOROBENZENE	330	36.7	370 U	350 U	360 U	370 U	370 U	400 U
PENTACLOROPHENOL	800	128	900 U	840 U	880 U	890 U	890 U	970 U
PHENANTHRENE	330	32.3	370 U	350 U	360 U	370 U	370 U	400 U
ANTHRACENE	330	28.7	370 U	350 U	360 U	370 U	370 U	400 U
CARBAZOLE	330	N/A	370 U	350 U	360 U	370 U	370 U	400 U
DI-N-BUTYLPHTHALATE	330	28.3	370 U	350 U	360 U	370 U	370 U	400 U
FLUORANTHENE	330	36.7	370 U	350 U	360 U	370 U	370 U	400 U
PYRENE	330	25.3	370 U	350 U	360 U	370 U	370 U	400 U
BUTYLBENZYLPHTHALATE	330	32.3	370 U	350 U	360 U	370 U	370 U	400 U
3,3'-DICHLOROBENZIDINE	330	114	370 U	350 U	360 U	370 U	370 U	400 U
BENZO(A)ANTHRACENE	330	27.7	370 U	350 U	360 U	370 U	370 U	400 U
CHRYSENE	330	14.7	370 U	350 U	360 U	370 U	370 U	400 U
Bis(2-ETHYLHEXYL)PHTHALATE	330	27.3	130 J	350 U	360 U	370 U	370 U	400 U
DI-N-OCTYLPHTHALATE	330	48.3	370 U	350 U	360 U	370 U	370 U	400 U
BENZO(B)FLUORANTHENE	330	116	370 U	350 U	360 U	370 U	370 U	400 U
BENZO(K)FLUORANTHENE	330	199	370 U	350 U	360 U	370 U	370 U	400 U
BENZO(A)PYRENE	330	20	370 U	350 U	360 U	370 U	370 U	400 U
INDENO(1,2,3-CD)PYRENE	330	35.7	370 U	350 U	360 U	370 U	370 U	400 U
DIBENZ(A,H)ANTHRACENE	330	47	370 U	350 U	360 U	370 U	370 U	400 U
BENZO(G,H,I)PERYLENE	330	43.3	370 U	350 U	360 U	370 U	370 U	400 U

SITE Cherry Point MCAS CTO 0165
CASE CHERR SDG CPT01
LABORATORY PACE INC - HAMPTON, NH

CP-00878-3.13-08/01/94

TCL SEMIVOLATILE LOW CONCENTRATION SOIL A

Halliburton NUS ID			05-SO-0611-COMP		05-SO-03-0001	
PACE ID			040914		40830-44	
ANALYTE	CRQL	MDL				
PHENOL	330	70	370	U	370	U
Bis(2-CHLOROETHYL)ETHER	330	69.7	370	U	370	U
2-CHLOROPHENOL	330	70.7	370	U	370	U
1,3-DICHLOROBENZENE	330	64	370	U	370	U
1,4-DICHLOROBENZENE	330	69	370	U	370	U
1,2-DICHLOROBENZENE	330	60	370	U	370	U
2-METHYLPHENOL	330	59.3	370	U	370	U
2,2'-OXYBIS(1-CHLOROPROPANE)	330	78	370	U	370	U
4-METHYLPHENOL	330	59.7	370	U	370	U
N-NITROSO-DI-N-PROPYLAMINE	330	57	370	U	370	U
HEXACHLOROETHANE	330	62	370	U	370	U
NITROBENZENE	330	55.7	370	U	370	U
ISOPHORONE	330	41	370	U	370	U
2-NITROPHENOL	330	83.7	370	U	370	U
2,4-DIMETHYLPHENOL	330	70.7	370	U	370	U
Bis(2-CHLOROETHOXY)METHANE	330	52	370	U	370	U
2,4-DICHLOROPHENOL	330	58.3	370	U	370	U
1,2,4-TRICHLOROBENZENE	330	60.3	370	U	370	U
NAPHTHALENE	330	64.7	370	U	370	U
4-CHLOROANILINE	330	65.3	370	U	370	U
HEXACHLOROBUTADIENE	330	64.7	370	U	370	U
4-CHLORO-3-METHYLPHENOL	330	47.7	370	U	370	U
2-METHYLNAPHTHALENE	330	52.7	370	U	370	U
HEXACHLOROCYCLOPENTADIENE	330	84.3	370	U	370	U
2,4,6-TRICHLOROPHENOL	330	36.3	370	U	370	U
2,4,5-TRICHLOROPHENOL	800	51.7	890	U	900	U
2-CHLORONAPHTHALENE	330	43	370	U	370	U
2-NITROANILINE	800	50	890	U	900	U
DIMETHYLPHTHALATE	330	22.3	370	U	370	U
ACENAPHTHYLENE	330	25	370	U	370	U
2,6-DINITROTOLUENE	330	53.7	370	U	370	U
3-NITROANILINE	800	69.7	890	U	900	U
ACENAPHTHENE	330	22	370	U	370	U
2,4-DINITROPHENOL	800	130	890	U	900	U
4-NITROPHENOL	800	127	890	U	900	U
DIBENZOFURAN	330	27.3	370	U	370	U
2,4-DINITROTOLUENE	330	45	370	U	370	U
DIETHYLPHTHALATE	330	20.3	370	U	370	U
4-CHLOROPHENYL-PHENYLETHER	330	22.3	370	U	370	U
LUORENE	330	32	370	U	370	U
4-NITROANILINE	800	102	890	U	900	U
4,6-DINITRO-2-METHYLPHENOL	800	66	890	U	900	U
N-NITROSODIPHENYLAMINE	330	24.7	370	U	370	U
4-BROMOPHENYL-PHENYLETHER	330	23.3	370	U	370	U
HEXACHLOROBENZENE	330	36.7	370	U	370	U
PENTACLOROPHENOL	800	128	890	U	900	U
PHENANTHRENE	330	32.3	370	U	370	U
ANTHRACENE	330	28.7	370	U	370	U
CARBAZOLE	330	N/A	370	U	370	U
DI-N-BUTYLPHTHALATE	330	28.3	370	U	370	U
FLUORANTHENE	330	36.7	370	U	370	U
PYRENE	330	25.3	370	U	370	U
BUTYLBENZYLPHTHALATE	330	32.3	370	U	370	U
3,3'-DICHLOROBENZIDINE	330	114	370	U	370	U
BENZO(A)ANTHRACENE	330	27.7	370	U	370	U
CHRYSENE	330	14.7	370	U	370	U
Bis(2-ETHYLHEXYL)PHTHALATE	330	27.3	370	U	370	U
DI-N-OCTYLPHTHALATE	330	48.3	370	U	370	U
BENZO(B)FLUORANTHENE	330	116	370	U	370	U
BENZO(K)FLUORANTHENE	330	199	370	U	370	U
BENZO(A)PYRENE	330	20	370	U	370	U
INDENO(1,2,3-CD)PYRENE	330	35.7	370	U	370	U
DIBENZ(A,H)ANTHRACENE	330	47	370	U	370	U
BENZO(G,H,I)PERYLENE	330	43.3	370	U	370	U

CLIENT ID			01-SO-0106-COMP	01-SO-0710-COMP	01-SO-1114-COMP	01-SO-01-0001	01-SO-02-0001	01-SO-03-0001	01-SO-04-0001	01-SO-05-0001	01-SO-06-0001	01-SO-07-0001
LABORATORY ID			041218	041219	041207	15311 7	15443.1DL	15442 3	15441.5DL	15311 7DL	15440 7	15436 9
ANALYTE	CRQL	MDL										
ALPHA-BHC	1.7	0.867	1.8 UJ	2 UJ	1.8 UJ	2 U	19 U	1.9 UJ	17 U	17 U	2 UJ	2 U
BETA-BHC	1.7	0 67	1.8 UJ	2 UJ	1.8 UJ	2 U	19 U	1.9 UJ	17 U	17 U	2 UJ	2 U
DELTA-BHC	1.7	0 5	1.8 UJ	2 UJ	1.8 UJ	2 U	19 U	1.9 UJ	17 U	17 U	2 UJ	2 U
GAMMA-BHC(LINDANE)	1.7	0 467	1.8 UJ	2 UJ	1.8 UJ	2 U	19 U	1.9 UJ	17 U	17 U	2 UJ	2 U
HEPTACHLOR	1.7	0.566	1.8 UJ	2 UJ	1.8 UJ	2 U	19 U	1.9 UJ	17 U	17 U	2 UJ	2 U
ALDRIN	1.7	0.367	1.8 UJ	2.6 J	1.8 UJ	2 U	19 U	1.9 UJ	17 U	17 U	2 UJ	2 U
HEPTACHLOR EPOXIDE	1.7	0.633	1.8 UJ	2.6 J	1.8 UJ	2 U	19 U	1.9 UJ	17 U	17 U	2 UJ	2 U
ENDOSULFAN I	1.7	0.733	1.8 UJ	2 UJ	1.8 UJ	2 U	19 U	1.9 UJ	17 U	17 U	2 UJ	2 U
DIELDRIN	3.3	1.367	13 J	3.9 UJ	3.5 UJ	3.9 U	36 U	3.6 UJ	34 U	120 J	3.9 UJ	3.6 J
4,4'-DDE	3.3	1.367	300	3.9 UJ	3.5 UJ	5.4	69	13 J	290	48	3.9 UJ	4.4
ENDRIN	3.3	1.6	3.6 UJ	3.9 UJ	3.5 UJ	3.9 U	36 U	3.6 UJ	34 U	32 U	3.9 UJ	1.8 J
ENDOSULFAN II	3.3	1.6	3.6 UJ	3.9 UJ	3.5 UJ	3.9 U	36 U	3.6 UJ	34 U	32 U	3.9 UJ	3.9 U
4,4'-DDD	3.3	1.333	18 J	6.7 J	3.5 UJ	1.1 UJ	36 U	1.7 J	39 J	21 J	4.4 J	3.5 J
ENDOSULFAN SULFATE	3.3	3.2	3.6 UJ	3.9 UJ	3.5 UJ	3.9 U	36 U	3.6 UJ	34 U	32 U	3.9 UJ	3.9 U
4,4'-DDT	3.3	1.5	330	3.9 UJ	3.5 UJ	8.1 J	110 J	19 J	250 J	28 J	6.2 J	2.4 J
METHOXYCHLOR	17	6.266	18 UJ	20 UJ	18 UJ	20 U	190 U	19 UJ	170 U	170 U	20 UJ	2[illegible] U
ENDRIN KETONE	3.3	1.067	3.6 UJ	3.9 UJ	3.5 UJ	3.9 U	36 U	3.6 UJ	34 U	32 U	3.9 UJ	3.9 U
ENDRIN ALDEHYDE	3.3	1.866	3.6 UJ	3.9 UJ	3.5 UJ	3.9 U	36 U	3.6 UJ	34 U	32 U	3.9 UJ	3.9 U
ALPHA-CHLORDANE	1.7	0.7	1.8 UJ	23 J	1.8 UJ	2 U	19 U	1.9 UJ	17 U	17 U	2 UJ	1[illegible] U
GAMMA-CHLORDANE	1.7	0.666	1.8 UJ	24 J	1.8 UJ	2 U	19 U	1.9 UJ	17 U	17 U	2 UJ	[illegible] U
TOXAPHENE	170	17.33	180 UJ	200 UJ	180 UJ	200 U	1900 U	190 UJ	1700 U	1700 U	200 UJ	20[illegible] U
AROCLOR-1016	33	6.333	36 UJ	39 UJ	35 UJ	39 U	360 U	36 UJ	340 U	320 U	39 UJ	39 U
AROCLOR-1221	67	8	72 UJ	80 UJ	70 UJ	80 U	730 U	73 UJ	690 U	650 U	78 UJ	8[illegible] U
AROCLOR-1232	33	3.666	36 UJ	39 UJ	35 UJ	39 U	360 U	36 UJ	340 U	320 U	39 UJ	39 U
AROCLOR-1242	33	4	36 UJ	39 UJ	35 UJ	39 U	360 U	36 UJ	340 U	320 U	39 UJ	39 U
AROCLOR-1248	33	8.333	36 UJ	39 UJ	35 UJ	39 U	360 U	36 UJ	340 U	320 U	39 UJ	39 U
AROCLOR-1254	33	6.999	36 UJ	39 UJ	35 UJ	39 U	360 U	36 UJ	340 U	320 U	39 UJ	39 U
AROCLOR-1260	33	5	36 UJ	39 UJ	35 UJ	39 U	360 U	36 UJ	340 U	320 U	39 UJ	39 U

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CLIENT ID			01 01-SO-08-0001	01-SO-09-0001	01-SO-10-0001	01-SO-13-0001	02-SO-0106-COMP	02-SO-01-0001	02-SO-02-0001	02-SO-03-0001	02-SO-04-0001	02-SO-05-0001
LABORATORY ID			15437 7	15438 5	15439 3	15313 3	041408	15314 1	15315	15298 6	15299 4DL	15300 1
ANALYTE	CRQL	MDL										
ALPHA-BHC	1 7	0 867	2 U	2 U	1 9 U	1 9 U	1 8 UJ	1.8 U	1 8 U	1 9 UJ	16 UJ	1 8
BETA-BHC	1 7	0 67	2 U	2 U	1 9 U	1 9 U	1 8 UJ	1 8 U	1 8 U	1 9 UJ	16 UJ	1 8
DELTA-BHC	1 7	0 5	2 U	2 U	1 9 U	1 9 U	1 8 UJ	1 8 U	1 8 U	1 9 UJ	16 UJ	1 8
GAMMA-BHC(LINDANE)	1 7	0 467	2 U	2 U	1 9 U	1 9 U	1 8 UJ	1.8 U	1 8 U	1 9 UJ	16 UJ	1 8
HEPTACHLOR	1 7	0 566	2 U	2 U	1 9 U	1 9 U	1.8 UJ	1 8 U	1 8 U	1 9 UJ	16 UJ	1 8
ALDRIN	1 7	0 367	2 U	2 U	1 9 U	1 9 U	1 8 UJ	1 8 U	1 8 U	1 9 UJ	16 UJ	1 8
HEPTACHLOR EPOXIDE	1 7	0 633	2 U	2 U	1 9 U	1 9 U	1.8 UJ	1.8 U	1 8 U	1 9 UJ	16 UJ	1 8
ENDOSULFAN I	1 7	0 733	2 U	2 U	1.9 U	1 9 U	1 8 UJ	1.8 U	1 8 U	0 52 J	16 UJ	1 8
DIELDRIN	3 3	1 367	3 3 J	2 6 J	2 3 J	3.8 U	3 5 UJ	0 96 J	5 4 J	0 86 J	32 UJ	3 5
4,4'-DDE	3 3	1 367	5 4	2 8 J	2 9 J	3 8 U	3.5 UJ	3.6 U	3 5 U	0 11 J	32 UJ	3 5
ENDRIN	3 3	1 6	1 7 J	3 9 U	3 7 U	3 8 U	3 5 UJ	3.6 U	3 5 U	1 3 J	32 UJ	3 5
ENDOSULFAN II	3 3	1.6	3 9 U	3 9 U	3 7 U	3 8 U	3.5 UJ	3.6 U	3.5 U	3 7 UJ	32 UJ	3 5
4,4'-DDD	3 3	1.333	5	1 8 J	3.7 U	3 8 U	3.5 UJ	3.6 U	3 5 U	3 7 UJ	32 UJ	3 5
ENDOSULFAN SULFATE	3 3	3 2	3.9 U	3 9 U	3 7 U	3 8 U	3.5 UJ	3.6 U	3.5 U	3.7 UJ	32 UJ	3 5
4,4'-DDT	3 3	1.5	8.2 J	2 J	3 7 U	2 9 J	3.5 UJ	3.6 U	3 5 U	3.7 UJ	32 UJ	5
METHOXYCHLOR	17	6 266	20 U	20 U	19 U	19 U	18 UJ	18 U	18 U	19 UJ	160 UJ	8
ENDRIN KETONE	3.3	1 067	3.9 U	3 9 U	3 7 U	3 8 U	3 5 UJ	3 6 U	3 5 U	3.7 UJ	32 UJ	5
ENDRIN ALDEHYDE	3.3	1.866	3 9 U	3 9 U	3.7 U	3 8 U	3.5 UJ	3 6 U	3 5 U	3.7 UJ	32 UJ	5
ALPHA-CHLORDANE	1.7	0.7	1 5 J	0 64 J	1 2 J	1 9 U	1 8 UJ	1 8 U	1.8 U	1 9 UJ	16 UJ	8
GAMMA-CHLORDANE	1 7	0.666	2 U	2 U	1 9 U	1 9 U	1 8 UJ	1 8 U	1 8 U	1 9 UJ	16 UJ	8
TOXAPHENE	170	17.33	200 U	200 U	190 U	190 U	180 UJ	180 U	180 U	190 UJ	1600 UJ	0
AROCLOR-1016	33	6.333	39 U	39 U	37 U	38 U	35 UJ	36 U	35 U	37 UJ	320 UJ	5
AROCLOR-1221	67	8	79 U	78 U	76 U	77 U	70 UJ	72 U	70 U	74 UJ	640 UJ	1
AROCLOR-1232	33	3 666	39 U	39 U	37 U	38 U	35 UJ	36 U	35 U	37 UJ	320 UJ	
AROCLOR-1242	33	4	39 U	39 U	37 U	38 U	35 UJ	36 U	35 U	37 UJ	320 UJ	
AROCLOR-1248	33	8 333	39 U	39 U	37 U	38 U	35 UJ	36 U	35 U	37 UJ	320 UJ	
AROCLOR-1254	33	6 999	39 U	39 U	37 U	38 U	35 UJ	36 U	35 U	37 U	320 UJ	
AROCLOR-1260	33	5	39 U	39 U	37 U	38 U	1300 J	76 J	430	45 J	3100 J	

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CLIENT ID			01	02-SO-06-0001	02-SO-07-0001	03-SO-0106-COMP	04-SO-0104-COMP	04-SO-0507-COMP	04-SO-0811-COMP	04-SO-1215-COMP	04-SO-1618-COMP	04-SO-10-0001
LABORATORY ID				15301 0DL	15302.8DL	042108	041306	042214	042217	042215	042216	15305 2
										FIELD DUPLICATE SAMPLES		
ANALYTE	CRQL	MDL										
ALPHA-BHC	1.7	0.867	U	17 U	17 U	1.9 UJ	2.1 U	2 UJ	2 UJ	2.1 UJ	2.1 UJ	1.8 U
BETA-BHC	1.7	0.67	U	17 U	17 U	1.9 UJ	2.1 U	2 UJ	2 UJ	2.1 UJ	2.1 UJ	1.8 U
DELTA-BHC	1.7	0.5	U	17 U	17 U	1.9 UJ	2.1 U	2 UJ	2 UJ	2.1 UJ	2.1 UJ	1.8 U
GAMMA-BHC(LINDANE)	1.7	0.467	U	17 U	17 U	1.9 UJ	2.1 U	2 UJ	2 UJ	2.1 UJ	2.1 UJ	1.8 U
HEPTACHLOR	1.7	0.566	U	17 U	17 U	1.9 UJ	2.1 U	2 UJ	2 UJ	2.1 UJ	2.1 UJ	1.8 U
ALDRIN	1.7	0.367	U	17 U	17 U	1.9 UJ	2.1 U	2 UJ	2 UJ	2.1 UJ	2.1 UJ	1.8 U
HEPTACHLOR EPOXIDE	1.7	0.633	U	17 U	17 U	1.9 UJ	2.1 U	2 UJ	2 UJ	2.1 UJ	2.1 UJ	1.8 U
ENDOSULFAN I	1.7	0.733	U	17 U	17 U	1.9 UJ	2.1 U	2 UJ	2 UJ	2.1 UJ	2.1 UJ	1.8 U
DIELDRIN	3.3	1.367	U	33 U	33 U	3.8 UJ	4.1 U	3.9 UJ	4 UJ	4 UJ	4.1 UJ	3.5 U
4,4'-DDE	3.3	1.367	U	33 U	33 U	3.8 UJ	4.1 U	3.9 UJ	4 UJ	4 UJ	4.1 UJ	3.5 U
ENDRIN	3.3	1.6	U	33 U	33 U	3.8 UJ	4.1 U	3.9 UJ	4 UJ	4 UJ	4.1 UJ	3.5 U
ENDOSULFAN II	3.3	1.6	U	33 U	33 U	3.8 UJ	4.1 U	3.9 UJ	4 UJ	4 UJ	4.1 UJ	3.5 U
4,4'-DDD	3.3	1.333	U	33 U	33 U	3.8 UJ	4.1 U	3.9 UJ	4 UJ	4 UJ	4.1 UJ	3.5 U
ENDOSULFAN SULFATE	3.3	3.2	U	33 U	33 U	3.8 UJ	4.1 U	3.9 UJ	4 UJ	4 UJ	4.1 UJ	3.5 U
4,4'-DDT	3.3	1.5	U	33 U	33 U	3.8 UJ	4.1 U	3.9 UJ	4 UJ	4 UJ	4.1 UJ	3.5 U
METHOXYCHLOR	17	6.266	U	170 U	170 U	19 UJ	21 UJ	20 UJ	20 UJ	21 UJ	21 UJ	18 U
ENDRIN KETONE	3.3	1.067	U	33 U	33 U	3.8 UJ	4.1 UJ	3.9 UJ	4 UJ	4 UJ	4.1 UJ	3.5 U
ENDRIN ALDEHYDE	3.3	1.866	U	33 U	33 U	3.8 UJ	4.1 U	3.9 UJ	4 UJ	4 UJ	4.1 UJ	3.5 U
ALPHA-CHLORDANE	1.7	0.7	U	17 U	17 U	1.9 UJ	2.1 U	2 UJ	2 UJ	2.1 UJ	2.1 UJ	1.8 U
GAMMA-CHLORDANE	1.7	0.666	J	17 U	17 U	1.9 UJ	2.1 U	2 UJ	2 UJ	2.1 UJ	2.1 UJ	1.8 U
TOXAPHENE	170	17.33	U	1700 U	1700 U	190 UJ	210 U	200 UJ	200 UJ	210 UJ	210 UJ	180 U
AROCLOR-1016	33	6.333	U	330 U	330 U	38 UJ	41 U	39 UJ	40 UJ	40 UJ	41 UJ	35 U
AROCLOR-1221	67	8	U	680 U	670 U	76 UJ	83 U	79 UJ	80 UJ	82 UJ	83 U	71 U
AROCLOR-1232	33	3.666	U	330 U	330 U	38 UJ	41 U	39 UJ	40 UJ	40 UJ	41 UJ	35 U
AROCLOR-1242	33	4	U	330 U	330 U	38 UJ	41 U	39 UJ	40 UJ	40 UJ	41 UJ	35 U
AROCLOR-1248	33	8.333	U	330 U	330 U	38 UJ	41 U	39 UJ	40 UJ	40 UJ	41 UJ	35 U
AROCLOR-1254	33	6.999	U	330 U	330 U	38 UJ	41 U	39 UJ	40 UJ	40 UJ	41 UJ	35 U
AROCLOR-1260	33	5	U	790 J	700	38 UJ	41 U	39 UJ	40 UJ	40 UJ	41 UJ	35 U

CLIENT ID			01 04-SO-12-0001	04-SO-15-0001	04-SO-16-0001	05-SO-15-COMP	05-SO-0611-COMP	05-SO-03-0001
LABORATORY ID			15304.4	15303.6	15306	040911	040914	15307.9
ANALYTE	CRQL	MDL						
ALPHA-BHC	1.7	0.867	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U	1.9 U
BETA-BHC	1.7	0.67	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U	1.9 U
DELTA-BHC	1.7	0.5	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U	1.9 U
GAMMA-BHC(LINDANE)	1.7	0.467	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U	1.9 U
HEPTACHLOR	1.7	0.566	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U	1.9 U
ALDRIN	1.7	0.367	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U	1.9 U
HEPTACHLOR EPOXIDE	1.7	0.633	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U	1.9 U
ENDOSULFAN I	1.7	0.733	1.9 U	1.9 U	1.9 U	2.1 U	9.2 J	1.9 U
DIELDRIN	3.3	1.367	3.6 U	3.7 U	3.7 U	4 U	3.8 U	3.7 U
4,4'-DDE	3.3	1.367	3.6 U	3.7 U	3.7 U	4 U	3.8 U	3.7 U
ENDRIN	3.3	1.6	3.6 U	3.7 U	3.7 U	4 U	3.8 U	3.7 U
ENDOSULFAN II	3.3	1.6	3.6 U	3.7 U	3.7 U	4 U	3.8 U	3.7 U
4,4'-DDD	3.3	1.333	3.6 U	3.7 U	3.7 U	4 U	3.8 U	3.7 U
ENDOSULFAN SULFATE	3.3	3.2	3.6 U	3.7 U	3.7 U	4 U	3.8 U	3.7 U
4,4'-DDT	3.3	1.5	3.6 U	3.7 U	3.7 U	4 U	3.8 U	3.7 U
METHOXYCHLOR	17	6.266	19 U	19 U	19 U	21 U	19 U	19 U
ENDRIN KETONE	3.3	1.067	3.6 U	3.7 U	3.7 U	4 U	3.8 U	3.7 U
ENDRIN ALDEHYDE	3.3	1.866	3.6 U	3.7 U	3.7 U	4 U	3.8 U	3.7 U
ALPHA-CHLORDANE	1.7	0.7	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U	1.9 U
GAMMA-CHLORDANE	1.7	0.666	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U	1.9 U
TOXAPHENE	170	17.33	190 U	190 U	190 U	210 U	190 U	190 U
AROCLOR-1016	33	6.333	36 U	37 U	37 U	40 U	38 U	37 U
AROCLOR-1221	67	8	73 U	75 U	74 U	82 U	77 U	75 U
AROCLOR-1232	33	3.666	36 U	37 U	37 U	40 U	38 U	37 U
AROCLOR-1242	33	4	36 U	37 U	37 U	40 U	38 U	37 U
AROCLOR-1248	33	8.333	36 U	37 U	37 U	40 U	38 U	37 U
AROCLOR-1254	33	6.999	36 U	37 U	37 U	40 U	38 U	37 U
AROCLOR-1260	33	5	36 UJ	37 U	28 J	40 U	38 U	37 U

SITE M.CAS Cherry Point, NC CTO 165
LABORATORY. PACE INC.

LOW CONCENTRATION TAL METAL
SOIL ANALYSES (mg/Kg)

Halliburton NUS ID:			01-SO-01-0305	01-SO-02-0305	01-SO-03-0305	01-SO-04-0305	01-SO-05-0305	01-SO-06-0305	01-SO-07-0305	01-SO-08-0305	01-SO-15-0305	01-SO-09-0305	01-SO-10-0305
PACE ID:			041209	041210	041211	041212	041510	041213	041214	041215	041216	041217	041201
										FIELD DUPLICATE SAMPLES			
ANALYTE	CRDL	IDL											
ALUMINUM	40	2	9410 J	7860 J	6750 J	5870 J	5320 J	8140 J	9380 J	8150 J	4410 J	6250 J	4640 J
ANTIMONY	12	2.2	R	R	R	R	R	R	R	R	R	R	R
ARSENIC	2	0.2	1.3 U	0.72 U	0.91 U	1.4 U	0.84 U	1.3 U	0.92 U	1.9 U	2.9 U	4.4	4.9
BARIUM	40	0.2	14.8 U	19.6 U	11.8 U	10.3 U	20.2	15.3 U	16.1 U	11.4 U	8.1 U	14.1 U	11.5 U
BERYLLIUM	1	0.2	0.08 U	0.16 U	0.09 U	0.08 U	0.15 U	0.08 U	0.07 U	0.07 U	0.09 U	0.09 U	0.09 U
CADMIUM	1	0.2	0.34 U	0.32 U	0.49 U	0.45 U	0.25 U	0.41 U	0.39 U	0.37 U	0.47 U	0.46 U	0.45 U
CALCIUM	1000	1.6	753 J	79 J	1140 J	202 J	508	184 J	237 J	262 J	185 J	251 J	579
CHROMIUM	2	0.4	11.6	6.5	8	6.1	5.4 J	9.7	12.7	10.5	6.2	8.1	5[illegible]
COBALT	10	0.4	0.72 U	0.48 U	0.78 U	0.68 U	0.47 U	0.63 U	0.81 U	0.57 U	0.72 U	0.69 U	0.6[illegible] U
COPPER	5	0.4	1.5 U	0.62 U	0.61 U	0.55 U	0.37 UJ	0.54 U	0.78 U	0.46 U	0.59 U	0.56 U	0.5[illegible] U
IRON	20	0.6	6280	2840	3730	2790	3080 J	5080	6080	4540	2870	4110	30[illegible] J
LEAD	0.6	0.2	5	5.8	3.8	3.5	7	4.8	5.5	4.7	3.3	3.8	4[illegible]
MAGNESIUM	1000	2.6	352	99.1	179	174	126	217	285	309	152	256	1[illegible]
MANGANESE	3	0.2	8.8	7.4	5.7	4.7 U	3.9 J	5.4 U	8.1	5.7	3.5 U	4.6 U	5[illegible]
MERCURY	0.1	0.1	0.02 UJ	0.03 J	0.03 UJ	0.03 U	0.03 J	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.[illegible] UJ
NICKEL	8	1.6	1.9 U	1.6 U	2.4 U	2.2 U	1.4	2 U	2.1 U	1.9 U	2.4 U	2.3 U	2[illegible] U
POTASSIUM	1000	49	333 U	114 U	219 U	162 U	169	255 U	379 U	338 U	208 U	220 U	2[illegible] U
SELENIUM	1	0.2	0.42 U	0.39 U	0.61 U	0.55 U	0.51 U	0.51 U	0.48 U	0.46 U	0.59 U	0.56 U	0.5[illegible] U
SILVER	2	0.4	0.58 U	0.54 U	0.84 U	0.76 U	0.49 U	0.7 U	0.67 U	0.64 U	0.81 U	0.78 U	0.[illegible] U
SODIUM	1000	1.8	16.6 U	17.2 U	13.6 U	7.2 U	20.1 U	11.2 U	16 U	11.5 U	11.5 U	5.4 U	[illegible] U
THALLIUM	2	0.2	0.34 U	0.32 U	0.49 U	0.45 U	0.41 U	0.41 U	0.39 U	0.37 U	0.47 U	0.46 U	0.[illegible] U
VANADIUM	10	0.4	15.2	6.3	9.6	6.8	7.6	11.9	14.2	12.7	7	10.5	[illegible]
ZINC	4	0.2	5.5 U	1.9 U	3.6 U	2.6 U	1.9 U	4.1 U	4.9 U	4.6 U	2.5 U	2.9 U	7[illegible] U
CYANIDE	1	0.05	0.08 U	0.11 U	0.11 U	0.12 U	0.11 U	0.12 U	0.09 U	0.11 U	0.11 U	0.1 U	0.[illegible] U

CD0078 3-09 01/94

SITE: MCAS Cherry Point, NC CTO 1(
LABORATORY PACE INC.

LOW CONCENTRATION TAL METAL
SOIL ANALYSES (mg/Kg)

Halliburton NUS ID:			01-SO-11-0305	01-SO-12-0305	01-SO-16-0305	01-SO-13-0305	01-SO-14-0305	01-SO-01-0001	01-SB-05-0001	01-SB-13-0001	02-SO-01-0305	02-SO-02-0305
PACE ID:			041202	041203	041204	041205	041206	40830-058	40830-059	40830-060	041401	041402
				FIELD DUPLICATE SAMPLES								FIELD DUPLI(
ANALYTE	CRDL	IDL										
ALUMINUM	40	2	9780 J	5710 J	6680 J	3570 J	7780 J	7990 J	4110 J	1760 J	3310 J	4950 J
ANTIMONY	12	2.2	R	R	R	R	R	2.3 UJ	2.8 U	2.7 UJ	R	R
ARSENIC	2	0.2	1.6	0.93	1	1	0.74	1.5	1.5	1.3 U	1.8 U	1.5 U
BARIUM	40	0.2	16	17.9	17.2	11.7 U	14.1 U	5.4 U	11.7	0.19 UJ	7.8 U	7.8 U
BERYLLIUM	1	0.2	0.08 U	0.07 U	0.09 U	0.08 U	0.08 U	0.14 U	0.08 U	0.21 U	0.07 U	0.03 U
CADMIUM	1	0.2	0.42 U	0.36 U	0.45 U	0.42 U	0.44 U	0.28 UJ	0.4 U	0.64 U	0.26 U	0.18 U
CALCIUM	1000	1.6	603	1100	1480	25800	1940	86800 J	13400 J	235000 J	9900	761
CHROMIUM	2	0.4	13.7	6	7.7	4.7	11.5	11.5	6.2	34	5.1 J	5.6 J
COBALT	10	0.4	0.79 U	0.54 U	0.69 U	0.63 U	0.71 U	0.68 U	0.62 U	6.8	0.46 U	0.4 U
COPPER	5	0.4	0.71 U	0.44 U	0.73 U	0.52 U	0.55 U	2.1 U	5.3 U	13	0.38 UJ	0.26 UJ
IRON	20	0.6	6350 J	2120 J	2890 J	1520 J	4460 J	5290 J	2430 J	5310 J	2290 J	2200 J
LEAD	0.6	0.2	6.7	4.7	5.9	26.5	5.5	5.8 U	11.8 U	7.3 U	10.6	3.4
MAGNESIUM	1000	2.6	343	106	151	479	249 B	1440	278	2940	257	205
MANGANESE	3	0.2	5.7	4.2	5	14.9	4.3	12.1 J	12.5 J	42.1 J	7.1 J	9.7 J
MERCURY	0.1	0.1	0.04 UJ	0.02 UJ	0.05 UJ	0.03 UJ	0.03 UJ	0.05 J	0.03 R	0.04 J	0.04 UJ	0.04 UJ
NICKEL	8	1.6	2.1 U	1.8 U	2.2 U	2.1 U	2.2 U	3 J	2.6	65 J	1.2	2
POTASSIUM	1000	49	403 U	185 U	272 U	219 U	268 U	478 U	280 U	622 U	148	160
SELENIUM	1	0.2	0.58	0.44 U	0.56 U	0.52	0.54 U	0.31 J	0.62 U	0.35 J	0.52 U	0.43 U
SILVER	2	0.4	0.73 U	0.61 U	0.78 U	0.71 U	0.75 U	0.47 R	0.54 U	1.2 J	0.5 U	0.34 U
SODIUM	1000	1.8	17.7 U	27.5 U	24 U	29.6 U	19.2 U	83.2	31.9 U	229	20.9 U	9.9 U
THALLIUM	2	0.2	0.42 U	0.36 U	0.45 U	0.42 U	0.44 U	1.1 U	0.62 U	1.9 U	0.42 U	0.28 U
VANADIUM	10	0.4	17.1	5.3	6.3	3.9 U	9.9	13 J	5.9 J	8.9 J	5.7	6.9
ZINC	4	0.2	5.7 U	1.7 U	3 U	3.5 U	3.8 U	8 U	10.9 U	175 J	4.9 U	15.7
CYANIDE	1	0.05	0.13 U	0.11 U	0.15 U	0.08 U	0.11 U	1.4 J	0.06 UJ	4.6 J	0.12 U	0.11 U

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SITE: MCAS Cherry Point, NC CTO 1t
LABORATORY PACE INC.

LOW CONCENTRATION TAL METAL
SOIL ANALYSES (mg/Kg)

Halliburton NUS ID:			02-SO-07-0305	02-SO-03-0305	02-SO-04-0305	02-SO-05-0305	02-SO-06-0305	02-SB-01-0001	02-SB-02-0001	02-SB-06-0001	02-SB-07-0001	03-SO-01-0305	03-SO-07-0305
PACE ID:			041403	041406	041407	041404	041405	40830-061	40830-062	40830-063	40830-064	042106	042107
			CATE SAMPLES									FIELD DUPLICATE SAMPLES	
ANALYTE	CRDL	IDL											
ALUMINUM	40	2	5270 J	2330 J	2440 J	6490 J	2640 J	3280 J	5040 J	2480 J	2580 J	4880 J	2380
ANTIMONY	12	2.2	R	R	R	R	R	2.6 UJ	2.8 UJ	2.6 UJ	2.5 UJ	1.9 UJ	1.2
ARSENIC	2	0.2	1.9 U	0.61 U	0.5 U	2.2 U	5.2	1.2	1.2	0.98	1.4	1.2 U	0.36
BARIUM	40	0.2	8.5 U	3.1 U	3.4 U	12.9	3.7 U	6.3 U	11.7	7.5 U	11.4	7.5 U	3.3
BERYLLIUM	1	0.2	0.04 U	0.05 U	0.04 U	0.04 U	0.04 U	0.06 U	0.16 U	0.12 U	0.11 U	0.07 U	0.03
CADMIUM	1	0.2	0.29 U	0.3 U	0.25 U	0.27 U	0.27 U	0.31 UJ	0.34 UJ	2 J	2.2 J	0.28 U	0.18
CALCIUM	1000	1.6	4000	204	532	1020	227	10300 J	21100 J	54600 J	49600 J	21.6 U	17.2
CHROMIUM	2	0.4	7.2 J	3.6 U	3.6 U	8.8 J	4.8 J	4.8	7.2	14.9	17.6	6.7 U	4
COBALT	10	0.4	0.51 U	0.54 U	0.44 U	0.47 U	0.49 U	0.72 U	0.85 U	1.4 U	1.3 U	1.1 U	[illegible]
COPPER	5	0.4	0.42 UJ	0.44 UJ	0.36 UJ	0.39 UJ	0.4 UJ	1.8 U	2.1 U	17.9	8.3 U	1.1 U	37
IRON	20	0.6	3160 J	927 J	803 J	4670 J	2490 J	1990 J	2990 J	2880 J	2880 J	1630 J	[illegible]
LEAD	0.6	0.2	3.9	1.7 U	2.6	4	2.1	13.4	18.4	47.3	51.1	3.2 J	9
MAGNESIUM	1000	2.6	226	126	148	123	152	272	541	811	742	233	[illegible]
MANGANESE	3	0.2	3.9 J	2.5 U	4.4 J	1.7 U	3 J	6.5 J	26.2 J	18.5 J	17.6 J	5.2 U	[illegible]
MERCURY	0.1	0.1	0.02 UJ	0.04 UJ	0.03 UJ	0.05 J	0.05 UJ	0.03 R	0.5 J	0.03 R	0.06 J	0.03 U	[illegible]
NICKEL	8	1.6	1.7	1.5 U	2.5	1.3 U	1.7	1.8	1.9	14	19.9	3 U	[illegible]
POTASSIUM	1000	49	192	139 U	114 U	122 U	126 U	249 U	379 U	365 U	358 U	214	[illegible]
SELENIUM	1	0.2	0.62 U	0.61 U	0.67 U	0.53 U	0.55 U	0.61 U	0.26 J	0.63 U	0.6 U	R	[illegible]
SILVER	2	0.4	0.55 U	0.59 U	0.48 U	0.51 U	0.53 U	0.53 U	0.57 U	0.57 U	0.77 U	0.53 UJ	[illegible]
SODIUM	1000	1.6	12.3 U	5.5 U	10.3 U	13.5 U	4.5 U	30.4 U	56.7	73.7	83	9.8 U	[illegible]
THALLIUM	2	0.2	0.47 U	0.49 U	0.4 U	0.43 U	1.2 U	0.61 U	0.65 U	0.63 U	0.6 U	0.45 U	[illegible]
VANADIUM	10	0.4	8.9	2.8 U	2.9 U	7.3	9.1	4.8 J	8.3 J	6.1 J	6.7 J	5.4 U	[illegible]
ZINC	4	0.2	12.1	1.7 U	3.4 U	1.8 U	1.8 U	10.6 U	12.8	55.4	57.5	3.3 U	[illegible]
CYANIDE	1	0.05	0.1 U	0.11 U	0.08 U	0.09 U	0.12 U	0.06 UJ	0.06 UJ	0.08 UJ	0.07 UJ	0.12 U	[illegible]

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SITE: MCAS Cherry Point, NC CTO 1(
LABORATORY: PACE INC.

LOW CONCENTRATION TAL METAL
SOIL ANALYSES (mg/Kg)

Halliburton NUS ID:			03-SO-02-0305	03-SO-02-0709	03-SO-03-0305	03-SO-04-0305	03-SO-04-0709	03-SB-04-0001	04-SO-01-0305	04-SO-02-0305	04-SO-03-0305	04-SO-04-0305
PACE ID:			042104	042105	042101	042102	042103	40830-070	041301	041302	041305	041303 FIELD DUPLICA
ANALYTE	CRDL	IDL										
ALUMINUM	40	2 J	4000 J	6770 J	5070 J	7340 J	9130 J	6200 J	4170 J	10800 J	4180 J	4560 J
ANTIMONY	12	2.2 UJ	1.6 UJ	3.2 U	1.8 UJ	1.7 UJ	2 UJ	2.6 UJ	R	R	R	R
ARSENIC	2	0.2 U	0.6 U	0.94 U	0.84 U	0.93 U	1.6 U	0.42 U	1.2 U	4.4 U	2.9 U	4.6
BARIUM	40	0.2 U	8.5 U	21.1 U	8.3 U	12 U	18.7 U	10.5	12.8 U	13.8 U	6.3 U	6.2 U
BERYLLIUM	1	0.2 U	0.04 U	0.28 U	0.1 U	0.06 U	0.06 U	0.08 U	0.07 U	0.08 U	0.06 U	0.08 U
CADMIUM	1	0.2 U	0.24 U	0.22 U	0.27 U	0.26 U	0.29 U	0.32 UJ	0.39 U	0.44 U	0.31 U	0.41 U
CALCIUM	1000	1.6 U	97.6	136	4190	344	185	44700 J	108 J	271 J	479 J	345 J
CHROMIUM	2	0.4 U	5.2 U	8.8	5.5 U	8.5	11.8	7.6	5.4	14.8	5.2	6.4
COBALT	10	0.4 U	0.43 U	2.9 U	0.53 U	0.85 U	0.83 U	1.7 U	0.69 U	0.77 U	0.49 U	0.62 U
COPPER	5	0.4 U	0.7 U	2.2 U	0.89 U	1.3 U	2.5 U	1.2 U	0.48 U	1.7 U	0.39 U	0.51 U
IRON	20	0.6 J	2070 J	3450 J	2610 J	3950 J	4830 J	2900 J	2690	18000	2620	3460
LEAD	0.6	0.2 J	3.1 J	4.7 J	3.3 J	4.6 J	5.4 J	2.9 U	4.1	6.3	2.3	3.1
MAGNESIUM	1000	2.6	132	175	221 B	276	230	785	134	337	154	221
MANGANESE	3	0.2 U	4.6 U	7.5 J	18.4 J	6.7 J	6 J	10.9 J	5.1 U	6.1	4 U	4.9 U
MERCURY	0.1	0.1 U	0.04 U	0.03 U	0.05 U	0.04 U	0.04 U	0.11 J	0.03 UJ	0.03 UJ	0.02 UJ	0.03 UJ
NICKEL	8	1.6 U	1.5 U	3.8 U	1.6 U	2.4 U	2.4 U	1.4 U	1.9 U	2.2 U	1.5 U	2 U
POTASSIUM	1000	49	113	182	140	236	223	388 U	156 U	326 U	155 U	202 U
SELENIUM	1	0.2 R	R	R	R	R	R	0.62 U	0.48 U	1.1 U	0.39 U	0.66 U
SILVER	2	0.4 UJ	0.47 UJ	0.43 UJ	0.52 UJ	0.49 UJ	0.56 UJ	0.54 U	0.67 U	0.75 U	0.53 U	0.7 U
SODIUM	1000	1.8 U	9.3 U	22.8 U	35 U	20.5 U	20.4 U	103	9.4 U	14.3 U	8.8 U	9.2 U
THALLIUM	2	0.2 U	0.39 U	0.36 U	0.44 U	0.41 U	0.47 U	0.62 U	0.39 U	0.87 U	0.44 U	0.41 U
VANADIUM	10	0.4 U	5.7 U	11.6 U	6.9 U	10.8 U	15.4 U	8.6 J	7.2	27.8	5.7	8.1
ZINC	4	0.2 U	1.8 U	4.5 U	2.9 U	4.3 U	3.5 U	3.8 U	2.2 U	5.6 U	2.1 U	3.2 U
CYANIDE	1	0.05 U	0.11 U	0.12 U	0.11 U	0.1 U	0.1 U	0.06 UJ	0.09 U	0.11 U	1.1 U	0.11 U

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SITE: MCAS Cherry Point, NC CTO 1(
LABORATORY: PACE INC.

LOW CONCENTRATION TAL METAL
SOIL ANALYSES (mg/Kg)

Halliburton NUS ID:			04-SO-16-0305	04-SO-05-0305	04-SO-05-0709	04-SO-06-0305	04-SO-06-0709	04-SO-07-1525	04-SO-08-0305	04-SO-09-0305	04-SO-10-0305	04-SO-11-0305
PACE ID:			041304	041515	041516	041517	041518	042201	042213	042212	042210	042211
			ATE SAMPLES									
ANALYTE	CRDL	IDL										
ALUMINUM	40	2	3370 J	2270 J	579 J	5410 J	2570 J	1460 J	4120 J	1880 J	754 J	3160 J
ANTIMONY	12	2.2	R	R	R	R	R	1.5 UJ	1.6 UJ	1.8 UJ	1.4 UJ	1.7 UJ
ARSENIC	2	0.2	3.2 U	2 U	0.76 U	3.5	2.3 U	1.9 U	4	1.6 U	0.42 U	1.1 U
BARIUM	40	0.2	5.2 U	3.6 U	0.74 U	7 U	3.2 U	0.28 U	7.4 U	5.8 U	2.2 U	4.3 U
BERYLLIUM	1	0.2	0.08 U	0.04 U	0.04 U	0.08 U	0.06 U	0.06 U	0.05 U	0.04 U	0.03 U	0.04 U
CADMIUM	1	0.2	0.4 U	0.26 U	0.24 U	0.24 U	0.32 U	0.24 U	0.24 U	0.26 U	0.21 U	0.25 U
CALCIUM	1000	1.6	276 J	99.4	55.8	169	238	91600	468	570	100	451
CHROMIUM	2	0.4	5.1	3.2 U	1.4 U	8.5 J	4 U	4.6 U	6.4 U	3.1 U	1.3 U	2.7 U
COBALT	10	0.4	0.6 U	0.45 U	0.42 U	0.46 U	1 U	0.83 U	0.43 U	0.46 U	0.37 U	0.45 U
COPPER	5	0.4	0.49 U	0.38 UJ	0.35 UJ	0.35 UJ	0.46 UJ	0.99 U	0.35 U	0.38 U	0.31 U	0.37 U
IRON	20	0.6	2250	1570 J	550 J	3820 J	2540 J	1590 J	3500 J	753 J	303 J	427 J
LEAD	0.6	0.2	2.6	1.8 U	0.76 U	2.9	1.8 U	R	2.5 J	2.9 J	0.8 U	1.4 J
MAGNESIUM	1000	2.6	181	90.8	31.7 U	318	188	1010	212	38.2 U	39.4 U	31.9 U
MANGANESE	3	0.2	4.6 U	2.5 U	0.49 U	6.5 J	4.2 J	10.5 J	5.2 U	1.6 U	1.4 U	0.43 U
MERCURY	0.1	0.1	0.04 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.04 UJ	0.03 U	0.03 U	0.04 U	0.03 U	0.04
NICKEL	8	1.6	2 U	1.2 U	1.1 U	1.7	1.5 U	1.1 U	2.1 U	1.7 U	1 U	1.7 U
POTASSIUM	1000	49	169 U	147	108 U	311	269	171 J	185	123	95.5 U	136
SELENIUM	1	0.2	0.49 U	0.51 U	0.47 U	0.49 U	0.63 U	0.38 U	R	R	R	R
SILVER	2	0.4	0.68 U	0.49 U	0.46 U	0.47 U	0.61 U	0.44 UJ	0.46 UJ	0.5 UJ	0.4 UJ	0.49 UJ
SODIUM	1000	1.6	8.2 U	4.2 U	3.4 U	9.5 U	10.4 U	119 J	11.6 U	7.4 U	3.4 U	12.5 U
THALLIUM	2	0.2	0.4 U	0.42 U	0.38 U	0.39 U	0.51 U	1.1 U	0.39 U	0.42 U	0.34 U	0.41 U
VANADIUM	10	0.4	5.6	4.4 U	1.6 U	13.7	4.3 U	2.5 U	6.9 U	2.4 U	0.88 U	1.6 U
ZINC	4	0.2	2.3 U	1.2 U	0.39 U	4.1 U	2.4 U	26.4 J	2.8 U	1.3 U	9.6 U	0.52 U
CYANIDE	1	0.05	0.07 U	0.13 U	0.12 U	0.1 U	0.12 U	0.1 U	0.1 U	0.11 U	0.09	0.1 U

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SITE: MCAS Cherry Point, NC CTO 1(
LABORATORY: PACE INC.

LOW CONCENTRATION TAL METAL
SOIL ANALYSES (mg/Kg)

Halliburton NUS ID:			04-SO-12-0305	04-SO-17-0709	04-SO-12-0709	04-SO-13-0305	04-SO-13-0709	04-SO-14-0305	04-SO-14-0709	04-SO-18-0709	04-SO-15-0305	04-SO-15-0709
PACE ID:			042202	042203	042204	041511	041512	042205	042206	042207	042208	042209
				FIELD DUPLICATE SAMPLES					FIELD DUPLICATE SAMPLES			
ANALYTE	CRDL	IDL										
ALUMINUM	40	2	3990 J	7370 J	6730 J	4670 J	1940 J	6740 J	1780 J	1190 J	2450 J	4630 J
ANTIMONY	12	2.2	1.9 UJ	4.4 UJ	3.8 UJ	R	R	1.7 UJ	1.7 UJ	1.9 UJ	1.6 UJ	2 UJ
ARSENIC	2	0.2	1.3 U	2.3 U	1.2 U	1.5 U	0.51 U	3.4 U	0.57 U	0.55 U	0.52 U	4.2
BARIUM	40	0.2	10.2 U	57.8 U	74 U	8.6 U	10.5 U	9.5 U	6.8 U	6.3 U	26.3 U	10.6 U
BERYLLIUM	1	0.2	0.04 U	1.9 U	0.99 U	0.07 U	0.12 U	0.08 U	0.04 U	0.07 U	0.06 U	0.07 U
CADMIUM	1	0.2	0.28 U	0.66 U	0.56 U	0.25 U	0.26 U	0.25 U	0.25 U	0.28 U	0.24 U	0.3 U
CALCIUM	1000	1.6	6750	3740	3280	448	268	582	253	306	12600	491
CHROMIUM	2	0.4	5.9 U	9.5 U	7.7 U	6.1 J	3.5 U	8.9	2.4 U	1.8 U	3.6 U	6.8 U
COBALT	10	0.4	0.5 U	1.2 U	1 U	0.73 U	0.45 U	1.1 U	0.44 U	0.61 U	0.56 U	0.73 U
COPPER	5	0.4	0.41 U	6.4 U	0.83 U	0.36 UJ	0.37 UJ	0.38 U	0.36 U	0.4 U	3.6 U	0.44 U
IRON	20	0.6	2030 J	1880 J	2950 J	2040 J	432 J	4360 J	335 J	193 J	1670 J	2500 J
LEAD	0.6	0.2	3.2 J	10.1 J	10.7 J	3.7	2	3.1 J	1.8 J	1.2 U	3.4 J	2.3 J
MAGNESIUM	1000	2.6	206	306	367	223	123	380	49.2 U	25.4 U	254	237
MANGANESE	3	0.2	5.6 U	7.5 U	20.8 J	5.5 J	2.7 U	10.6 J	2.5 U	2.2 U	28.7 J	5.6 U
MERCURY	0.1	0.1	0.04 U	0.09 U	0.1	0.03 UJ	0.03 UJ	0.03 U	0.03 U	0.04 U	0.03 U	0.04 U
NICKEL	8	1.6	1.6 U	5.1 U	3.5 U	1.2 U	1.2 U	4.4 U	1.2 U	2.2 U	1.7 U	2.5 U
POTASSIUM	1000	49	129 U	300 U	258 U	251	213	338	125	126 U	168	257
SELENIUM	1	0.2	R	R	R	0.49 U	0.51 U	R	R	R	R	R
SILVER	2	0.4	0.54 UJ	1.3 UJ	1.1 UJ	0.47 U	0.49 U	0.48 UJ	0.48 UJ	0.53 UJ	0.46 UJ	0.58 UJ
SODIUM	1000	1.8	29.3 U	106 U	106	10.7 U	7.5 U	19.6 U	9.2 U	10.6 U	17.8 U	12.1 U
THALLIUM	2	0.2	0.46 U	1.1 U	0.91 U	0.4 U	0.41 U	0.4 U	0.4 U	0.44 U	0.39 U	0.49 U
VANADIUM	10	0.4	5.7 U	8.4 U	3.2 U	7.6	3.2 U	14.1 U	2.4 U	2 U	2.6 U	6 U
ZINC	4	0.2	2.2 U	2.4 U	2.4 U	2.9 U	1.2 U	6.6 U	1.1 U	0.88 U	8.9 U	3.3 U
CYANIDE	1	0.05	0.1 U	0.28 U	0.22 U	0.12 U	0.12 U	0.1 U	0.1 U	0.11 U	0.09 U	0.09 U

SITE: MCAS Cherry Point, NC CTO 1(
LABORATORY: PACE INC.

LOW CONCENTRATION TAL METAL
SOIL ANALYSES (mg/Kg)

Halliburton NUS ID:			04-SB-10-0001	04-SB-12-0001	04-SB-15-0001	04-SB-16-0001	05-SB-03-0001	05-SO-01-0204	05-SO-02-0305	05-SO-03-0305	05-SO-04-0305	05-SO-05-0305
PACE ID:			40830-068	40830-067	40830-066	40830-069	40830-071	040901	040902	040903	040904	040905
ANALYTE	CRDL	IDL										
ALUMINUM	40	2	1480 J	3370 J	5920 J	6180 J	3560 J	2210 J	3680 J	3160 J	7010 J	4950 J
ANTIMONY	12	2.2	2.7 UJ	4.8 U	2.5 U	3.4 U	2.7 UJ	R	R	R	R	R
ARSENIC	2	0.2	0.85 U	0.81 U	1.5	1.6 J	1.7	2.8	4.5	2.6	3.4	3.1
BARIUM	40	0.2	0.18 R	0.17 R	15.7	5.4 U	5 U	4.2 U	5.5 U	4.7 U	12.8 U	7.2 U
BERYLLIUM	1	0.2	0.07 U	0.08 U	0.1 U	0.12 U	0.08 U	0.07 U	0.08 U	0.08 U	0.07 U	0.07 U
CADMIUM	1	0.2	0.33 UJ	0.76 U	0.3 UJ	0.35 UJ	0.33 UJ	0.35 U	0.32 U	0.43 U	0.36 U	0.37 U
CALCIUM	1000	1.6	134000 J	124000 J	4620 J	84000 J	32800 J	56.9	457 U	41.1	240	61.5
CHROMIUM	2	0.4	3.6 J	6.2 J	8.6	9.7 J	6	3.6	5.4	4.1	8.4	6.4
COBALT	10	0.4	51.9	9.2	1.1 U	4.3 U	0.59 U	0.53 U	0.49 U	0.65 U	0.98 U	1 U
COPPER	5	0.4	1.8 U	2.5 U	1.6 U	1.9 U	1.1 U	0.43 U	0.73 U	0.53 U	0.73 U	0.81 U
IRON	20	0.6	2750 J	4140 J	3130 J	4410 J	2900 J	2040 J	2810 J	2680 J	4260	3080 J
LEAD	0.6	0.2	12 U	8.6 U	5.4 U	25.6	10.7 U	2.1	3.4	2.9	4.4	3.4
MAGNESIUM	1000	2.6	1390	1520	319	928	540	73.2	102	136	433	272
MANGANESE	3	0.2	10.9 J	9.4 J	9 J	9.2 J	8.4 J	1.5 U	3.3 U	3.7 U	12.5	8.1
MERCURY	0.1	0.1	0.03 R	0.03 R	0.03 R	0.03 R	0.04 J	0.03 UJ	0.03 UJ	0.04 UJ	0.04 UJ	0.03 UJ
NICKEL	8	1.6	1.4 U	1.3 U	2.1	1.9 R	1.4 U	1.7 U	1.6 U	2.1 U	2.7	1.9 U
POTASSIUM	1000	49	265 U	405 U	373	529 U	223 U	107 U	100 U	132 U	168 U	220 U
SELENIUM	1	0.2	0.26 J	0.19 J	0.57 U	0.68 R	0.65 U	0.43 U	0.4 U	0.53 U	0.44 U	0.46 U
SILVER	2	0.4	0.55 R	0.52 R	0.55 U	0.59 U	0.57 U	0.6 U	0.56 U	0.73 U	0.61 U	0.64 U
SODIUM	1000	1.6	136	123	37.6 U	110	62	5.5 U	8.8 U	6.5 U	12.1 U	6.2 U
THALLIUM	2	0.2	1.3 U	1.2 U	0.57 U	0.68 R	0.65 U	0.35 U	0.32 U	0.43 U	0.36 U	0.37 U
VANADIUM	10	0.4	1.8 J	5.7 J	8.5 J	9.9 J	6.8 J	4.9	6.7	5	9	6.2
ZINC	4	0.2	7.6 U	39 J	6.5 U	12.6 J	6.4 U	1.2 U	1.5 U	1.6 U	4.9 U	3.5 U
CYANIDE	1	0.05	0.06 UJ	0.06 UJ	0.08 UJ	0.06 J	0.07 UJ	0.1 U	0.13 U	0.09 U	0.1 U	0.08 U

CP-00878-3.13-08/01/94

SITE: MCAS Cherry Point, NC CTO 1(
LABORATORY: PACE INC

LOW CONCENTRATION TAL METAL
SOIL ANALYSES (mg/Kg)

Halliburton NUS ID:			05-SO-06-0305	05-SO-07-0305	05-SO-08-0305	05-SO-12-0305	05-SO-09-0305	05-SO-10-0305	05-SO-11-0305
PACE ID:			040906	040907	040908	040909	040910	041513	041514
					FIELD DUPLICATE SAMPLES				
ANALYTE	CRDL	IDL							
ALUMINUM	40	2	3130 J	5940 J	7440 J	4180 J	4120 J	332 J	2220 J
ANTIMONY	12	2.2	R	3.4 U	R	R	R	R	R
ARSENIC	2	0.2	2.2	3	4.4	2.6	2.2	1 U	0.95 U
BARIUM	40	0.2	4.4 U	12.9 U	11.7 U	9.4 U	7.4 U	0.69 U	6.2 U
BERYLLIUM	1	0.2	0.09 U	0.09 U	0.08 U	0.08 U	0.07 U	0.04 U	0.04 U
CADMIUM	1	0.2	0.45 U	0.46 U	0.44 U	0.42 U	0.38 U	0.27 U	0.24 U
CALCIUM	1000	1.6	34.5	600	734	4060	34.6	4.9 U	27.5 U
CHROMIUM	2	0.4	6	5.9	9.9	5.1	4.4	2 U	4.1 J
COBALT	10	0.4	0.69 U	0.7 U	2.1 U	3.4 U	0.58 U	0.49 U	0.42 U
COPPER	5	0.4	0.56 U	0.66 U	0.79 U	0.52 U	0.48 U	0.4 UJ	0.35 UJ
IRON	20	0.6	3360 J	2630 J	5820 J	2970 J	2830 J	1200 J	1930 J
LEAD	0.6	0.2	2.5	3.3	4.4	2.8	3	0.67 U	2
MAGNESIUM	1000	2.6	107	269	303	216	222	10.6 U	92.7
MANGANESE	3	0.2	1.5 U	7.7	8.6	5.5	5.9	1.6 U	8.5 J
MERCURY	0.1	0.1	0.03 UJ	0.04 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 J
NICKEL	8	1.6	2.2 U	2.3 U	2.2 U	2.1 U	1.9	1.3 U	1.1 J
POTASSIUM	1000	49	139 U	190 U	188 U	133 U	119 U	125 U	119
SELENIUM	1	0.2	0.56 U	0.57 U	0.55 U	0.52 U	0.48 U	0.55 U	0.53 U
SILVER	2	0.4	0.77 U	0.78 U	0.76 U	0.72 U	0.66 U	0.53 U	0.46 U
SODIUM	1000	1.8	8.4 U	14 U	20.9 U	15.8 U	8.2 U	3.9 U	6.9 U
THALLIUM	2	0.2	0.45 U	0.46 U	0.44 U	0.42 U	0.38 U	0.44 U	0.39 U
VANADIUM	10	0.4	8	6.3	12.7	5.8	4.7	3.7 U	4.9 U
ZINC	4	0.2	2 U	3.2 U	3.4 U	2 U	2.4 U	0.74 U	1.6 U
CYANIDE	1	0.05	0.11 U	0.09 U	0.08 U	0.09 U	0.09 U	0.11 U	0.11 U

CP-00878-3.13-08/01/94

SITE: Cherry Point MCAS, CTO 0165
LABORATORY: PACE INC. - HAMPTON. GP-00878-3.13-08/01/94

Total Petroleum Hydrocarbon Analyses (ppm)

Halliburton NUS ID:	PACE ID:	Total Gasoline		Total Diesel		Oil and Grease	
01-SO-01-0305	041209	16	U	46	UJ	290	U
01-SO-02-0305	041210	16	U	48	UJ	300	U
01-SO-03-0305	041211	16	U	46	UJ	280	U
01-SO-04-0305	041212	16	U	46	UJ	290	U
01-SO-05-0305	041510	17	U	47	UJ	310	J
01-SO-06-0305	041213	16	U	45	UJ	290	U
01-SO-07-0305	041214	16	U	45	UJ	290	U
01-SO-08-0305	041215	14	U	45	UJ	280	U
01-SO-09-0305	041217	16	U	44	UJ	290	U
01-SO-10-0305	041201	17	U	48	UJ	300	U
01-SO-11-0305	041202	17	U	47	UJ	290	U
01-SO-12-0305	041203	18	U	52	UJ	320	U
01-SO-13-0305	041205	14	U	43	UJ	270	U
01-SO-14-0305	041206	14	U	44	UJ	270	U
01-SO-15-0305	041216	15	U	45	UJ	270	U
01-SO-16-0305	041204	17	U	49	UJ	310	U
01-SO-01-0001	40830-016,	18	U	5.3		310	
01-SO-05-0001	40830-017,	16	U	4.2		270	U
01-SO-13-0001	40830-018,	18	U	48		760	
02-SO-01-0305	041401	15	U	45	UJ	280	U
02-SO-02-0305	041402	16	U	44	UJ	270	U
02-SO-03-0305	041406	17	U	46	UJ	290	U
02-SO-04-0305	041407	17	U	44	UJ	410	
02-SO-05-0305	041404	48		45	UJ	290	U
02-SO-06-0305	041405	16	U	43	UJ	270	U
02-SO-07-0305	041403	16	U	45	UJ	280	U
02-SO-01-0001	40830-019,	17	U	6.2		270	U
02-SO-02-0001	40830-020,	16	U	10		350	
02-SO-06-0001	40830-021,	18	U	32		2300	
02-SO-07-0001	40830-022,	17	U	35		1800	
03-SO-01-0305	042106	17	U	46	UJ	290	U
03-SO-0106-COMP	042108			44	UJ		
03-SO-02-0305	042104	16	U	43	UJ	270	UJ
03-SO-02-0709	042105	16	U	45	UJ	290	UJ
03-SO-03-0305	042101	14	U	44	UJ	280	J
03-SO-04-0305	042102	17	U	46	UJ	280	UJ
03-SO-04-0709	042103	15	U	45	UJ	280	UJ
03-SO-07-0305	042107	16	U	42	UJ	270	U
04-SO-01-0305	041301	15	U	46	UJ	290	U
04-SO-02-0305	041302	15	U	45	UJ	280	U
04-SO-03-0305	041305	14	U	42	UJ	270	U
04-SO-04-0305	041303	16	U	45	UJ	280	U
04-SO-05-0305	041515	16	U	44	UJ	280	U
04-SO-05-0709	041516	17	U	48	UJ	290	U
04-SO-06-0305	041517	14	U	43	UJ	260	U
04-SO-06-0709	041518	16	U	49	UJ	310	U
04-SO-07-1525	042201	16	U	44	UJ	360	J
04-SO-08-0305	042213	17	U	46	UJ	290	UJ
04-SO-09-0305	042212	17	U	47	UJ	290	UJ
04-SO-10-0305	042210	14	U	43	UJ	260	UJ
04-SO-11-0305	042211	15	U	42	UJ	270	UJ
04-SO-12-0305	042202	16	U	45	UJ	280	UJ
04-SO-12-0709	042204	32	U	120	J	1700	J
04-SO-13-0305	041511	17	U	48	UJ	290	U
04-SO-13-0709	041512	17	U	46	UJ	400	
04-SO-14-0305	042205	15	U	44	UJ	330	J
04-SO-14-0709	042206	16	U	43	UJ	280	UJ

SITE: Cherry Point MCAS, CTO 0165
LABORATORY: PACE INC. - HAMPTON, CP-00878-3.13-08/01/94

Total Petroleum Hydrocarbon Analyses (ppm)

Halliburton NUS ID:	PACE ID:	Total Gasoline		Total Diesel		Oil and Grease	
04-SO-15-0305	042208	17	U	44	UJ	330	J
04-SO-15-0709	042209	17	U	49	UJ	310	UJ
04-SO-16-0305	041304	15	U	43	UJ	270	U
04-SO-17-0709	042203	38	U	120	J	2500	J
04-SO-18-0709	042207	16	U	44	UJ	280	UJ
04-SO-15-0001	40830-024,	17	U	3.7	U	1400	
04-SO-12-0001	40830-025,	17	U	4.4		280	U
04-SO-10-0001	40830-026,	16	U	3.5	U	260	U
04-SO-16-0001	40830-027,	17	U	3.7	U	270	U
05-SO-01-0204	040901	15	U	44	UJ	280	U
05-SO-02-0305	040902	15	U	44	UJ	280	U
05-SO-03-0305	040910	16	U	43	UJ	280	U
05-SO-03-0305	040903	15	U	47	UJ	290	U
05-SO-04-0305	040904	16	U	44	UJ	270	U
05-SO-05-0305	040905	16	U	41	UJ	260	U
05-SO-06-0305	040906	18	U	47	UJ	300	U
05-SO-07-0305	040907	16	U	49	UJ	300	U
05-SO-08-0305	040908	14	U	45	UJ	280	U
05-SO-10-0305	041513	14	U	41	UJ	270	
05-SO-11-0305	041514	16	U	42	UJ	310	
05-SO-12-0305	040909	16	U	43	UJ	270	U
05-SO-03-0001	40830-028,	17	U	7.6		280	U

SITE: Cherry Point MCAS, CTO 0165
LABORATORY: PACE INC. – HAMPTON, NH

METALS TCLP ANALYSES (ug/L)

CLIENT ID:	041501	041502	041504	041505	041503	041506	041507	041508	041509
HNUS ID:	01-SO-05-0105	04-SO-03-109	04-SO-05/06-0105	04-SO-05/06-0509	05-SO-10/11-0105	01-CC-01	02-CC-01	04-CC-01	04-CC-02
METALS									
Arsenic	20.9 U	20.9 U	20.9 U	20.9 U	20.9 U	20.9 U	39.4	33.7	20.9 U
Barium	131 B	221	194 B	90.9 B	143 B	76.7 B	108 B	44.8 B	31.2 B
Cadmium	1.3 U	1.3 U	1.3 U	1.3 B	1.3 U	9.1	9.6	4.6 B	6.9
Chromium	7.9 B	2.9 U	8.2 B	16	5.2 B	63.5	27.7	90.9	29.2
Lead	15.8 U	15.8 U	15.8 U	15.8 U	18.2	464	15.8 U	15.8 U	15.8 U
Mercury	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Selenium	30.7 U	30.7 U	30.7 U	30.7 U	30.7 U	30.7 U	30.7 U	30.7 U	30.7 U
Silver	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
PESTICIDES									
Gamma-BHC	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U
Chlordane	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Endrin	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U
Heptachlor	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U
Heptachlor Epoxide	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U
Toxaphene	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Methoxychlor	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
VOLATILES (ug/l)									
Vinyl chloride	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
1,2-Dichloroethane	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Chloroform	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Methyl ethyl ketone	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
Carbon Tetrachloride	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Benzene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Chlorobenzene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SEMIVOLATILES									
Pyridine	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U			
1,4-Dichlorobenzene	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U			
2,4-Dinitrotoluene	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U			
2-Methylphenol	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U			
3-,4-Methylphenols	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U			
Hexachloroethane	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U			
Nitrobenzene	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U			
Hexachlorobenzene	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U			
Pentachlorophenol	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U			
Hexachlorobutadiene	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U			
2,4,6-Trichlorophenol	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U			
2,4,5-Trichlorophenol	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U			

CP00878-3 13-08/01/94

SITE: Cherry Point MCAS, CTO 0165
LABORATORY: PACE INC. – HAMPTON, NH

TAL METALS AQUEOUS ANALYSES
GROUNDWATER SAMPLES (ug/L)

Halliburton NUS ID:			01-GW-MW1A-001	02-GW-MW2A-001	03-GW-MW3A-001	04-GW-MW4C-001	04-GW-MW4D-001	04-GW-MW4B-001	04-GW-MW4A-001	05-GW-MW5A-001	RB11
PACE ID:			042604	042605	042606	042607	042608	042609	042610	042602	042603
						FIELD DUPLICATE SAMPLES					
ANALYTE	CRDL	IDL									
ALUMINUM	200	10	749	2650	217 U	749 U	309	56 U	682	172 U	172 U
ANTIMONY	60	11	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ
ARSENIC	10	1	2.8 U	5.3	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U
BARIUM	200	1	104 U	150	128	368 U	385 U	198	485 U	183 U	18 U
BERYLLIUM	5	1	0.48 U	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
CADMIUM	5	1	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
CALCIUM	5000	8	20100	29700	4720	41000	40400	95700	28900	3170	158 U
CHROMIUM	10	2	2.9 U	5.5 U	2.9 U	3 U	7.2 U	2.9 U	2.9 U	2.9 U	2.9 U
COBALT	50	2	16.7 U	2.4 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U
COPPER	25	2	1.9 U	4.3 U	1.9 U	1.9 U	2.5 U	1.9 U	1.9 U	1.9 U	1.9 U
IRON	100	3	1580 J	21500	1010 J	827 J	1710 J	9680 J	1490 J	1410 J	52.6 U
LEAD	3	1	1.5 U	0.67 U	5.2 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	4.8
MAGNESIUM	5000	13	10800	3630	6000	2430	2480	6590	5790	3620	20.4 U
MANGANESE	15	1	202	727	102	14.1 U	18.6 U	133	80.7	23.8 U	0.61 U
MERCURY	0.2	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	40	8	15.1	8.6	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U
POTASSIUM	5000	245	3880	8030	1440	12300	12100	12800	2490	875	565 U
SELENIUM	5	1	2.8 U	2.8 U	2.8 U	4.4	3.8	2.8 U	2.8 U	2.8 U	2.8 U
SILVER	10	2	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
SODIUM	5000	9	13700	21600	20300	10800	10500	23800	11500	4280	144 U
THALLIUM	10	1	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
VANADIUM	50	2	2.8 U	3	2.8 U	2.8 U	2.8 U	2.8 U	3.1 U	2.8 U	2.8 U
ZINC	20	1	117	62.8	319	31.7 U	46.2	125	89.3	89.3	22 U
CYANIDE	20	10	1.2 U	1.2 U	1.2 U	1.3	1.2 U	5.4	1.2 U	1.2 U	1.2 U

CP-00878-3.13-08/01/94

SITE MCAS Cherry Point, CTO 165
LABORATORY PACE INC – HAMPTON, NH

TCL PESTICIDE GROUNDWATER ANALYSES (ug/L)

Halliburton NUS ID			RB11	01-GW-MW1A-001	02-GW-MW2A-001	03-GW-MW3A-001	04-GW-MW4C-001	04-GW-MW4D-001	04-GW-MW4B-001	04-GW-MW4A-001	05-GW-MW5A-001
PACE ID.			042603	042604	042605	042606	042607	042608	042609	042610	042602
							FIELD DUPLICATE SAMPLES				
ANALYTE	CRQL	MDL									
ALPHA-BHC	0.05	0.028	0.056 U	0.052 U	0.052 U	0.052 U	0.051 U	0.052 U	0.051 U	0.052 U	0.055 U
BETA-BHC	0.05	0.021	0.056 U	0.052 U	0.052 U	0.052 U	0.051 U	0.052 U	0.051 U	0.052 U	0.055 U
DELTA-BHC	0.05	0.015	0.056 U	0.052 U	0.052 U	0.052 U	0.051 U	0.052 U	0.051 U	0.052 U	0.055 U
GAMMA-BHC (LINDANE)	0.05	0.014	0.056 U	0.052 U	0.052 U	0.052 U	0.051 U	0.052 U	0.051 U	0.052 U	0.055 U
HEPTACHLOR	0.05	0.017	0.056 U	0.052 U	0.052 U	0.052 U	0.051 U	0.052 U	0.051 U	0.052 U	0.055 U
ALDRIN	0.05	0.011	0.056 U	0.052 U	0.052 U	0.052 U	0.051 U	0.052 U	0.051 U	0.052 U	0.055 U
HEPTACHLOR EPOXIDE	0.05	0.019	0.056 U	0.052 U	0.052 U	0.052 U	0.051 U	0.052 U	0.051 U	0.052 U	0.055 U
ENDOSULFAN I	0.05	0.022	0.056 U	0.052 U	0.052 U	0.052 U	0.051 U	0.052 U	0.051 U	0.052 U	0.055 U
DIELDRIN	0.1	0.041	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U
4,4'-DDE	0.1	0.041	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U
ENDRIN	0.1	0.048	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U
ENDOSULFAN II	0.1	0.049	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDD	0.1	0.04	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN SULFATE	0.1	0.088	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U
4,4'-DDT	0.1	0.045	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
METHOXYCHLOR	0.05	0.188	0.56 U	0.52 U	0.52 U	0.52 U	0.51 U	0.52 U	0.51 U	0.52 U	0.55 U
ENDRIN KETONE	0.1	0.032	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U
ENDRIN ALDEHYDE	0.1	0.056	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U
ALPHA-CHLORDANE	0.05	0.021	0.056 U	0.052 U	0.052 U	0.052 U	0.051 U	0.052 U	0.051 U	0.052 U	0.055 U
GAMMA-CHLORDANE	0.05	0.02	0.056 U	0.052 U	0.052 U	0.052 U	0.051 U	0.052 U	0.051 U	0.052 U	0.055 U
TOXAPHENE	5	0.52	5.6 U	5.2 U	5.2 U	5.2 U	5.1 U	5.2 U	5.1 U	5.2 U	5.5 U
AROCLOR-1016	1	0.19	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
AROCLOR-1221	2	0.24	2.2 U	2.1 U	2.1 U	2.1 U	2 U	2.1 U	2 U	2.1 U	2.2 U
AROCLOR-1232	1	0.11	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
AROCLOR-1242	1	0.12	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
AROCLOR-1248	1	0.25	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
AROCLOR-1254	1	0.21	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
AROCLOR-1260	1	0.15	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U

CP108783139 08/01/94

SITE MCAS Cherry Point, CTO 0165
LABORATORY PACE INC

TCL VOLATILE AQUEOUS ANALYSES

Halliburton NUS ID	01-GW-MW1A-001 042604	02-GW-MW2A-001 042605	03-GW-MW3A-001 042606	04-GW-MW4C-001 042607	04-GW-MW4D-001 042608	04-GW-MW4B-001 042609	04-GW-MW4A-001 042610	05-GW-MW5A-001 042602
Acetone	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Butanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	2.1	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	1 U	1 U	1 U	0.8 J	0.8 J	1 U	1 U	1 U
Chloromethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Chlorotoluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Chlorotoluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	5.4	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1.8	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	7.9	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	6.9	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethene (cis)	1 U	4.1	1 U	1.1	1	1.1	1 U	1 U
1,2-Dichloroethene (trans)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
p-Isopropyltoluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Naphthalene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	1 U	1 U	1 U	580	600	0.9 J	2.1	1 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1.4	0.8 J	1 U	2.9	2.9	1 U	1 U	1 U
Trichlorofluoromethane	1.4	1.2	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	2 U	2 U	2 U	2 U	2 U	1.6 J	2 U	2 U
Xylene	1 U	1 U	1 U	U	1 U	1 U	1 U	1 U
[illegible]	1		1			1		1

CP-00878-3.13-08/01/94

SITE: Cherry Point MCAS, CTO 0165
LABORATORY: PACE INC. – HAMPTON, NH

Groundwater TPH/COD Analyses

Halliburton NUS ID:	PACE ID:	Total Gasoline	Total Diesel	Oil and Grease	COD
01-GW-MW1A-001	042604	100 U	100 U	5.1 U	5 U
02-GW-MW2A-001	042605	100 U	180	5.2	56
03-GW-MW3A-001	042606	100 U	110 U	5.2 U	5 U
04-GW-MW4A-001	042610	100 U	110 U	5.2 U	5 U
04-GW-MW4B-001	042609	100 U	110 U	5.2 U	51
04-GW-MW4C-001	042607	100 U	110 U	5.2 U	5 U
04-GW-MW4D-001	042608	100 U	100 U	5.2 U	130
05-GW-MW5A-001	042602	100 U	110 U	5.4 U	5 U
RB11	042603	100 U	100 U	5.3 U	5 U

SITE: Cherry Point MCAS, CTO 0165
LABORATORY: PACE INC. - HAMPTON, NH

CP-00878-3.13-08/01/94

TCL SEMIVOLATILE AQUEOUS ANALYSES (ug/L)

Halliburton NUS ID:			04-GW-MW4C-001	04-GW-MW4D-001	04-GW-MW4B-001	04-GW-MW4A-001	05-GW-MW5A-0
CLIENT ID:			42807	42808	42809	42810	428
			FIELD DUPLICATE SAMPLES				
ANALYTE	CRQL	MDL					
PHENOL	10	2.1	10 U	11 U	10 U	10 U	12 U
Bis(2-CHLOROETHYL)ETHER	10	2.09	10 U	11 U	10 U	10 U	12 U
2-CHLOROPHENOL	10	2.12	10 U	11 U	10 U	10 U	12 U
1,3-DICHLOROBENZENE	10	1.92	10 U	11 U	10 U	10 U	12 U
1,4-DICHLOROBENZENE	10	2.07	10 U	11 U	10 U	10 U	12 U
1,2-DICHLOROBENZENE	10	1.8	10 U	11 U	10 U	10 U	12 U
2-METHYLPHENOL	10	1.78	10 U	11 U	10 U	10 U	12 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10	2.34	10 U	11 U	10 U	10 U	12 U
4-METHYLPHENOL	10	1.79	10 U	11 U	10 U	10 U	12 U
N-NITROSO-DI-N-PROPYLAMINE	10	1.71	10 U	11 U	10 U	10 U	12 U
HEXACHLOROETHANE	10	1.86	10 U	11 U	10 U	10 U	12 U
NITROBENZENE	10	1.67	10 U	11 U	10 U	10 U	12 U
ISOPHORONE	10	1.23	10 U	11 U	10 U	10 U	12 U
2-NITROPHENOL	10	2.51	10 U	11 U	10 U	10 U	12 U
2,4-DIMETHYLPHENOL	10	2.12	10 U	11 U	10 U	10 U	12 U
Bis(2-CHLOROETHOXY)METHANE	10	1.56	10 U	11 U	10 U	10 U	12 U
2,4-DICHLOROPHENOL	10	1.75	10 U	11 U	10 U	10 U	12 U
1,2,4-TRICHLOROBENZENE	10	1.81	10 U	11 U	10 U	10 U	12 U
NAPHTHALENE	10	1.94	10 U	11 U	10 U	10 U	12 U
4-CHLOROANILINE	10	1.96	10 U	11 U	10 U	10 U	12 U
HEXACHLOROBUTADIENE	10	1.94	10 U	11 U	10 U	10 U	12 U
4-CHLORO-3-METHYLPHENOL	10	1.43	10 U	11 U	10 U	10 U	12 U
2-METHYLNAPHTHALENE	10	1.58	10 U	11 U	10 U	10 U	12 U
HEXACHLOROCYCLOPENTADIENE	10	2.53	10 U	11 U	10 U	10 U	12 U
2,4,6-TRICHLOROPHENOL	10	1.09	10 U	11 U	10 U	10 U	12 U
2,4,5-TRICHLOROPHENOL	25	1.55	26 U	27 U	26 U	26 U	29 U
2-CHLORONAPHTHALENE	10	1.29	10 U	11 U	10 U	10 U	12 U
2-NITROANILINE	25	1.5	26 U	27 U	26 U	26 U	29 U
DIMETHYLPHTHALATE	10	0.67	10 U	11 U	10 U	10 U	12 U
ACENAPHTHYLENE	10	0.75	10 U	11 U	10 U	10 U	12 U
2,6-DINITROTOLUENE	10	1.61	10 U	11 U	10 U	10 U	12 U
3-NITROANILINE	25	2.09	26 U	27 U	26 U	26 U	29 U
ACENAPHTHENE	10	0.66	10 U	11 U	10 U	10 U	12 U
2,4-DINITROPHENOL	25	3.89	26 U	27 U	26 U	26 U	29 U
4-NITROPHENOL	25	3.81	26 U	27 U	26 U	26 U	29 U
DIBENZOFURAN	10	0.82	10 U	11 U	10 U	10 U	12 U
2,4-DINITROTOLUENE	10	1.35	10 U	11 U	10 U	10 U	12 U
DIETHYLPHTHALATE	10	0.61	10 U	11 U	10 U	10 U	12
4-CHLOROPHENYL-PHENYLETHER	10	0.67	10 U	11 U	10 U	10 U	12
FLUORENE	10	0.96	10 U	11 U	10 U	10 U	12
4-NITROANILINE	25	3.06	26 U	27 U	26 U	26 U	29 U
4,6-DINITRO-2-METHYLPHENOL	25	1.96	26 U	27 U	26 U	26 U	29 U
N-NITROSODIPHENYLAMINE	10	0.74	10 U	11 U	10 U	10 U	12 U
4-BROMOPHENYL-PHENYLETHER	10	0.7	10 U	11 U	10 U	10 U	12 U
HEXACHLOROBENZENE	10	1.1	10 U	11 U	10 U	10 U	12 U
PENTACLOROPHENOL	25	3.84	26 U	27 U	26 U	26 U	29 U
PHENANTHRENE	10	0.97	10 U	11 U	10 U	10 U	12 U
ANTHRACENE	10	0.86	10 U	11 U	10 U	10 U	12 U
CARBAZOLE	10	N/A	10 U	11 U	10 U	10 U	12 U
DI-N-BUTYLPHTHALATE	10	0.85	10 U	11 U	10 U	10 U	12 U
FLUORANTHENE	10	1.1	10 U	11 U	10 U	10 U	12 U
PYRENE	10	0.76	10 U	11 U	10 U	10 U	12 U
BUTYLBENZYLPHTHALATE	10	0.97	10 U	11 U	10 U	10 U	12 U
3,3'-DICHLOROBENZIDINE	10	3.43	10 U	11 U	10 U	10 U	12 U
BENZO(A)ANTHRACENE	10	0.83	10 U	11 U	10 U	10 U	12 U
CHRYSENE	10	0.44	10 U	11 U	10 U	10 U	12 U
Bis(2-ETHYLHEXYL)PHTHALATE	10	0.82	10 U	11 U	10 U	10 U	12 U
DI-N-OCTYLPHTHALATE	10	1.45	10 U	11 U	10 U	10 U	12 U
BENZO(B)FLUORANTHENE	10	3.49	10 U	11 U	10 U	10 U	12 U
BENZO(K)FLUORANTHENE	10	5.96	10 U	11 U	10 U	10 U	12 U
BENZO(A)PYRENE	10	0.6	10 U	11 U	10 U	10 U	12 U
INDENO(1,2,3-CD)PYRENE	10	1.07	10 U	11 U	10 U	10 U	12 U
DIBENZ(A,H)ANTHRACENE	10	1.41	10 U	11 U	10 U	10 U	12 U
BENZO(G,H,I)PERYLENE	10	1.3	10 U	11 U	10 U	10 U	12 U
DILUTION FACTOR:			1	1	1	1	1

SITE: Cherry Point MCAS, CTO 0165 CP-00878-3.13-08/01/94
LABORATORY: PACE INC. - HAMPTON, NH

TCL SEMIVOLATILE AQUEOUS ANALYSES (ug/L)

Halliburton NUS ID:			RB11	01-GW-MW1A-001	02-GW-MW2A-001	03-GW-MW3A-00
CLIENT ID:			42603	42604	42605	42606
ANALYTE	CRQL	MDL				
PHENOL	10	2.1	11 U	10 U	10 U	10 U
Bis(2-CHLOROETHYL)ETHER	10	2.09	11 U	10 U	10 U	10 U
2-CHLOROPHENOL	10	2.12	11 U	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10	1.92	11 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10	2.07	11 U	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10	1.8	11 U	10 U	4 J	10 U
2-METHYLPHENOL	10	1.78	11 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10	2.34	11 U	10 U	10 U	10 U
4-METHYLPHENOL	10	1.79	11 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10	1.71	11 U	10 U	10 U	10 U
HEXACHLOROETHANE	10	1.86	11 U	10 U	10 U	10 U
NITROBENZENE	10	1.67	11 U	10 U	10 U	10 U
ISOPHORONE	10	1.23	11 U	10 U	10 U	10 U
2-NITROPHENOL	10	2.51	11 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10	2.12	11 U	10 U	10 U	10 U
Bis(2-CHLOROETHOXY)METHANE	10	1.56	11 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10	1.75	11 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10	1.81	11 U	10 U	10 U	10 U
NAPHTHALENE	10	1.94	11 U	10 U	10 U	10 U
4-CHLOROANILINE	10	1.96	11 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10	1.94	11 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10	1.43	11 U	10 U	10 U	10 U
2-METHYLNAPHTHALENE	10	1.58	11 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10	2.53	11 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10	1.09	11 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	25	1.55	27 U	26 U	25 U	25 U
2-CHLORONAPHTHALENE	10	1.29	11 U	10 U	10 U	10 U
2-NITROANILINE	25	1.5	27 U	26 U	25 U	25 U
DIMETHYLPHTHALATE	10	0.67	11 U	10 U	10 U	10 U
ACENAPHTHYLENE	10	0.75	11 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10	1.61	11 U	10 U	10 U	10 U
3-NITROANILINE	25	2.09	27 U	26 U	25 U	25 U
ACENAPHTHENE	10	0.66	11 U	10 U	10 U	10 U
2,4-DINITROPHENOL	25	3.89	27 U	26 U	25 U	25 U
4-NITROPHENOL	25	3.81	27 U	26 U	25 U	25 U
DIBENZOFURAN	10	0.82	11 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10	1.35	11 U	10 U	10 U	10 U
DIETHYLPHTHALATE	10	0.61	11 U	10 U	10 U	10 U
4-CHLOROPHENYL-PHENYLETHER	10	0.67	11 U	10 U	10 U	10 U
FLUORENE	10	0.96	11 U	10 U	10 U	10 U
4-NITROANILINE	25	3.06	27 U	26 U	25 U	25 U
4,6-DINITRO-2-METHYLPHENOL	25	1.98	27 U	26 U	25 U	25 U
N-NITROSODIPHENYLAMINE	10	0.74	11 U	10 U	6 J	10 U
4-BROMOPHENYL-PHENYLETHER	10	0.7	11 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10	1.1	11 U	10 U	10 U	10 U
PENTACLOROPHENOL	25	3.84	27 U	26 U	25 U	25 U
PHENANTHRENE	10	0.97	11 U	10 U	10 U	10 U
ANTHRACENE	10	0.86	11 U	10 U	10 U	10 U
CARBAZOLE	10	N/A	11 U	10 U	10 U	10 U
DI-N-BUTYLPHTHALATE	10	0.85	11 U	10 U	10 U	10 U
FLUORANTHENE	10	1.1	11 U	10 U	10 U	10 U
PYRENE	10	0.76	11 U	10 U	10 U	10 U
BUTYLBENZYLPHTHALATE	10	0.97	11 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	10	3.43	11 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10	0.83	11 U	10 U	10 U	10 U
CHRYSENE	10	0.44	11 U	10 U	10 U	10 U
Bis(2-ETHYLHEXYL)PHTHALATE	10	0.82	11 U	10 U	10 U	10 U
DI-N-OCTYLPHTHALATE	10	1.45	11 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	3.49	11 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	5.96	11 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	0.6	11 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	1.07	11 U	10 U	10 U	10 U
DIBENZ(A,H)ANTHRACENE	10	1.41	11 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10	1.3	11 U	10 U	10 U	10 U
DILUTION FACTOR:			1	1	1	1

APPENDIX D

RISK ASSESSMENT SPREADSHEETS

RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: MCAS CHERRY POINT
LOCATION: SITE 1
DATE: 05/16/94

EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION

RELEVANT EQUATION: DEX = (C x SA x AF x ABS x EF x ED)/(BW x AT x 1E6)

WHERE:

C	= CONCENTRATION IN SOIL (MG/KG)		
SA1	= YOUTH SKIN SURFACE AREA (SQ CM/DAY):		0
SA2	= ADULT SKIN SURFACE AREA (SQ CM/DAY):		6160
AF	= ADHERENCE FACTOR (MG/SQ CM):		1
ABS	= ABSORPTION FRACTION: (DECIMAL FRACTION)	VOCS:	0.01
		BNAS/PESTICIDES:	0.01
		PCBS:	0.01
		METALS:	0.001
EF1	= YOUTH EXPOSURE FREQUENCY (DAYS/YEAR):		24
EF2	= ADULT EXPOSURE FREQUENCY (DAYS/YEAR):		250
ED1	= YOUTH EXPOSURE DURATION (YEARS):		6
ED2	= ADULT EXPOSURE DURATION (YEARS):		1
BW1	= BODY WEIGHT ADOLESCENT (KG):		15
BW2	= BODY WEIGHT ADULT (KG):		70
AT1	= AVERAGING TIME (DAYS), NONCARCINOGENS (YOUTH):		2190
AT2	= AVERAGING TIME (DAYS), NONCARCINOGENS (ADULT):		365
AT3	= AVERAGING TIME (DAYS), CARCINOGENS:		25550

DETERMINE CONVERSION FACTORS:
DEX = (C)*(SA SQ CM)*(AF MG/SQ CM)*(ABS)*(EF DAYS/YEAR)*(ED YEARS)/(AT DAYS)/(BW KG)/(1 KG/1E6 MG)

DOSEyouth = (CF1)*(C)*(ABS) CF1 = 0.00E+00 LIFETIME Dose = (CF3)*(C)*(ABS) CF3 = 8.61E-07
DOSEadult = (CF2)*(C)*(ABS) CF2 = 6.03E-05

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RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)
SITE 1
EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION
CALCULATE DOSES:

CHEMICAL	C (MG/KG)	ABSORPTION FRACTION	ANNUAL YOUTH DOSE (MG/KG/DAY)	ANNUAL ADULT DOSE (MG/KG/DAY)	LIFETIME AVERAGE DOSE (MG/KG/DAY)	Dermal RfD (MG/KG/DAY)	Dermal CSF (KG-DAY/MG)
Trichloroethene	0.0033	0.01	0.00E+00	1.99E-09	2.84E-11	0.00E+00	1.10E-02
bis(2-Ethylhexyl)phthalate	0.34	0.01	0.00E+00	2.05E-07	2.93E-09	1.00E-02	2.80E-02
Aldrin	0.0026	0.01	0.00E+00	1.57E-09	2.24E-11	1.50E-05	3.40E+01
Heptachlor epoxide	0.0026	0.01	0.00E+00	1.57E-09	2.24E-11	5.20E-06	2.28E+01
Dieldrin	0.12	0.01	0.00E+00	7.23E-08	1.03E-09	2.50E-05	3.20E+01
4,4'-DDT	0.33	0.01	0.00E+00	1.99E-07	2.84E-09	4.00E-04	4.25E-01
4,4'-DDD	0.039	0.01	0.00E+00	2.35E-08	3.36E-10	0.00E+00	3.00E-01
4,4'-DDE	0.3	0.01	0.00E+00	1.81E-07	2.58E-09	0.00E+00	4.25E-01
Chlordane	0.047	0.01	0.00E+00	2.83E-08	4.05E-10	4.80E-05	1.63E+00
Endrin	0.0018	0.01	0.00E+00	1.08E-09	1.55E-11	1.95E-04	0.00E+00
Antimony	0	0.001	0.00E+00	0.00E+00	0.00E+00	2.00E-05	0.00E+00
Arsenic	4.9	0.001	0.00E+00	2.95E-07	4.22E-09	2.85E-04	1.89E+00
Barium	20.2	0.001	0.00E+00	1.22E-06	1.74E-08	2.80E-03	0.00E+00
Beryllium	0	0.001	0.00E+00	0.00E+00	0.00E+00	5.00E-05	4.30E+02
Cadmium	0	0.001	0.00E+00	0.00E+00	0.00E+00	5.00E-05	0.00E+00
Chromium (III)	34	0.001	0.00E+00	2.05E-06	2.93E-08	2.00E-02	0.00E+00
Chromium (IV)	34	0.001	0.00E+00	2.05E-06	2.93E-08	0.00E+00	0.00E+00
Cobalt	0	0.001	0.00E+00	0.00E+00	0.00E+00	4.00E-04	0.00E+00
Copper	13	0.001	0.00E+00	7.84E-07	1.12E-08	2.22E-02	0.00E+00
Lead	26.5	0.001	0.00E+00	1.60E-06	2.28E-08	0.00E+00	0.00E+00
Manganese	42.1	0.001	0.00E+00	2.54E-06	3.63E-08	1.50E-04	0.00E+00
Mercury	0.05	0.001	0.00E+00	3.01E-09	4.31E-11	2.10E-05	0.00E+00
Nickel	65	0.001	0.00E+00	3.92E-06	5.60E-08	3.00E-03	0.00E+00
Selenium	0.58	0.001	0.00E+00	3.50E-08	4.99E-10	4.00E-03	0.00E+00
Silver	1.2	0.001	0.00E+00	7.23E-08	1.03E-09	1.00E-03	0.00E+00
Vanadium	17.1	0.001	0.00E+00	1.03E-06	1.47E-08	7.00E-05	0.00E+00
Zinc	175	0.001	0.00E+00	1.05E-05	1.51E-07	7.50E-02	0.00E+00
Cyanide	4.6	0.01	0.00E+00	2.77E-06	3.96E-08	1.00E-02	0.00E+00
			0.00E+00	0.00E+00	0.00E+00		
			0.00E+00	0.00E+00	0.00E+00		
			0.00E+00	0.00E+00	0.00E+00		
			0.00E+00	0.00E+00	0.00E+00		
			0.00E+00	0.00E+00	0.00E+00		
			0.00E+00	0.00E+00	0.00E+00		
			0.00E+00	0.00E+00	0.00E+00		
			0.00E+00	0.00E+00	0.00E+00		
			0.00E+00	0.00E+00	0.00E+00		
			0.00E+00	0.00E+00	0.00E+00		
			0.00E+00	0.00E+00	0.00E+00		
			0.00E+00	0.00E+00	0.00E+00		

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RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL (PAGE THREE)
SITE 1
EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION
DETERMINE HAZARD INDICES AND CANCER RISK:

CHEMICAL	HAZARD INDEX YOUTH	HAZARD INDEX ADULT	INCREMENTAL CANCER RISK
Trichloroethene	0.00E+00	0.00E+00	3.13E-13
bis(2-Ethylhexyl)phthalate	0.00E+00	2.05E-05	8.20E-11
Aldrin	0.00E+00	1.04E-04	7.61E-10
Heptachlor epoxide	0.00E+00	3.01E-04	5.09E-10
Dieldrin	0.00E+00	2.89E-03	3.31E-08
4,4'-DDT	0.00E+00	4.97E-04	1.21E-09
4,4'-DDD	0.00E+00	0.00E+00	1.01E-10
4,4'-DDE	0.00E+00	0.00E+00	1.10E-09
Chlordane	0.00E+00	5.90E-04	6.58E-10
Endrin	0.00E+00	5.56E-06	0.00E+00
Antimony	0.00E+00	0.00E+00	0.00E+00
Arsenic	0.00E+00	1.04E-03	7.99E-09
Barium	0.00E+00	4.35E-04	0.00E+00
Beryllium	0.00E+00	0.00E+00	0.00E+00
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium (III)	0.00E+00	1.02E-04	0.00E+00
Chromium (IV)	0.00E+00	0.00E+00	0.00E+00
Cobalt	0.00E+00	0.00E+00	0.00E+00
Copper	0.00E+00	3.53E-05	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	1.69E-02	0.00E+00
Mercury	0.00E+00	1.44E-04	0.00E+00
Nickel	0.00E+00	1.31E-03	0.00E+00
Selenium	0.00E+00	8.74E-06	0.00E+00
Silver	0.00E+00	7.23E-05	0.00E+00
Vanadium	0.00E+00	1.47E-02	0.00E+00
Zinc	0.00E+00	1.41E-04	0.00E+00
Cyanide	0.00E+00	2.77E-04	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
TOTAL	0.00E+00	3.96E-02	4.55E-08

RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL

SITE NAME: MCAS CHERRY POINT
LOCATION: SITE 1
DATE: 05/16/94

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH PICA INGESTION ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS

RELEVANT EQUATION: IEX = (C x IR x Fi x EF x ED)/(BW x AT x 1E6)

WHERE:
C = MEAN CONCENTRATION IN SOIL SAMPLE (MG/KG)
IR = SOIL INGESTION RATE (MG/EVENT)
EF = EXPOSURE FREQUENCY (EVENTS/YEAR)
Fi = FRACTION FROM CONTAMINATED SOURCE
ED = EXPOSURE DURATION (YEARS)
BW = BODY WEIGHT (KG)
AT = AVERAGING TIME (DAYS)

ENTER INPUT PARAMETERS:

ADULT:		YOUTH:	
IR:	480	IR:	0
EF:	250	EF:	350
Fi:	1	Fi:	1
ED:	1	ED:	6
BW:	70	BW:	15
AT(CAR):	25550	AT(CAR):	25550
AT(NON):	365	AT(NON):	2190

DETERMINE CONVERSION FACTORS:

ADULT:
CF: 4.70E–06 (AVG ANNUAL DOSE)

YOUTH:
CF: 0.00E+00 (AVG ANNUAL DOSE)

ADULT/YOUTH (CANCER RISK):
CF: 6.71E–08

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RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL (PAGE TWO)
SITE 1
EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS
CALCULATE DOSES:

CHEMICAL	C (MG/KG)	YOUTH ANNUAL DOSE (MG/KG/DAY)	ADULT ANNUAL DOSE (MG/KG/DAY)	LIFETIME AVERAGE DOSE (MG/KG/DAY)	RFD (MG/KG/DAY)	CSF (KG–DAY/MG)
Trichloroethene	0.0033	0.00E+00	1.55E–08	2.21E–10		1.10E–02
bis(2–Ethylhexyl)phthalate	0.34	0.00E+00	1.60E–06	2.28E–08	2.00E–02	1.40E–02
Aldrin	0.0026	0.00E+00	1.22E–08	1.74E–10	3.00E–05	1.70E+01
Heptachlor epoxide	0.0026	0.00E+00	1.22E–08	1.74E–10	1.30E–05	9.10E+00
Dieldrin	0.12	0.00E+00	5.64E–07	8.05E–09	5.00E–05	1.60E+01
4,4'–DDT	0.33	0.00E+00	1.55E–06	2.21E–08	5.00E–04	3.40E–01
4,4'–DDD	0.039	0.00E+00	1.83E–07	2.62E–09		2.40E–01
4,4'–DDE	0.3	0.00E+00	1.41E–06	2.01E–08		3.40E–01
Chlordane	0.047	0.00E+00	2.21E–07	3.15E–09	6.00E–05	1.30E+00
Endrin	0.0018	0.00E+00	8.45E–09	1.21E–10	3.00E–04	
Antimony	0	0.00E+00	0.00E+00	0.00E+00	4.00E–04	
Arsenic	4.9	0.00E+00	2.30E–05	3.29E–07	3.00E–04	1.80E+00
Barium	20.2	0.00E+00	9.49E–05	1.36E–06	7.00E–02	
Beryllium	0	0.00E+00	0.00E+00	0.00E+00	5.00E–03	4.30E+00
Cadmium	0	0.00E+00	0.00E+00	0.00E+00	1.00E–03	
Chromium (III)	34	0.00E+00	1.60E–04	2.28E–06	1.00E+00	
Chromium (IV)	34	0.00E+00	1.60E–04	2.28E–06		
Cobalt	0	0.00E+00	0.00E+00	0.00E+00	8.00E–03	
Copper	13	0.00E+00	6.11E–05	8.72E–07	3.70E–02	
Lead	26.5	0.00E+00	1.24E–04	1.78E–06		
Manganese	42.1	0.00E+00	1.98E–04	2.82E–06	5.00E–03	
Mercury	0.05	0.00E+00	2.35E–07	3.35E–09	3.00E–04	
Nickel	65	0.00E+00	3.05E–04	4.36E–06	2.00E–02	
Selenium	0.58	0.00E+00	2.72E–06	3.89E–08	5.00E–03	
Silver	1.2	0.00E+00	5.64E–06	8.05E–08	5.00E–03	
Vanadium	17.1	0.00E+00	8.03E–05	1.15E–06	7.00E–03	
Zinc	175	0.00E+00	8.22E–04	1.17E–05	3.00E–01	
Cyanide	4.6	0.00E+00	2.16E–05	3.09E–07	2.00E–02	
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		

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RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL (PAGE THREE)
SITE 1
EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS
DETERMINE HAZARD INDICES AND CANCER RISK

CHEMICAL	HAZARD INDEX YOUTH	HAZARD INDEX ADULT	INCREMENTAL CANCER RISK
Trichloroethene	0.00E+00	0.00E+00	2.44E−12
bis(2−Ethylhexyl)phthalate	0.00E+00	7.98E−05	3.19E−10
Aldrin	0.00E+00	4.07E−04	2.97E−09
Heptachlor epoxide	0.00E+00	9.39E−04	1.59E−09
Dieldrin	0.00E+00	1.13E−02	1.29E−07
4,4'−DDT	0.00E+00	3.10E−03	7.53E−09
4,4'−DDD	0.00E+00	0.00E+00	6.28E−10
4,4'−DDE	0.00E+00	0.00E+00	6.84E−09
Chlordane	0.00E+00	3.68E−03	4.10E−09
Endrin	0.00E+00	2.82E−05	0.00E+00
Antimony	0.00E+00	0.00E+00	0.00E+00
Arsenic	0.00E+00	7.67E−02	5.92E−07
Barium	0.00E+00	1.36E−03	0.00E+00
Beryllium	0.00E+00	0.00E+00	0.00E+00
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium (III)	0.00E+00	1.60E−04	0.00E+00
Chromium (IV)	0.00E+00	0.00E+00	0.00E+00
Cobalt	0.00E+00	0.00E+00	0.00E+00
Copper	0.00E+00	1.65E−03	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	3.95E−02	0.00E+00
Mercury	0.00E+00	7.83E−04	0.00E+00
Nickel	0.00E+00	1.53E−02	0.00E+00
Selenium	0.00E+00	5.45E−04	0.00E+00
Silver	0.00E+00	1.13E−03	0.00E+00
Vanadium	0.00E+00	1.15E−02	0.00E+00
Zinc	0.00E+00	2.74E−03	0.00E+00
Cyanide	0.00E+00	1.08E−03	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
TOTAL	0.00E+00	1.72E−01	7.45E−07

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RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: MCAS CHERRY POINT
LOCATION: SITE 2
DATE: 05/16/94

EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION

RELEVANT EQUATION: DEX = (C x SA x AF x ABS x EF x ED)/(BW x AT x 1E6)

WHERE:

C	= CONCENTRATION IN SOIL (MG/KG)		
SA1	= YOUTH SKIN SURFACE AREA (SQ CM/DAY):		0
SA2	= ADULT SKIN SURFACE AREA (SQ CM/DAY):		6160
AF	= ADHERENCE FACTOR (MG/SQ CM):		1
ABS	= ABSORPTION FRACTION: (DECIMAL FRACTION)	VOCS:	0.1
		BNAS/PESTICIDES:	0.05
		PCBS:	0.03
		METALS:	0.001
EF1	= YOUTH EXPOSURE FREQUENCY (DAYS/YEAR):		24
EF2	= ADULT EXPOSURE FREQUENCY (DAYS/YEAR):		250
ED1	= YOUTH EXPOSURE DURATION (YEARS):		6
ED2	= ADULT EXPOSURE DURATION (YEARS):		1
BW1	= BODY WEIGHT ADOLESCENT (KG):		15
BW2	= BODY WEIGHT ADULT (KG):		70
AT1	= AVERAGING TIME (DAYS), NONCARCINOGENS (YOUTH):		2190
AT2	= AVERAGING TIME (DAYS), NONCARCINOGENS (ADULT):		365
AT3	= AVERAGING TIME (DAYS), CARCINOGENS:		25550

DETERMINE CONVERSION FACTORS:
DEX = (C)*(SA SQ CM)*(AF MG/SQ CM)*(ABS)*(EF DAYS/YEAR)*(ED YEARS)/(AT DAYS)/(BW KG)/(1 KG/1E6 MG)

DOSEyouth = (CF1)*(C)*(ABS) CF1 = 0.00E+00 CANCER RISK = (CF3)*(C)*(ABS) CF3 = 8.61E-07
DOSEadult = (CF2)*(C)*(ABS) CF2 = 6.03E-05

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RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)
SITE 2
EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION
CALCULATE DOSES:

CHEMICAL	C (MG/KG)	ABSORPTION FRACTION	ANNUAL YOUTH DOSE (MG/KG/DAY)	ANNUAL ADULT DOSE (MG/KG/DAY)	LIFETIME AVERAGE DOSE (MG/KG/DAY)	DERMAL RfD (MG/KG/DAY)	DERMAL CSF (KG-DAY/MG)
Toluene	0.0091	0.01	0.00E+00	5.48E-09	7.84E-11	2.00E-01	0.00E+00
Xylenes	0.0069	0.01	0.00E+00	4.16E-09	5.94E-11	2.00E+00	0.00E+00
Carbazole	0.11	0.01	0.00E+00	6.63E-08	9.47E-10	0.00E+00	4.00E-02
Acenaphthene	0.1	0.01	0.00E+00	6.03E-08	8.61E-10	3.00E-02	0.00E+00
Fluorene	0.11	0.01	0.00E+00	6.63E-08	9.47E-10	2.00E-02	0.00E+00
Anthracene	0.42	0.01	0.00E+00	2.53E-07	3.62E-09	1.95E-01	0.00E+00
Phenanthrene	1.3	0.01	0.00E+00	7.84E-07	1.12E-08	0.00E+00	0.00E+00
Fluoranthene	3.7	0.01	0.00E+00	2.23E-06	3.19E-08	2.00E-02	0.00E+00
Pyrene	3.4	0.01	0.00E+00	2.05E-06	2.93E-08	1.95E-02	0.00E+00
Benzo(a)anthracene	2.6	0.01	0.00E+00	1.57E-06	2.24E-08	0.00E+00	1.46E+00
Chrysene	2.4	0.01	0.00E+00	1.45E-06	2.07E-08	0.00E+00	1.46E+00
bis(2-Ethylhexyl)phthalate	0.77	0.01	0.00E+00	4.64E-07	6.63E-09	1.00E-02	2.80E-02
Butylbenzylphthalate	0.08	0.01	0.00E+00	4.82E-08	6.89E-10	1.00E-01	0.00E+00
Benzo(b)fluoranthene	2.9	0.01	0.00E+00	1.75E-06	2.50E-08	0.00E+00	1.46E+00
Benzo(k)fluoranthene	1.4	0.01	0.00E+00	8.44E-07	1.21E-08	0.00E+00	1.46E+00
Benzo(a)pyrene	2.4	0.01	0.00E+00	1.45E-06	2.07E-08	0.00E+00	4.87E+01
Indeno(1,2,3-cd)pyrene	0.97	0.01	0.00E+00	5.85E-07	8.35E-09	0.00E+00	1.46E+00
Dibenz(a,h)anthracene	0.37	0.01	0.00E+00	2.23E-07	3.19E-09	0.00E+00	7.30E+01
Benzo(g,h,i)perylene	0.96	0.01	0.00E+00	5.79E-07	8.27E-09	0.00E+00	0.00E+00
Dieldrin	0.0054	0.01	0.00E+00	3.25E-09	4.65E-11	2.50E-04	0.00E+00
4,4'-DDE	0.00011	0.01	0.00E+00	6.63E-11	9.47E-13	0.00E+00	4.25E-01
Endrin	0.0013	0.01	0.00E+00	7.84E-10	1.12E-11	1.95E-04	0.00E+00
gamma-Chlordane	0.00093	0.01	0.00E+00	5.61E-10	8.01E-12	4.80E-05	1.63E+00
Aroclor-1260	3.1	0.01	0.00E+00	1.87E-06	2.67E-08	0.00E+00	9.06E+00
Arsenic	5.2	0.001	0.00E+00	3.13E-07	4.48E-09	2.85E-04	1.89E+00
Barium	12.9	0.001	0.00E+00	7.76E-07	1.11E-08	2.80E-03	0.00E+00
Beryllium	0	0.001	0.00E+00	0.00E+00	0.00E+00	5.00E-05	4.30E+02
Cadmium	2.2	0.001	0.00E+00	1.33E-07	1.89E-09	5.00E-05	0.00E+00
Chromium (III)	17.6	0.001	0.00E+00	1.06E-06	1.52E-08	2.00E-02	0.00E+00
Chromium (VI)	17.6	0.001	0.00E+00	1.06E-06	1.52E-08	0.00E+00	0.00E+00
Cobalt	0	0.001	0.00E+00	0.00E+00	0.00E+00	4.00E-04	0.00E+00
Copper	17.9	0.001	0.00E+00	1.08E-06	1.54E-08	2.22E-02	0.00E+00
Lead	51.1	0.001	0.00E+00	3.08E-06	4.40E-08	0.00E+00	0.00E+00
Manganese	26.2	0.001	0.00E+00	1.58E-06	2.26E-08	1.50E-04	0.00E+00
Mercury	0.5	0.001	0.00E+00	3.01E-08	4.31E-10	2.10E-05	0.00E+00
Nickel	19.9	0.001	0.00E+00	1.20E-06	1.71E-08	3.00E-03	0.00E+00
Selenium	0.26	0.001	0.00E+00	1.57E-08	2.24E-10	4.00E-03	0.00E+00
Silver	0	0.001	0.00E+00	0.00E+00	0.00E+00	1.00E-03	0.00E+00
Vanadium	9.1	0.001	0.00E+00	5.48E-07	7.84E-09	7.00E-05	0.00E+00
Zinc	57.5	0.001	0.00E+00	3.47E-06	4.95E-08	7.50E-02	0.00E+00

RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL (PAGE THREE)
SITE 2
EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION
DETERMINE HAZARD INDICES AND CANCER RISK:

CHEMICAL	HAZARD INDEX YOUTH	HAZARD INDEX ADULT	INCREMENTAL CANCER RISK
Toluene	0.00E+00	2.74E−08	0.00E+00
Xylenes	0.00E+00	2.08E−09	0.00E+00
Phenanthrene	0.00E+00	0.00E+00	0.00E+00
Fluoranthene	0.00E+00	1.12E−04	0.00E+00
Pyrene	0.00E+00	1.05E−04	0.00E+00
Benzo(a)anthracene	0.00E+00	0.00E+00	3.27E−08
Chrysene	0.00E+00	0.00E+00	3.02E−08
bis(2−Ethylhexyl)phthalate	0.00E+00	4.64E−05	1.86E−10
Benzo(b)fluoranthene	0.00E+00	0.00E+00	3.65E−08
Benzo(k)fluoranthene	0.00E+00	0.00E+00	1.76E−08
Benzo(a)pyrene	0.00E+00	0.00E+00	1.01E−06
Aroclor−1260	0.00E+00	0.00E+00	2.42E−07
Arsenic	0.00E+00	1.10E−03	8.48E−09
Barium	0.00E+00	2.78E−04	0.00E+00
Chromium (III)	0.00E+00	5.30E−05	0.00E+00
Chromium (VI)	0.00E+00	0.00E+00	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	1.05E−02	0.00E+00
Mercury	0.00E+00	1.44E−03	0.00E+00
Nickel	0.00E+00	4.00E−04	0.00E+00
Vanadium	0.00E+00	7.84E−03	0.00E+00
Zinc	0.00E+00	4.62E−05	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
TOTAL	**0.00E+00**	**2.19E−02**	**1.37E−06**

RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL

SITE NAME: MCAS CHERRY POINT
LOCATION: SITE 2
DATE: 05/16/94

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH PICA INGESTION ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS

RELEVANT EQUATION: IEX = (C x IR x Fi x EF x ED)/(BW x AT x 1E6)

WHERE:
C = MEAN CONCENTRATION IN SOIL SAMPLE (MG/KG)
IR = SOIL INGESTION RATE (MG/EVENT)
EF = EXPOSURE FREQUENCY (EVENTS/YEAR)
Fi = FRACTION FROM CONTAMINATED SOURCE
ED = EXPOSURE DURATION (YEARS)
BW = BODY WEIGHT (KG)
AT = AVERAGING TIME (DAYS)

ENTER INPUT PARAMETERS:

ADULT:		YOUTH:	
IR:	480	IR:	0
EF:	250	EF:	350
Fi:	1	Fi:	1
ED:	1	ED:	6
BW:	70	BW:	15
AT(CAR):	25550	AT(CAR):	25550
AT(NON):	365	AT(NON):	2190

DETERMINE CONVERSION FACTORS:

ADULT:			YOUTH:			ADULT/YOUTH (CANCER RISK):	
CF:	4.70E–06	(AVG ANNUAL DOSE)	CF:	0.00E+00	(AVG ANNUAL DOSE)	CF:	6.71E–08

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RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL (PAGE TWO)
SITE 2
EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS
CALCULATE DOSES:

CHEMICAL	C (MG/KG)	YOUTH ANNUAL DOSE (MG/KG/DAY)	ADULT ANNUAL DOSE (MG/KG/DAY)	LIFETIME AVERAGE DOSE (MG/KG/DAY)	RFD (MG/KG/DAY)	CSF (KG–DAY/MG)
Toluene	0.0091	0.00E+00	4.27E–08	6.11E–10	2.00E–01	
Xylenes	0.0069	0.00E+00	3.24E–08	4.63E–10	2.00E+00	
Carbazole	0.11	0.00E+00	5.17E–07	7.38E–09	3.00E–05	0.02
Acenaphthene	0.1	0.00E+00	4.70E–07	6.71E–09	0.06	9.10E+00
Fluorene	0.11	0.00E+00	5.17E–07	7.38E–09	0.04	1.60E+01
Anthracene	0.42	0.00E+00	1.97E–06	2.82E–08	0.3	3.40E–01
Phenanthrene	1.3	0.00E+00	6.11E–06	8.72E–08		
Fluoranthene	3.7	0.00E+00	1.74E–05	2.48E–07	4.00E–02	
Pyrene	3.4	0.00E+00	1.60E–05	2.28E–07	3.00E–02	
Benzo(a)anthracene	2.6	0.00E+00	1.22E–05	1.74E–07		7.30E–01
Chrysene	2.4	0.00E+00	1.13E–05	1.61E–07		7.30E–01
bis(2–Ethylhexyl)phthalate	0.77	0.00E+00	3.62E–06	5.17E–08	2.00E–02	1.40E–02
Butylbenzylphthalate	0.08	0.00E+00	3.76E–07	5.37E–09	0.2	
Benzo(b)fluoranthene	2.9	0.00E+00	1.36E–05	1.95E–07		7.30E–01
Benzo(k)fluoranthene	1.4	0.00E+00	6.58E–06	9.39E–08		7.30E–01
Benzo(a)pyrene	2.4	0.00E+00	1.13E–05	1.61E–07		7.30E+00
Indeno(1,2,3–cd)pyrene	0.97	0.00E+00	4.56E–06	6.51E–08		0.73
Dibenz(a,h)anthracene	0.37	0.00E+00	1.74E–06	2.48E–08	8.00E–03	7.3
Benzo(g,h,i)perylene	0.96	0.00E+00	4.51E–06	6.44E–08	3.70E–02	
Dieldrin	0.0054	0.00E+00	2.54E–08	3.62E–10	0.0005	
4,4'–DDE	0.00011	0.00E+00	5.17E–10	7.38E–12	5.00E–03	0.34
Endrin	0.0013	0.00E+00	6.11E–09	8.72E–11	0.0003	
gamma–Chlordane	0.00093	0.00E+00	4.37E–09	6.24E–11	0.00006	1.3
Aroclor–1260	3.1	0.00E+00	1.46E–05	2.08E–07		7.70E+00
Arsenic	5.2	0.00E+00	2.44E–05	3.49E–07	3.00E–04	1.80E+00
Barium	12.9	0.00E+00	6.06E–05	8.66E–07	7.00E–02	
Beryllium	0	0.00E+00	0.00E+00	0.00E+00	0.005	4.3
Cadmium	2.2	0.00E+00	1.03E–05	1.48E–07	0.001	
Chromium (III)	17.6	0.00E+00	8.27E–05	1.18E–06	1.00E+00	
Chromium (VI)	17.6	0.00E+00	8.27E–05	1.18E–06		
Cobalt	0	0.00E+00	0.00E+00	0.00E+00	0.008	
Copper	17.9	0.00E+00	8.41E–05	1.20E–06	0.037	
Lead	51.1	0.00E+00	2.40E–04	3.43E–06		
Manganese	26.2	0.00E+00	1.23E–04	1.76E–06	5.00E–03	
Mercury	0.5	0.00E+00	2.35E–06	3.35E–08	3.00E–04	
Nickel	19.9	0.00E+00	9.35E–05	1.34E–06	2.00E–02	
Selenium	0.26	0.00E+00	1.22E–06	1.74E–08	0.005	
Silver	0	0.00E+00	0.00E+00	0.00E+00	0.005	
Vanadium	9.1	0.00E+00	4.27E–05	6.11E–07	7.00E–03	
Zinc	57.5	0.00E+00	2.70E–04	3.86E–06	3.00E–01	

RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL (PAGE THREE)
SITE 2
EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS
DETERMINE HAZARD INDICES AND CANCER RISK:

CHEMICAL	HAZARD INDEX YOUTH	HAZARD INDEX ADULT	INCREMENTAL CANCER RISK
Toluene	0.00E+00	2.14E−07	0.00E+00
Xylenes	0.00E+00	1.62E−08	0.00E+00
Carbazole	0.00E+00	1.72E−02	1.48E−10
Acenaphthene	0.00E+00	7.83E−06	6.11E−08
Fluorene	0.00E+00	1.29E−05	1.18E−07
Anthracene	0.00E+00	6.58E−06	9.58E−09
Phenanthrene	0.00E+00	0.00E+00	0.00E+00
Fluoranthene	0.00E+00	4.34E−04	0.00E+00
Pyrene	0.00E+00	5.32E−04	0.00E+00
Benzo(a)anthracene	0.00E+00	0.00E+00	1.27E−07
Chrysene	0.00E+00	0.00E+00	1.18E−07
bis(2−Ethylhexyl)phthalate	0.00E+00	1.81E−04	7.23E−10
Butylbenzylphthalate	0.00E+00	1.88E−06	0.00E+00
Benzo(b)fluoranthene	0.00E+00	0.00E+00	1.42E−07
Benzo(k)fluoranthene	0.00E+00	0.00E+00	6.86E−08
Benzo(a)pyrene	0.00E+00	0.00E+00	1.18E−06
Indeno(1,2,3−cd)pyrene	0.00E+00	0.00E+00	4.75E−08
Dibenz(a,h)anthracene	0.00E+00	2.17E−04	1.81E−07
Benzo(g,h,i)perylene	0.00E+00	1.22E−04	0.00E+00
Dieldrin	0.00E+00	5.07E−05	0.00E+00
4,4'−DDE	0.00E+00	1.03E−07	2.51E−12
Endrin	0.00E+00	2.04E−05	0.00E+00
gamma−Chlordane	0.00E+00	7.28E−05	8.11E−11
Aroclor−1260	0.00E+00	0.00E+00	1.60E−06
Arsenic	0.00E+00	8.14E−02	6.28E−07
Barium	0.00E+00	8.66E−04	0.00E+00
Beryllium	0.00E+00	0.00E+00	0.00E+00
Cadmium	0.00E+00	1.03E−02	0.00E+00
Chromium (III)	0.00E+00	8.27E−05	0.00E+00
Chromium (VI)	0.00E+00	0.00E+00	0.00E+00
Cobalt	0.00E+00	0.00E+00	0.00E+00
Copper	0.00E+00	2.27E−03	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	2.46E−02	0.00E+00
Mercury	0.00E+00	7.83E−03	0.00E+00
Nickel	0.00E+00	4.67E−03	0.00E+00
Selenium	0.00E+00	2.44E−04	0.00E+00
Silver	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	6.11E−03	0.00E+00
Zinc	0.00E+00	9.00E−04	0.00E+00
TOTAL	**0.00E+00**	**1.58E−01**	**4.28E−06**

RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: MCAS CHERRY POINT
LOCATION: SITE 3
DATE: 05/16/94

EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION

RELEVANT EQUATION: DEX = (C x SA x AF x ABS x EF x ED)/(BW x AT x 1E6)

WHERE:

C = CONCENTRATION IN SOIL (MG/KG)		
SA1 = YOUTH SKIN SURFACE AREA (SQ CM/DAY):		0
SA2 = ADULT SKIN SURFACE AREA (SQ CM/DAY):		6160
AF = ADHERENCE FACTOR (MG/SQ CM):		1
ABS = ABSORPTION FRACTION: (DECIMAL FRACTION)	VOCS:	0.1
	BNAS/PESTICIDES:	0.05
	PCBS:	0.03
	METALS:	0.001
EF1 = YOUTH EXPOSURE FREQUENCY (DAYS/YEAR):		24
EF2 = ADULT EXPOSURE FREQUENCY (DAYS/YEAR):		250
ED1 = YOUTH EXPOSURE DURATION (YEARS):		6
ED2 = ADULT EXPOSURE DURATION (YEARS):		1
BW1 = BODY WEIGHT ADOLESCENT (KG):		15
BW2 = BODY WEIGHT ADULT (KG):		70
AT1 = AVERAGING TIME (DAYS), NONCARCINOGENS (YOUTH):		2190
AT2 = AVERAGING TIME (DAYS), NONCARCINOGENS (ADULT):		365
AT3 = AVERAGING TIME (DAYS), CARCINOGENS:		25550

DETERMINE CONVERSION FACTORS:
DEX = (C)*(SA SQ CM)*(AF MG/SQ CM)*(ABS)*(EF DAYS/YEAR)*(ED YEARS)/(AT DAYS)/(BW KG)/(1 KG/1E6 MG)

DOSEyouth = (CF1)*(C)*(ABS) CF1 = 0.00E+00 CANCER RISK = (CF3)*(C)*(ABS) CF3 = 8.61E-07
DOSEadult = (CF2)*(C)*(ABS) CF2 = 6.03E-05

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RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)
SITE 3
EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION
CALCULATE DOSES:

CHEMICAL	C (MG/KG)	ABSORPTION FRACTION	ANNUAL YOUTH DOSE (MG/KG/DAY)	ANNUAL ADULT DOSE (MG/KG/DAY)	LIFETIME AVERAGE DOSE (MG/KG/DAY)	DERMAL RfD (MG/KG/DAY)	DERMAL CSF (KG–DAY/MG)
Barium	0	0.001	0.00E+00	0.00E+00	0.00E+00	2.80E–03	0.00E+00
Beryllium	0	0.001	0.00E+00	0.00E+00	0.00E+00	5.00E–05	4.30E+02
Chromium (III)	11.8	0.001	0.00E+00	7.11E–07	1.02E–08	2.00E–02	0.00E+00
Chromium (VI)	11.8	0.001	0.00E+00	7.11E–07	1.02E–08	1.00E–04	0.00E+00
Cobalt	0	0.001	0.00E+00	0.00E+00	0.00E+00	4.00E–04	0.00E+00
Copper	0	0.001	0.00E+00	0.00E+00	0.00E+00	2.22E–02	0.00E+00
Lead	5.4	0.001	0.00E+00	3.25E–07	4.65E–09	0.00E+00	0.00E+00
Manganese	18.4	0.001	0.00E+00	1.11E–06	1.58E–08	1.50E–04	0.00E+00
Mercury	0.11	0.001	0.00E+00	6.63E–09	9.47E–11	2.10E–05	0.00E+00
Vanadium	8.6	0.001	0.00E+00	5.18E–07	7.41E–09	7.00E–05	0.00E+00
Zinc	0	0.001	0.00E+00	0.00E+00	0.00E+00	7.50E–02	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	

CP-00878-3.13-08/01/94

RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL (PAGE THREE)
SITE 3
EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION
DETERMINE HAZARD INDICES AND CANCER RISK:

CHEMICAL	HAZARD INDEX YOUTH	HAZARD INDEX ADULT	INCREMENTAL CANCER RISK
Barium	0.00E+00	0.00E+00	0.00E+00
Beryllium	0.00E+00	0.00E+00	0.00E+00
Chromium (III)	0.00E+00	3.56E−05	0.00E+00
Chromium (VI)	0.00E+00	7.11E−03	0.00E+00
Cobalt	0.00E+00	0.00E+00	0.00E+00
Copper	0.00E+00	0.00E+00	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	7.39E−03	0.00E+00
Mercury	0.00E+00	3.16E−04	0.00E+00
Vanadium	0.00E+00	7.41E−03	0.00E+00
Zinc	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
TOTAL	0.00E+00	2.23E−02	0.00E+00

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RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL

SITE NAME: MCAS CHERRY POINT
LOCATION: SITE 3
DATE: 05/16/94

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH PICA INGESTION ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS

RELEVANT EQUATION: IEX = (C x IR x Fi x EF x ED)/(BW x AT x 1E6)

WHERE:
C = MEAN CONCENTRATION IN SOIL SAMPLE (MG/KG)
IR = SOIL INGESTION RATE (MG/EVENT)
EF = EXPOSURE FREQUENCY (EVENTS/YEAR)
Fi = FRACTION FROM CONTAMINATED SOURCE
ED = EXPOSURE DURATION (YEARS)
BW = BODY WEIGHT (KG)
AT = AVERAGING TIME (DAYS)

ENTER INPUT PARAMETERS:

ADULT:		YOUTH:	
IR:	480	IR:	0
EF:	250	EF:	350
Fi:	1	Fi:	1
ED:	1	ED:	6
BW:	70	BW:	15
AT(CAR):	25550	AT(CAR):	25550
AT(NON):	365	AT(NON):	2190

DETERMINE CONVERSION FACTORS:

ADULT:			YOUTH:			ADULT/YOUTH (CANCER RISK):	
CF:	4.70E–06	(AVG ANNUAL DOSE)	CF:	0.00E+00	(AVG ANNUAL DOSE)	CF:	6.71E–08

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RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL (PAGE TWO)
SITE 3
EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS
CALCULATE DOSES:

CHEMICAL	C (MG/KG)	YOUTH ANNUAL DOSE (MG/KG/DAY)	ADULT ANNUAL DOSE (MG/KG/DAY)	LIFETIME AVERAGE DOSE (MG/KG/DAY)	RFD (MG/KG/DAY)	CSF (KG–DAY/MG)
Barium	0	0.00E+00	0.00E+00	0.00E+00	7.00E–02	
Beryllium	0	0.00E+00	0.00E+00	0.00E+00	5.00E–03	4.30E+00
Chromium (III)	11.8	0.00E+00	5.54E–05	7.92E–07	1.00E+00	
Chromium (VI)	11.8	0.00E+00	5.54E–05	7.92E–07	5.00E–03	
Cobalt	0	0.00E+00	0.00E+00	0.00E+00	8.00E–03	
Copper	0	0.00E+00	0.00E+00	0.00E+00	3.70E–02	
Lead	5.4	0.00E+00	2.54E–05	3.62E–07		
Manganese	18.4	0.00E+00	8.64E–05	1.23E–06	5.00E–03	
Mercury	0.11	0.00E+00	5.17E–07	7.38E–09	3.00E–04	
Vanadium	8.6	0.00E+00	4.04E–05	5.77E–07	7.00E–03	
Zinc	0	0.00E+00	0.00E+00	0.00E+00	3.00E–01	
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		

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RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL (PAGE THREE)
SITE 3
EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS
DETERMINE HAZARD INDICES AND CANCER RISK

CHEMICAL	HAZARD INDEX YOUTH	HAZARD INDEX ADULT	INCREMENTAL CANCER RISK
Barium	0.00E+00	0.00E+00	0.00E+00
Beryllium	0.00E+00	0.00E+00	0.00E+00
Chromium (III)	0.00E+00	5.54E−05	0.00E+00
Chromium (VI)	0.00E+00	1.11E−02	0.00E+00
Cobalt	0.00E+00	0.00E+00	0.00E+00
Copper	0.00E+00	0.00E+00	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	1.73E−02	0.00E+00
Mercury	0.00E+00	1.72E−03	0.00E+00
Vanadium	0.00E+00	5.77E−03	0.00E+00
Zinc	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
TOTAL	0.00E+00	3.59E−02	0.00E+00

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RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: MCAS CHERRY POINT
LOCATION: SITE 4
DATE: 05/16/94

EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION

RELEVANT EQUATION: DEX = (C x SA x AF x ABS x EF x ED)/(BW x AT x 1E6)

WHERE:

C = CONCENTRATION IN SOIL (MG/KG)			
SA1 = YOUTH SKIN SURFACE AREA (SQ CM/DAY):			0
SA2 = ADULT SKIN SURFACE AREA (SQ CM/DAY):			6160
AF = ADHERENCE FACTOR (MG/SQ CM):			1
ABS = ABSORPTION FRACTION: (DECIMAL FRACTION)	VOCS:		0.1
	BNAS/PESTICIDES:		0.05
	PCBS:		0.03
	METALS:		0.001
EF1 = YOUTH EXPOSURE FREQUENCY (DAYS/YEAR):			24
EF2 = ADULT EXPOSURE FREQUENCY (DAYS/YEAR):			250
ED1 = YOUTH EXPOSURE DURATION (YEARS):			6
ED2 = ADULT EXPOSURE DURATION (YEARS):			1
BW1 = BODY WEIGHT ADOLESCENT (KG):			15
BW2 = BODY WEIGHT ADULT (KG):			70
AT1 = AVERAGING TIME (DAYS), NONCARCINOGENS (YOUTH):			2190
AT2 = AVERAGING TIME (DAYS), NONCARCINOGENS (ADULT):			365
AT3 = AVERAGING TIME (DAYS), CARCINOGENS:			25550

DETERMINE CONVERSION FACTORS:
DEX = (C)*(SA SQ CM)*(AF MG/SQ CM)*(ABS)*(EF DAYS/YEAR)*(ED YEARS)/(AT DAYS)/(BW KG)/(1 KG/1E6 MG)

DOSEyouth = (CF1)*(C)*(ABS) CF1 = 0.00E+00 CANCER RISK = (CF3)*(C)*(ABS) CF3 = 8.61E-07
DOSEadult = (CF2)*(C)*(ABS) CF2 = 6.03E-05

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RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)
SITE 4
EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION
CALCULATE DOSES:

CHEMICAL	C (MG/KG)	ABSORPTION FRACTION	ANNUAL YOUTH DOSE (MG/KG/DAY)	ANNUAL ADULT DOSE (MG/KG/DAY)	LIFETIME AVERAGE DOSE (MG/KG/DAY)	RFD (MG/KG/DAY)	CSF (KG–DAY/MG)
Aroclor–1260	0.028	0.01	0.00E+00	1.69E–08	2.41E–10	0.00E+00	9.06E+00
bis(2–Ethylhexyl)phthalate	0.13	0.01	0.00E+00	7.84E–08	1.12E–09	1.00E–02	2.80E–02
Antimony	0	0.001	0.00E+00	0.00E+00	0.00E+00	2.00E–05	0.00E+00
Arsenic	4.6	0.001	0.00E+00	2.77E–07	3.96E–09	2.85E–04	1.89E+00
Barium	0	0.001	0.00E+00	0.00E+00	0.00E+00	2.80E–03	0.00E+00
Beryllium	0	0.001	0.00E+00	0.00E+00	0.00E+00	5.00E–05	4.30E+02
Cadmium	0	0.001	0.00E+00	0.00E+00	0.00E+00	5.00E–05	0.00E+00
Chromium (III)	14.8	0.001	0.00E+00	8.92E–07	1.27E–08	2.00E–02	0.00E+00
Chromium (VI)	14.8	0.001	0.00E+00	8.92E–07	1.27E–08	0.00E+00	0.00E+00
Cobalt	51.9	0.001	0.00E+00	3.13E–06	4.47E–08	4.00E–04	0.00E+00
Copper	0	0.001	0.00E+00	0.00E+00	0.00E+00	2.22E–02	0.00E+00
Lead	25.6	0.001	0.00E+00	1.54E–06	2.20E–08	0.00E+00	0.00E+00
Manganese	28.7	0.001	0.00E+00	1.73E–06	2.47E–08	1.50E–04	0.00E+00
Mercury	0.1	0.001	0.00E+00	6.03E–09	8.61E–11	2.10E–05	0.00E+00
Nickel	0	0.001	0.00E+00	0.00E+00	0.00E+00	3.00E–03	0.00E+00
Selenium	0.28	0.001	0.00E+00	1.69E–08	2.41E–10	4.00E–03	0.00E+00
Silver	0	0.001	0.00E+00	0.00E+00	0.00E+00	1.00E–03	0.00E+00
Vanadium	27.8	0.001	0.00E+00	1.68E–06	2.39E–08	7.00E–05	0.00E+00
Zinc	39	0.001	0.00E+00	2.35E–06	3.36E–08	7.50E–02	0.00E+00
Cyanide	0.09	0.01	0.00E+00	5.42E–08	7.75E–10	1.00E–02	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	

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RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL (PAGE THREE)
SITE 4
EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION
DETERMINE HAZARD INDICES AND CANCER RISK:

CHEMICAL	HAZARD INDEX YOUTH	HAZARD INDEX ADULT	INCREMENTAL CANCER RISK
Aroclor-1260	0.00E+00	0.00E+00	2.18E-09
bis(2-Ethylhexyl)phthalate	0.00E+00	7.84E-06	3.13E-11
Antimony	0.00E+00	0.00E+00	0.00E+00
Arsenic	0.00E+00	9.73E-04	7.50E-09
Barium	0.00E+00	0.00E+00	0.00E+00
Beryllium	0.00E+00	0.00E+00	0.00E+00
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium (III)	0.00E+00	4.46E-05	0.00E+00
Chromium (VI)	0.00E+00	0.00E+00	0.00E+00
Cobalt	0.00E+00	7.82E-03	0.00E+00
Copper	0.00E+00	0.00E+00	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	1.15E-02	0.00E+00
Mercury	0.00E+00	2.87E-04	0.00E+00
Nickel	0.00E+00	0.00E+00	0.00E+00
Selenium	0.00E+00	4.22E-06	0.00E+00
Silver	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	2.39E-02	0.00E+00
Zinc	0.00E+00	3.13E-05	0.00E+00
Cyanide	0.00E+00	5.42E-06	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
TOTAL	0.00E+00	4.46E-02	9.72E-09

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RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL

SITE NAME: MCAS CHERRY POINT
LOCATION: SITE 4
DATE: 05/16/94

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH PICA INGESTION ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS

RELEVANT EQUATION: IEX = (C x IR x Fi x EF x ED)/(BW x AT x 1E6)

WHERE:
C = MEAN CONCENTRATION IN SOIL SAMPLE (MG/KG)
IR = SOIL INGESTION RATE (MG/EVENT)
EF = EXPOSURE FREQUENCY (EVENTS/YEAR)
Fi = FRACTION FROM CONTAMINATED SOURCE
ED = EXPOSURE DURATION (YEARS)
BW = BODY WEIGHT (KG)
AT = AVERAGING TIME (DAYS)

ENTER INPUT PARAMETERS:

ADULT:		YOUTH:	
IR:	480	IR:	0
EF:	250	EF:	350
Fi:	1	Fi:	1
ED:	1	ED:	6
BW:	70	BW:	15
AT(CAR):	25550	AT(CAR):	25550
AT(NON):	365	AT(NON):	2190

DETERMINE CONVERSION FACTORS:

ADULT:			YOUTH:			ADULT/YOUTH (CANCER RISK):	
CF:	4.70E-06	(AVG ANNUAL DOSE)	CF:	0.00E+00	(AVG ANNUAL DOSE)	CF:	6.71E-08

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RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL (PAGE TWO)
SITE 4
EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS
CALCULATE DOSES:

CHEMICAL	C (MG/KG)	YOUTH ANNUAL DOSE (MG/KG/DAY)	ADULT ANNUAL DOSE (MG/KG/DAY)	LIFETIME AVERAGE DOSE (MG/KG/DAY)	RFD (MG/KG/DAY)	CSF (KG–DAY/MG)
Aroclor–1260	0.028	0.00E+00	1.32E–07	1.88E–09		7.70E+00
bis(2–Ethylhexyl)phthalate	0.13	0.00E+00	6.11E–07	8.72E–09	2.00E–02	1.40E–02
Antimony	0	0.00E+00	0.00E+00	0.00E+00	0.0004	
Arsenic	4.6	0.00E+00	2.16E–05	3.09E–07	3.00E–04	1.80E+00
Barium	0	0.00E+00	0.00E+00	0.00E+00	0.07	
Beryllium	0	0.00E+00	0.00E+00	0.00E+00	0.005	4.3
Cadmium	0	0.00E+00	0.00E+00	0.00E+00	0.001	
Chromium (III)	14.8	0.00E+00	6.95E–05	9.93E–07	1.00E+00	
Chromium (VI)	14.8	0.00E+00	6.95E–05	9.93E–07		
Cobalt	51.9	0.00E+00	2.44E–04	3.48E–06	0.008	
Copper	0	0.00E+00	0.00E+00	0.00E+00	0.037	
Lead	25.6	0.00E+00	1.20E–04	1.72E–06		
Manganese	28.7	0.00E+00	1.35E–04	1.93E–06	5.00E–03	
Mercury	0.1	0.00E+00	4.70E–07	6.71E–09	3.00E–04	
Nickel	0	0.00E+00	0.00E+00	0.00E+00	2.00E–02	
Selenium	0.28	0.00E+00	1.32E–06	1.88E–08	0.005	
Silver	0	0.00E+00	0.00E+00	0.00E+00	0.005	
Vanadium	27.8	0.00E+00	1.31E–04	1.87E–06	7.00E–03	
Zinc	39	0.00E+00	1.83E–04	2.62E–06	3.00E–01	
Cyanide	0.09	0.00E+00	4.23E–07	6.04E–09	2.00E–02	
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		

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RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL (PAGE THREE)
SITE 4
EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS
DETERMINE HAZARD INDICES AND CANCER RISK:

CHEMICAL	HAZARD INDEX YOUTH	HAZARD INDEX ADULT	INCREMENTAL CANCER RISK
Aroclor-1260	0.00E+00	0.00E+00	1.45E-08
bis(2-Ethylhexyl)phthalate	0.00E+00	3.05E-05	1.22E-10
Antimony	0.00E+00	0.00E+00	0.00E+00
Arsenic	0.00E+00	7.20E-02	5.56E-07
Barium	0.00E+00	0.00E+00	0.00E+00
Beryllium	0.00E+00	0.00E+00	0.00E+00
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium (III)	0.00E+00	6.95E-05	0.00E+00
Chromium (VI)	0.00E+00	0.00E+00	0.00E+00
Cobalt	0.00E+00	3.05E-02	0.00E+00
Copper	0.00E+00	0.00E+00	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	2.70E-02	0.00E+00
Mercury	0.00E+00	1.57E-03	0.00E+00
Nickel	0.00E+00	0.00E+00	0.00E+00
Selenium	0.00E+00	2.63E-04	0.00E+00
Silver	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	1.87E-02	0.00E+00
Zinc	0.00E+00	6.11E-04	0.00E+00
Cyanide	0.00E+00	2.11E-05	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
TOTAL	0.00E+00	1.51E-01	5.70E-07

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RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: MCAS CHERRY POINT
LOCATION: SITE 5
DATE: 05/16/94

EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION

RELEVANT EQUATION: DEX = (C x SA x AF x ABS x EF x ED)/(BW x AT x 1E6)

WHERE:

C = CONCENTRATION IN SOIL (MG/KG)		
SA1 = YOUTH SKIN SURFACE AREA (SQ CM/DAY):		0
SA2 = ADULT SKIN SURFACE AREA (SQ CM/DAY):		6160
AF = ADHERENCE FACTOR (MG/SQ CM):		1
ABS = ABSORPTION FRACTION: (DECIMAL FRACTION)	VOCS:	0.1
	BNAS/PESTICIDES:	0.05
	PCBS:	0.03
	METALS:	0.001
EF1 = YOUTH EXPOSURE FREQUENCY (DAYS/YEAR):		24
EF2 = ADULT EXPOSURE FREQUENCY (DAYS/YEAR):		250
ED1 = YOUTH EXPOSURE DURATION (YEARS):		6
ED2 = ADULT EXPOSURE DURATION (YEARS):		1
BW1 = BODY WEIGHT ADOLESCENT (KG):		15
BW2 = BODY WEIGHT ADULT (KG):		70
AT1 = AVERAGING TIME (DAYS), NONCARCINOGENS (YOUTH):		2190
AT2 = AVERAGING TIME (DAYS), NONCARCINOGENS (ADULT):		365
AT3 = AVERAGING TIME (DAYS), CARCINOGENS:		25550

DETERMINE CONVERSION FACTORS:
DEX = (C)*(SA SQ CM)*(AF MG/SQ CM)*(ABS)*(EF DAYS/YEAR)*(ED YEARS)/(AT DAYS)/(BW KG)/(1 KG/1E6 MG)

DOSEyouth = (CF1)*(C)*(ABS) CF1 = 0.00E+00 CANCER RISK = (CF3)*(C)*(ABS) CF3 = 8.61E-07
DOSEadult = (CF2)*(C)*(ABS) CF2 = 6.03E-05

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RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)
SITE 5
EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION
CALCULATE DOSES:

CHEMICAL	C (MG/KG)	ABSORPTION FRACTION	ANNUAL YOUTH DOSE (MG/KG/DAY)	ANNUAL ADULT DOSE (MG/KG/DAY)	LIFETIME AVERAGE DOSE (MG/KG/DAY)	RFD (MG/KG/DAY)	CSF (KG–DAY/MG)
Toluene	0.0039	0.01	0.00E+00	2.35E–09	3.36E–11	2.00E–01	0.00E+00
Endosulfan I	0.0092	0.01	0.00E+00	5.55E–09	7.92E–11	3.00E–05	0.00E+00
Arsenic	4.5	0.001	0.00E+00	2.71E–07	3.87E–09	2.85E–04	1.89E+00
Barium	5	0.001	0.00E+00	3.01E–07	4.31E–09	2.80E–03	0.00E+00
Beryllium	0.08	0.001	0.00E+00	4.82E–09	6.89E–11	5.00E–05	4.30E+02
Chromium (III)	9.9	0.001	0.00E+00	5.97E–07	8.52E–09	2.00E–02	0.00E+00
Chromium (VI)	9.9	0.001	0.00E+00	5.97E–07	8.52E–09	1.00E–04	0.00E+00
Copper	1.1	0.001	0.00E+00	6.63E–08	9.47E–10	2.22E–02	0.00E+00
Lead	4.4	0.001	0.00E+00	2.65E–07	3.79E–09	0.00E+00	0.00E+00
Manganese	12.5	0.001	0.00E+00	7.53E–07	1.08E–08	1.50E–04	0.00E+00
Mercury	0.04	0.001	0.00E+00	2.41E–09	3.44E–11	2.10E–05	0.00E+00
Nickel	2.7	0.001	0.00E+00	1.63E–07	2.32E–09	3.00E–03	0.00E+00
Vanadium	12.7	0.001	0.00E+00	7.65E–07	1.09E–08	7.00E–05	0.00E+00
Zinc	0	0.001	0.00E+00	0.00E+00	0.00E+00	7.50E–02	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	

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RISK ASSESSMENT SPREADSHEET – DIRECT DERMAL CONTACT WITH SOIL (PAGE THREE)
SITE 5
EXPOSURE SCENARIO: CONSTRUCTION WORKER – SHORT TERM DURATION
DETERMINE HAZARD INDICES AND CANCER RISK:

CHEMICAL	HAZARD INDEX YOUTH	HAZARD INDEX ADULT	INCREMENTAL CANCER RISK
Toluene	0.00E+00	1.18E-08	0.00E+00
Endosulfan I	0.00E+00	1.85E-04	0.00E+00
Arsenic	0.00E+00	9.52E-04	7.34E-09
Barium	0.00E+00	1.08E-04	0.00E+00
Beryllium	0.00E+00	9.64E-05	2.96E-08
Chromium (III)	0.00E+00	2.98E-05	0.00E+00
Chromium (VI)	0.00E+00	5.97E-03	0.00E+00
Copper	0.00E+00	2.99E-06	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	5.02E-03	0.00E+00
Mercury	0.00E+00	1.15E-04	0.00E+00
Nickel	0.00E+00	5.42E-05	0.00E+00
Vanadium	0.00E+00	1.09E-02	0.00E+00
Zinc	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
TOTAL	0.00E+00	2.35E-02	3.70E-08

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RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL

SITE NAME: MCAS CHERRY POINT
LOCATION: SITE 5
DATE: 05/16/94

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH PICA INGESTION ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS

RELEVANT EQUATION: IEX = (C x IR x Fi x EF x ED)/(BW x AT x 1E6)

WHERE:
C = MEAN CONCENTRATION IN SOIL SAMPLE (MG/KG)
IR = SOIL INGESTION RATE (MG/EVENT)
EF = EXPOSURE FREQUENCY (EVENTS/YEAR)
Fi = FRACTION FROM CONTAMINATED SOURCE
ED = EXPOSURE DURATION (YEARS)
BW = BODY WEIGHT (KG)
AT = AVERAGING TIME (DAYS)

ENTER INPUT PARAMETERS:

ADULT:		YOUTH:	
IR:	480	IR:	0
EF:	250	EF:	350
Fi:	1	Fi:	1
ED:	1	ED:	6
BW:	70	BW:	15
AT(CAR):	25550	AT(CAR):	25550
AT(NON):	365	AT(NON):	2190

DETERMINE CONVERSION FACTORS:

ADULT:
CF: 4.70E−06 (AVG ANNUAL DOSE)

YOUTH:
CF: 0.00E+00 (AVG ANNUAL DOSE)

ADULT/YOUTH (CANCER RISK):
CF: 6.71E−08

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RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL (PAGE TWO)
SITE 5
EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS
CALCULATE DOSES:

CHEMICAL	C (MG/KG)	YOUTH ANNUAL DOSE (MG/KG/DAY)	ADULT ANNUAL DOSE (MG/KG/DAY)	LIFETIME AVERAGE DOSE (MG/KG/DAY)	RFD (MG/KG/DAY)	CSF (KG–DAY/MG)
Toluene	0.0039	0.00E+00	1.83E−08	2.62E−10	2.00E−01	
Endosulfan I	0.0092	0.00E+00	4.32E−08	6.17E−10	5.00E−05	
Arsenic	4.5	0.00E+00	2.11E−05	3.02E−07	3.00E−04	1.80E+00
Barium	5	0.00E+00	2.35E−05	3.35E−07	0.07	
Beryllium	0.08	0.00E+00	3.76E−07	5.37E−09	0.005	4.3
Chromium (III)	9.9	0.00E+00	4.65E−05	6.64E−07	1.00E+00	
Chromium (VI)	9.9	0.00E+00	4.65E−05	6.64E−07	5.00E−03	
Copper	1.1	0.00E+00	5.17E−06	7.38E−08	0.037	
Lead	4.4	0.00E+00	2.07E−05	2.95E−07		
Manganese	12.5	0.00E+00	5.87E−05	8.39E−07	5.00E−03	
Mercury	0.04	0.00E+00	1.88E−07	2.68E−09	3.00E−04	
Nickel	2.7	0.00E+00	1.27E−05	1.81E−07	2.00E−02	
Vanadium	12.7	0.00E+00	5.96E−05	8.52E−07	7.00E−03	
Zinc	0	0.00E+00	0.00E+00	0.00E+00	3.00E−01	
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		
		0.00E+00	0.00E+00	0.00E+00		

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RISK ASSESSMENT SPREADSHEET – INCIDENTAL INGESTION OF SOIL (PAGE THREE)
SITE 5
EXPOSURE SCENARIO–INCIDENTAL INGESTION OF SOIL BY CONSTRUCTION WORKERS
DETERMINE HAZARD INDICES AND CANCER RISK

CHEMICAL	HAZARD INDEX YOUTH	HAZARD INDEX ADULT	INCREMENTAL CANCER RISK
Toluene	0.00E+00	9.16E−08	0.00E+00
Endosulfan I	0.00E+00	8.64E−04	0.00E+00
Arsenic	0.00E+00	7.05E−02	5.43E−07
Barium	0.00E+00	3.35E−04	0.00E+00
Beryllium	0.00E+00	7.51E−05	2.31E−08
Chromium (III)	0.00E+00	4.65E−05	0.00E+00
Chromium (VI)	0.00E+00	9.30E−03	0.00E+00
Copper	0.00E+00	1.40E−04	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	1.17E−02	0.00E+00
Mercury	0.00E+00	6.26E−04	0.00E+00
Nickel	0.00E+00	6.34E−04	0.00E+00
Vanadium	0.00E+00	8.52E−03	0.00E+00
Zinc	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
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	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
TOTAL	0.00E+00	1.03E−01	5.67E−07

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TITLE:	RTI LAND TREATMENT MODEL APPLIED TO OPEN LANDFILLS
REFERENCE:	USEPA, TSDF – Air Emissions Models, November 1989, EPA–450/3–87/026

Description:	Model is based upon theory of diffusion out of a flat slab surface. Originally designed for use in estimating emissions from land treatment units, the model provides emission estimates that will be used to calculate vapor concentrations inside an excavated area whose dimensions are specified by the user.

Instructions:	Provide data for each blank cell (*) and input chemical data as required on subsequent pages. Print all pages by invoking print macro using "ALT–P".

SITE CHARACTERISTICS

Emission Duration (t)	2534400	(seconds)
Mean annual windspeed (U) *	4	(m/sec)
Excavation Length *	20	(m)
Excavation Width *	10	(m)
Excavation Depth *	8	(m)
Depth to Contaminant Layer (top) *	0	(m)
Depth to Contaminant Layer (bottom)*	5	(m)
Exposed Contaminant Thickness *	500	(cm)
Effective Treatment Area Diameter	15.96	(m)

SOIL CHARACTERISTICS

Soil Temperature	60.0	(Farenheit)*
(calculated)'	15.6	(Celcius)
(calculated)'	288.7	(Kelvin)
Bulk Soil Density *	1.35	(gm/cm3)
Total Porosity *	0.4	(Fraction)
Air filled Porosity *	0.1	(Fraction)

OTHER CHARACTERISTICS

Density of Air *	1.2E–03	(gm/cm3)
Viscosity of Air *	1.8E–04	(gm/cm/s)

EXPOSURE INPUTS

Receptor: * Construction Worker – Site 4 (UST)

Inhalation Rate (InhR) *	2.5	(m3/hr)
Exposure Time (ET) *	8	(hr/day)
Exposure Frequency (EF) *	30	(day/yr)
Exposure Duration (ED) *	1	(yr)
Body Weight (BW) *	70	(Kg)
Lifetime (LT) *	70	(yr)

CHEMICAL TRANSPORT INFORMATION

Input physical data in columns marked with an asterisk (*).

Chemical *	Parameter Units	Chemical Concentration * (ug/Kg)	Molecular Weight * (gm/mol)	Vapor Pressure Calculation Data T1 * (Degrees C)	P1 * (mm Hg)	T2 * (Degrees C)	P2 * (mm Hg)	Enthalpy (Latm/mol)	Vapor Pressure (mm Hg)	Diffusivity in Air * (cm2/s)	Effective Diffusivity (cm2/s)
Trichloroethene			131.39	25.00	77	74.20	760	3.95E+02	4.54E+01	7.90E-02	2.31E-04
2-Butanone		ND	72.11	25.00	100	79.60	760	3.21E+02	6.51E+01	8.08E-02	2.36E-04
Toluene			92.14	25.00	28	110.60	760	3.62E+02	1.73E+01	8.70E-02	2.54E-04
Xylene (total)			106.17	15.50	5	27.30	10	4.18E+02	5.02E+00	8.70E-02	2.54E-04
Phenanthrene			178.23	118.20	1	340.00	760	5.89E+02	1.47E-03	5.00E-02	1.46E-04
Fluoranthene			202.26	25.00	5.0E-06	375.00	760	8.53E+02	1.60E-06	5.00E-02	1.46E-04
Pyrene			202.26	200.00	2.5	393.00	760	7.66E+02	8.38E-06	5.00E-02	1.46E-04
Benzo(a)anthracene			228.29	20.00	5.0E-09		760	**********	1.12E-06	5.10E-02	1.49E-04
Chrysene			228.29	25.00	6.3E-09	448.00	760	1.06E+03	8.25E-03	5.00E-02	1.46E-04
bis(2-Ethylhexyl)phthalate		130.00	390.54	200.00	1.2	385.00	760	8.91E+02	5.15E-07	3.51E-02	1.03E-04
Benzo(b)fluoranthene			252.32	20.00	5.0E-07	480.00	760	8.33E+02	2.93E-07	5.00E-02	1.46E-04
Benzo(k)fluoranthene			252.32	20.00	9.6E-11	480.00	760	1.17E+03	4.54E-11	5.00E-02	1.46E-04
Benzo(a)pyrene			252.32	20.00	5.0E-09	310.00	10	1.04E+03	2.58E-09	4.30E-02	1.26E-04

Total Loading = 130 (ug/Kg)

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VAPOR EMISSION MODEL RESULTS

Chemical	Parameter Units	Chemical Concentration (ug/Kg)	Gas Phase Ratio (Keq)	Volatilization Constant (Kd) (1/s)	Vapor Phase Mass Transfer Coefficient (Kgas) (m/s)	Emissions Rate (E) (gm/cm2/s)
Trichloroethene		0	560.90592601	1.3E-06	0.006819	0
2-Butanone		ND	805.16327471	1.9E-06	0.006923	0
Toluene		0	213.27837816	5.3E-07	0.007275	0
Xylene (total)		0	62.013468086	1.6E-07	0.007275	0
Phenanthrene		0	0.0182240464	2.6E-11	0.005019	0
Fluoranthene		0	0.0000197404	2.8E-14	0.005019	0
Pyrene		0	0.0001035228	1.5E-13	0.005019	0
Benzo(a)anthracene		0	0.0000138669	2.0E-14	0.005086	0
Chrysene		0	0.1019753092	1.5E-10	0.005019	0
bis(2-Ethylhexyl)phthalate		130	6.36264E-06	6.4E-15	0.00396	1.6E-15
Benzo(b)fluoranthene		0	3.62730E-06	5.2E-15	0.005019	0
Benzo(k)fluoranthene		0	5.60714E-10	8.1E-19	0.005019	0
Benzo(a)pyrene		0	3.18485E-08	3.9E-17	0.004537	0
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CONTACT CONCENTRATION ASSESSMENT

Chemical	Parameter / Units	Chemical Concentration (ug/Kg)	Emission Rate (E) (gm/cm2/s)	Emission Area (m2)	Emission Rate (gm/sec)	Total Mass (gm)	Confined Space Air Concentration (mg/m3)	Vented Space Air Concentration (mg/m3)
Trichloroethene		0	0	680	0	0	0	NA
2-Butanone		ND	0	680	0	0	0	NA
Toluene		0	0	680	0	0	0	NA
Xylene (total)		0	0	680	0	0	0	NA
Phenanthrene		0	0	680	0	0	0	NA
Fluoranthene		0	0	680	0	0	0	NA
Pyrene		0	0	680	0	0	0	NA
Benzo(a)anthracene		0	0	680	0	0	0	NA
Chrysene		0	0	680	0	0	0	NA
bis(2-Ethylhexyl)phthalate		130	1.58903E-15	680	1.1E-08	0.027385	0.011166	NA
Benzo(b)fluoranthene		0	0	680	0	0	0	NA
Benzo(k)fluoranthene		0	0	680	0	0	0	NA
Benzo(a)pyrene		0	0	680	0	0	0	NA
0		0	0	680	0	0	0	NA
0		0	0	680	0	0	0	NA
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EXPOSURE ASSESSMENT/RISK CHARACTERIZATION

Chemical	Parameter Units	Contact Concentration (mg/m3)	Inhalation Reference Dose * (mg/Kg/day)	Cancer Slope Factor * (Kg day/mg)	Noncarc. Dose (mg/Kg/day)	Carcinogenic Dose (mg/Kg/day)	Hazard Quotient	Increased Cancer Risk
Trichloroethene		0		6.0E-03	0	0	NA	0
2-Butanone		0	0.3		0	0	0	0
Toluene		0	0.11		0	0	0	0
Xylene (total)		0	0.0857 (para-)		0	0	0	0
Phenanthrene		0			0	0	NA	0
Fluoranthene		0	0.04 (oral)		0	0	0	0
Pyrene		0	0.03 (oral)		0	0	0	0
Benzo(a)anthracene		0		7.3E-01 (oral)	0	0	NA	0
Chrysene		0		7.3E-01 (oral)	0	0	NA	0
bis(2-Ethylhexyl)phthalate		0.011166	0.014 (oral)	1.4E-02 (oral)	0.000262	3.7E-06	0.01873	5.2E-08
Benzo(b)fluoranthene		0		7.3E-01 (oral)	0	0	NA	0
Benzo(k)fluoranthene		0		7.3E-01 (oral)	0	0	NA	0
Benzo(a)pyrene		0		7.3E+00 (oral)	0	0		0
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						Cumulative Indices/Risks =	0.01873	5.24E-08

(1) Oral RfD or CSF

(1a) Oral RfD for Naphthalene

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TITLE:	RTI LAND TREATMENT MODEL APPLIED TO OPEN LANDFILLS
REFERENCE:	USEPA, TSDF – Air Emissions Models, November 1989, EPA-450/3-87/026

Description:	Model is based upon theory of diffusion out of a flat slab surface. Originally designed for use in estimating emissions from land treatment units, the model provides emission estimates that will be used to calculate vapor concentrations inside an excavated area whose dimensions are specified by the user.

Instructions:	Provide data for each blank cell (*) and input chemical data as required on subsequent pages. Print all pages by invoking print macro using "ALT-P".

SITE CHARACTERISTICS

Emission Duration (t)	1670400	(seconds)
Mean annual windspeed (U) *	4	(m/sec)
Excavation Length *	15	(m)
Excavation Width *	2	(m)
Excavation Depth *	5	(m)
Depth to Contaminant Layer (top) *	0	(m)
Depth to Contaminant Layer (bottom) *	5	(m)
Exposed Contaminant Thickness *	500	(cm)
Effective Treatment Area Diameter	6.18	(m)

EXPOSURE INPUTS

Receptor: * Construction Worker – Site 4 (Utilities)

Inhalation Rate (InhR) *	2.5	(m3/hr)
Exposure Time (ET) *	8	(hr/day)
Exposure Frequency (EF) *	20	(day/yr)
Exposure Duration (ED) *	1	(yr)
Body Weight (BW) *	70	(Kg)
Lifetime (LT) *	70	(yr)

SOIL CHARACTERISTICS

Soil Temperature	60.0	(Farenheit) *
(calculated)	15.6	(Celcius)
(calculated)	288.7	(Kelvin)
Bulk Soil Density *	1.35	(gm/cm3)
Total Porosity *	0.4	(Fraction)
Air filled Porosity *	0.1	(Fraction)

OTHER CHARACTERISTICS

Density of Air *	1.2E-03	(gm/cm3)
Viscosity of Air *	1.8E-04	(gm/cm/s)

CHEMICAL TRANSPORT INFORMATION

Input physical data in columns marked with an asterisk (*).

Chemical *	Parameter Units	Chemical Concentration * (ug/Kg)	Molecular Weight * (gm/mol)	Vapor Pressure Calculation Data T1 * (Degrees C)	P1 * (mm Hg)	T2 * (Degrees C)	P2 * (mm Hg)	Enthalpy (Latm/mol)	Vapor Pressure (mm Hg)	Diffusivity in Air * (cm2/s)	Effective Diffusivity (cm2/s)
Trichloroethene			131.39	25.00	77	74.20	760	3.95E+02	4.54E+01	7.90E-02	2.31E-04
2-Butanone		ND	72.11	25.00	100	79.60	760	3.21E+02	6.51E+01	8.08E-02	2.36E-04
Toluene			92.14	25.00	28	110.60	760	3.62E+02	1.73E+01	8.70E-02	2.54E-04
Xylene (total)			106.17	15.50	5	27.30	10	4.18E+02	5.02E+00	8.70E-02	2.54E-04
Phenanthrene			178.23	118.20	1	340.00	760	5.89E+02	1.47E-03	5.00E-02	1.46E-04
Fluoranthene			202.26	25.00	5.0E-06	375.00	760	8.53E+02	1.60E-06	5.00E-02	1.46E-04
Pyrene			202.26	200.00	2.5	393.00	760	7.66E+02	8.38E-06	5.00E-02	1.46E-04
Benzo(a)anthracene			228.29	20.00	5.0E-09		760	**********	1.12E-06	5.10E-02	1.49E-04
Chrysene			228.29	25.00	6.3E-09	448.00	760	1.06E+03	8.25E-03	5.00E-02	1.46E-04
bis(2-Ethylhexyl)phthalate		130.00	390.54	200.00	1.2	385.00	760	8.91E+02	5.15E-07	3.51E-02	1.03E-04
Benzo(b)fluoranthene			252.32	20.00	5.0E-07	480.00	760	8.33E+02	2.93E-07	5.00E-02	1.46E-04
Benzo(k)fluoranthene			252.32	20.00	9.6E-11	480.00	760	1.17E+03	4.54E-11	5.00E-02	1.46E-04
Benzo(a)pyrene			252.32	20.00	5.0E-09	310.00	10	1.04E+03	2.58E-09	4.30E-02	1.26E-04

Total Loading = 130 (ug/Kg)

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VAPOR EMISSION MODEL RESULTS

Chemical	Parameter Units	Chemical Concentration (ug/Kg)	Gas Phase Ratio (Keq)	Volatilization Constant (Kd) (1/s)	Vapor Phase Mass Transfer Coefficient (Kgas) (m/s)	Emissions Rate (E) (gm/cm2/s)
Trichloroethene		0	560.90592601	1.3E−06	0.007569	0
2−Butanone		ND	805.16327471	1.9E−06	0.007684	0
Toluene		0	213.27837816	5.3E−07	0.008075	0
Xylene (total)		0	62.013468086	1.6E−07	0.008075	0
Phenanthrene		0	0.0182240464	2.6E−11	0.005571	0
Fluoranthene		0	0.0000197404	2.8E−14	0.005571	0
Pyrene		0	0.0001035228	1.5E−13	0.005571	0
Benzo(a)anthracene		0	0.0000138669	2.0E−14	0.005646	0
Chrysene		0	0.1019753092	1.5E−10	0.005571	0
bis(2−Ethylhexyl)phthalate		130	6.36264E−06	6.4E−15	0.004395	2.0E−15
Benzo(b)fluoranthene		0	3.62730E−06	5.2E−15	0.005571	0
Benzo(k)fluoranthene		0	5.60714E−10	8.1E−19	0.005571	0
Benzo(a)pyrene		0	3.18485E−08	3.9E−17	0.005036	0
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CONTACT CONCENTRATION ASSESSMENT

Chemical	Parameter Units	Chemical Concentration (ug/Kg)	Emission Rate (E) (gm/cm2/s)	Emission Area (m2)	Emission Rate (gm/sec)	Total Mass (gm)	Confined Space Air Concentration (mg/m3)	Vented Space Air Concentration (mg/m3)
Trichloroethene		0	0	200	0	0	0	NA
2-Butanone		ND	0	200	0	0	0	NA
Toluene		0	0	200	0	0	0	NA
Xylene (total)		0	0	200	0	0	0	NA
Phenanthrene		0	0	200	0	0	0	NA
Fluoranthene		0	0	200	0	0	0	NA
Pyrene		0	0	200	0	0	0	NA
Benzo(a)anthracene		0	0	200	0	0	0	NA
Chrysene		0	0	200	0	0	0	NA
bis(2-Ethylhexyl)phthalate		130	1.95723E-15	200	3.9E-09	0.006539	0.011166	NA
Benzo(b)fluoranthene		0	0	200	0	0	0	NA
Benzo(k)fluoranthene		0	0	200	0	0	0	NA
Benzo(a)pyrene		0	0	200	0	0	0	NA
0		0	0	200	0	0	0	NA
0		0	0	200	0	0	0	NA
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EXPOSURE ASSESSMENT/RISK CHARACTERIZATION

Chemical	Parameter Units	Contact Concentration (mg/m3)	Inhalation Reference Dose * (mg/Kg/day)	Cancer Slope Factor * (Kg day/mg)	Noncarc. Dose (mg/Kg/day)	Carcinogenic Dose (mg/Kg/day)	Hazard Quotient	Increased Cancer Risk
Trichloroethene		0		6.0E-03	0	0	NA	0
2-Butanone		0	0.3		0	0	0	0
Toluene		0	0.11		0	0	0	0
Xylene (total)		0	0.086 (para-)		0	0	0	0
Phenanthrene		0			0	0	NA	0
Fluoranthene		0	0.04 (oral)		0	0	0	0
Pyrene		0	0.03 (oral)		0	0	0	0
Benzo(a)anthracene		0		7.3E-01 (oral)	0	0	NA	0
Chrysene		0		7.3E-01 (oral)	0	0	NA	0
bis(2-Ethylhexyl)phthalate		0.011166	0.02 (oral)	1.4E-02 (oral)	0.000175	2.5E-06	0.008741	3.5E-08
Benzo(b)fluoranthene		0		7.3E-01 (oral)	0	0	NA	0
Benzo(k)fluoranthene		0		7.3E-01 (oral)	0	0	NA	0
Benzo(a)pyrene		0		7.3E+00 (oral)	0	0		0
0		0						
0		0						
0		0						
0		0						
0		0						
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0		0						
0		0						
0		0						
0		0						
0		0						
0		0						
						Cumulative Indices/Risks =	0.008741	3.50E-08

(1) Oral RfD or CSF

(1a) Oral RfD for Naphthalene

CP-00878-3.13-08/01/94

CONTAMINANT VAPOR FATE AND TRANSPORT MODEL
MCAS CHERRY POINT, NORTH CAROLINA – Site 1

Site Characteristics

Flux Area :	1600	(m2)
Building Volume :	16000	(m3)
Mean Windspeed:	4	(m/sec)
Unpaved Length :	0	(m)

Soil Properties

Temperature :	60	(Degrees Fahrenheit)
Total Porosity :	0.31	(Unitless Fraction)

Receptor Exposure Parameters:

Inhalation Rate:	0.6	(m3/hr)
Exposure Time:	8	(hrs/day)
Exposure Frequency:	250	(day/yr)
Exposure Duration:	25	(yr)
Body Weight:	70	(Kg)
Lifetime:	70	(yr)

Chemical	Maximum Detected Soil Concentration (mg/Kg)	Maximum Detected GW Concentration (mg/L)	Minumum Contaminant Depth (feet)	Depth to Groundwater (feet BGS)	Molecular Weight (gm/mol)	Vapor Pressure (mm Hg)	Diffusivity in Air (cm2/s)	Henry's Law Constant (m3-atm/mol)	Soil Gas Concentration (mg/m3)	Flux Rate (mg/m2-hr)	Indoor Air Contaminant Concentration (mg/m3)	Reference Dose (inhalation) (mg/Kg-day)	Cancer Slope Factor (inhalation) (Kg-day/mg)	Noncarcinogenic Intake (mg/Kg-day)	Carcinogenic Intake (mg/Kg-day)	Hazard Quotient	Incremental Cancer Risk
Chlorobenzene			3	15.94	112.56	95.2	7.30E-02	3.93E-03		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Chloroform			3	15.94	119.38	160	1.04E-01	3.38E-03		0.0E+00	0.0E+00	NA	8.0E-02	0.0E+00	0.0E+00	NA	0.0E+00
1,2-Dichlorobenzene			3	15.94	147	1.5	6.90E-02	2.95E-03		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
1,4-Dichlorobenzene			3	15.94	147	1.8	6.90E-02	4.33E-03		0.0E+00	0.0E+00	NA	2.3E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Dichlorodifluoromethane			3	15.94	120.91	4250	1.04E-01	3.90E-01		0.0E+00	0.0E+00	6.0E-02	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Trichlorofluoromethane		0.014	3	15.94	137.38	667	1.04E-01	5.83E-02	3.45E+01	5.1E-02	1.0E-02	2.0E-01	NA	4.8E-04	1.7E-04	2.4E-03	0.0E+00
1,1-Dichloroethane			3	15.94	98.96	234	1.04E-01	5.87E-03		0.0E+00	0.0E+00	1.0E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
cis-1,2-Dichloroethene			3	15.94	96.94	202	1.04E-01	4.08E-03		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
1,1,2,2-Tetrachloroethane		0.0055	3	15.94	167.85	4	7.10E-02	3.80E-04	8.82E-02	1.3E-04	2.6E-05	NA	2.0E-01	1.2E-06	4.4E-07	NA	8.8E-08
Tetrachloroethene			3	15.94	165.83	19	7.20E-02	2.88E-02		0.0E+00	0.0E+00	NA	2.0E-03	0.0E+00	0.0E+00	NA	0.0E+00
Trichloroethene	0.0033	0.0014	3	15.94	131.39	77	7.90E-02	1.17E-02	1.63E+00	2.4E-03	4.8E-04	NA	6.0E-03	2.3E-05	8.1E-06	NA	4.9E-08
Vinyl chloride			3	15.94	62.5	2580	1.06E-01	2.78E-02		0.0E+00	0.0E+00	NA	3.0E-01	0.0E+00	0.0E+00	NA	0.0E+00
2-Butanone			3	15.94	72.11	100	8.08E-02	4.68E-05		0.0E+00	0.0E+00	3.0E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Toluene			3	15.94	92.14	28	8.70E-02	5.92E-03		0.0E+00	0.0E+00	1.1E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Xylenes			3	15.94	106.17	10	8.70E-02	4.33E-03		0.0E+00	0.0E+00	8.6E-02	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Phenanthrene			3	15.94	178.23	1	5.00E-02	3.93E-05		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Fluoranthene			3	15.94	202.26	5.0E-08	5.00E-02	6.50E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Pyrene			3	15.94	202.26	2.5	5.00E-02	5.10E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Benzo(a)anthracene			3	15.94	228.29	5.0E-09	5.10E-02	6.80E-07		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Chrysene			3	15.94	228.29	6.3E-09	5.00E-02	1.05E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
bis(2-Ethylhexyl)phthalate			3	15.94	390.54	1.2	3.51E-02	3.00E-07		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Benzo(b)fluoranthene			3	15.94	252.32	5.0E-07	5.00E-02	1.20E-05		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Benzo(k)fluoranthene			3	15.94	252.32	9.6E-11	5.00E-02	1.40E-03		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Benzo(a)pyrene			3	15.94	252.32	5.0E-09	4.30E-02	4.90E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
														CUMULATIVE RISKS		0.002394	1.361E-07

CONTAMINANT VAPOR FATE AND TRANSPORT MODEL
MCAS CHERRY POINT, NORTH CAROLINA – Site 2

Site Characteristics

Flux Area :	2200	(m2)
Building Volume :	11000	(m3)
Mean Windspeed:	4	(m/sec)
Unpaved Length :	0	(m)

Soil Properties

Temperature :	60	(Degrees Fahrenheit)
Total Porosity :	0.31	(Unitless Fraction)

Receptor Exposure Parameters:

Inhalation Rate:	0.6	(m3/hr)
Exposure Time:	8	(hrs/day)
Exposure Frequency:	250	(day/yr)
Exposure Duration:	25	(yr)
Body Weight:	70	(Kg)
Lifetime:	70	(y)

Chemical	Maximum Detected Soil Concentration (mg/Kg)	Maximum Detected GW Concentration (mg/L)	Minimum Contaminant Depth (feet)	Depth to Groundwater (feet BGS)	Molecular Weight (gm/mol)	Vapor Pressure (mm Hg)	Diffusivity in Air (cm2/s)	Henry's Law Constant (m3-atm/mol)	Soil Gas Concentration (mg/m3)	Flux Rate (mg/m2-hr)	Indoor Air Contaminant Concentration (mg/m3)	Reference Dose (inhalation) (mg/Kg-day)	Cancer Slope Factor (inhalation) (Kg-day/mg)	Noncarcinogenic Intake (mg/Kg-day)	Carcinogenic Intake (mg/Kg-day)	Hazard Quotient	Incremental Cancer Risk
Chlorobenzene		0.0021	3	10.91	112.56	95.2	7.30E-02	3.93E-03	3.48E-01	5.2E-04	2.1E-04	NA	NA	9.7E-06	3.5E-06	NA	0.0E+00
Chloroform			3	10.91	119.38	160	1.04E-01	3.38E-03		0.0E+00	0.0E+00	NA	6.0E-02	0.0E+00	0.0E+00	NA	0.0E+00
1,2-Dichlorobenzene		0.0054	3	10.91	147	1.5	6.90E-02	2.98E-03	6.72E-01	1.0E-03	4.0E-04	NA	NA	1.9E-05	6.7E-06	NA	0.0E+00
1,4-Dichlorobenzene		0.0018	3	10.91	147	1.8	6.90E-02	4.39E-03	3.29E-01	4.9E-04	1.9E-04	2.3E-01	NA	9.1E-06	3.3E-06	4.0E-05	0.0E+00
Dichlorodifluoromethane		0.0079	3	10.91	120.91	4250	1.04E-01	3.90E-01	1.30E+02	1.9E-01	7.7E-02	6.0E-02	NA	3.6E-03	1.3E-03	6.0E-02	0.0E+00
Trichlorofluoromethane		0.0012	3	10.91	137.38	667	1.04E-01	5.83E-02	2.95E+00	4.4E-03	1.7E-03	2.0E-01	NA	8.2E-05	2.9E-05	4.1E-04	0.0E+00
1,1-Dichloroethane		0.0069	3	10.91	98.96	234	1.04E-01	5.87E-03	1.71E+00	2.5E-03	1.0E-03	1.0E-01	NA	4.8E-05	1.7E-05	4.8E-04	0.0E+00
cis-1,2-Dichloroethene		0.0041	3	10.91	96.94	202	1.04E-01	4.08E-03	7.06E-01	1.0E-03	4.2E-04	NA	NA	2.0E-05	7.0E-06	NA	0.0E+00
1,1,2,2-Tetrachloroethane			3	10.91	167.85	4	7.10E-02	3.80E-04		0.0E+00	0.0E+00	NA	2.0E-01	0.0E+00	0.0E+00	NA	0.0E+00
Tetrachloroethene			3	10.91	165.83	18	7.20E-02	2.68E-02		0.0E+00	0.0E+00	NA	2.0E-03	0.0E+00	0.0E+00	NA	0.0E+00
Trichloroethene		0.0008	3	10.91	131.39	77	7.90E-02	1.17E-02	3.98E-01	5.8E-04	2.3E-04	NA	6.0E-03	1.1E-05	3.9E-06	NA	2.4E-00
Vinyl chloride			3	10.91	62.5	2580	1.08E-01	2.78E-02		0.0E+00	0.0E+00	NA	3.0E-01	0.0E+00	0.0E+00	NA	0.0E+00
2-Butanone			3	10.91	72.11	100	8.08E-02	4.68E-05		0.0E+00	0.0E+00	3.0E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Toluene	0.0091		3	10.91	92.14	28	8.70E-02	5.92E-03	2.27E+00	3.4E-03	1.3E-03	1.1E-01	NA	6.3E-05	2.3E-05	5.7E-04	0.0E+00
Xylenes	0.0061		3	10.91	106.17	10	8.70E-02	4.33E-03	1.11E+00	1.6E-03	6.6E-04	6.6E-02	NA	3.1E-05	1.1E-05	3.6E-04	0.0E+00
Phenanthrene	0.22		3	10.91	178.23	1	5.00E-02	3.93E-05	3.66E-01	5.4E-04	2.2E-04	NA	NA	1.0E-05	3.6E-06	NA	0.0E+00
Fluoranthene	0.32		3	10.91	202.26	5.0E-06	5.00E-02	6.50E-06	6.78E-02	1.3E-04	5.2E-05	NA	NA	2.4E-06	8.7E-07	NA	0.0E+00
Pyrene	0.26		3	10.91	202.26	2.5	5.00E-02	5.10E-06	5.60E-02	8.3E-05	3.3E-05	NA	NA	1.6E-06	5.6E-07	NA	0.0E+00
Benzo(a)anthracene	0.13		3	10.91	228.29	5.0E-09	5.10E-02	6.60E-07	3.62E-03	5.4E-06	2.1E-06	NA	NA	1.0E-07	3.6E-08	NA	0.0E+00
Chrysene	0.15		3	10.91	228.29	6.3E-09	5.00E-02	1.05E-06	6.66E-03	9.8E-06	3.9E-06	NA	NA	1.8E-07	6.6E-08	NA	0.0E+00
bis(2-Ethylhexyl)phthalate	0.12		3	10.91	390.54	1.2	3.51E-02	3.00E-07	1.52E-03	2.2E-06	9.0E-07	NA	NA	4.2E-08	1.5E-08	NA	0.0E+00
Benzo(b)fluoranthene	0.12		3	10.91	252.32	5.0E-07	5.00E-02	1.20E-05	6.08E-02	9.0E-05	3.8E-05	NA	NA	1.7E-06	6.0E-07	NA	0.0E+00
Benzo(k)fluoranthene	0.14		3	10.91	252.32	9.6E-11	5.00E-02	1.40E-03	8.27E+00	1.2E-02	4.9E-03	NA	NA	2.3E-04	8.2E-05	NA	0.0E+00
Benzo(a)pyrene	0.13		3	10.91	252.32	5.0E-09	4.30E-02	4.90E-06	2.69E-04	4.0E-07	1.6E-07	NA	NA	7.5E-09	2.7E-09	NA	0.0E+00
														CUMULATIVE RISKS		0.062118	2.354E-06

CO... 'AF-ORT AIE AND TRANSPORT MODEL
MCAS Ch... POINT, NORTH CAROLINA – Site 4

Site Characteristics

Flux Area : 1500 (m2)
Building Volume : 15000 (m3)
Mean Windspeed: 4 (m/sec)
Unpaved Length : 0 (m)

Soil Properties

Temperature : 60 (Degrees Fahrenheit)
Total Porosity : 0.31 (Unitless Fraction)

Receptor Exposure Parameters:

Inhalation Rate: 0.8 (m3/hr)
Exposure Time: 8 (hrs/day)
Exposure Frequency: 250 (day/yr)
Exposure Duration: 25 (yr)
Body Weight: 70 (Kg)
Lifetime: 70 (y)

Chemical	Maximum Detected Soil Concentration (mg/Kg)	Maximum Detected GW Concentration (mg/L)	Minimum Contaminant Depth (feet)	Depth to Groundwater (feet BGS)	Molecular Weight (gm/mol)	Vapor Pressure (mm Hg)	Diffusivity in Air (cm2/s)	Henry's Law Constant (m3-atm/mol)	Soil Gas Concentration (mg/m3)	Flux Rate (mg/m2-hr)	Indoor Air Contaminant Concentration (mg/m3)	Reference Dose (inhalation) (mg/Kg-day)	Cancer Slope Factor (inhalation) (Kg-day/mg)	Noncarcinogenic Intake (mg/Kg-day)	Carcinogenic Intake (mg/Kg-day)	Hazard Quotient	Incremental Cancer Risk
Chlorobenzene			3	8.25	112.56	95.2	7.30E-02	3.93E-03		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Chloroform		0.0006	3	8.25	119.38	160	1.04E-01	3.39E-03	6.50E-02	4.4E-05	8.2E-06	NA	6.0E-02	4.3E-07	1.8E-07	NA	1.2E-08
1,2-Dichlorobenzene			3	8.25	147	1.5	6.80E-02	2.89E-03		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
1,4-Dichlorobenzene			3	8.25	147	1.8	6.80E-02	4.33E-03		0.0E+00	0.0E+00	2.3E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Dichlorodifluoromethane			3	8.25	120.91	4250	1.04E-01	3.90E-01		0.0E+00	0.0E+00	6.0E-02	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Trichlorofluoromethane			3	8.25	137.38	687	1.04E-01	5.83E-02		0.0E+00	0.0E+00	2.0E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
1,1-Dichloroethane			3	8.25	98.96	234	1.04E-01	5.87E-03		0.0E+00	0.0E+00	1.0E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
cis-1,2-Dichloroethene		0.0011	3	8.25	96.94	202	1.04E-01	4.08E-03	1.88E-01	1.0E-04	2.0E-06	NA	NA	9.4E-07	3.4E-07	NA	0.0E+00
1,1,2,2-Tetrachloroethane			3	8.25	167.85	4	7.10E-02	3.80E-04		0.0E+00	0.0E+00	NA	2.0E-01	0.0E+00	0.0E+00	NA	0.0E+00
Tetrachloroethene		0.56	3	8.25	165.83	18	7.20E-02	2.88E-02	6.50E+02	3.3E-01	7.1E-02	NA	2.0E-03	3.3E-05	1.2E-05	NA	2.4E-08
Trichloroethene		0.0029	3	8.25	131.39	77	7.90E-02	1.17E-02	1.45E+00	7.7E-04	1.5E-04	NA	6.0E-03	7.2E-06	2.6E-06	NA	1.6E-05
Vinyl chloride		0.0016	3	8.25	62.5	2560	1.06E-01	2.78E-02	1.88E+00	1.0E-03	2.0E-04	NA	3.0E-01	9.3E-06	3.4E-06	NA	1.0E-06
2-Butanone			3	8.25	72.11	100	8.08E-02	4.88E-06		0.0E+00	0.0E+00	3.0E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Toluene			3	8.25	92.14	28	8.70E-02	5.92E-03		0.0E+00	0.0E+00	1.1E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Xylenes			3	8.25	106.17	10	8.70E-02	4.33E-03		0.0E+00	0.0E+00	8.6E-02	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Phenanthrene			3	8.25	178.23	1	5.00E-02	3.93E-05		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Fluoranthene			3	8.25	202.26	5.0E-06	5.00E-02	6.50E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Pyrene			3	8.25	202.26	2.5	5.00E-02	5.10E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Benzo(a)anthracene			3	8.25	228.29	5.0E-09	5.10E-02	6.80E-07		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Chrysene			3	8.25	228.29	6.3E-09	5.00E-02	1.08E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
bis(2-Ethylhexyl)phthalate	0.13		3	8.25	390.54	1.2	3.51E-02	3.00E-07	1.88E-05	2.4E-08	4.8E-07	NA	NA	2.3E-08	8.2E-09	NA	0.0E+00
Benzo(b)fluoranthene			3	8.25	252.32	5.0E-07	5.00E-02	1.20E-05		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Benzo(k)fluoranthene			3	8.25	252.32	9.6E-11	5.00E-02	1.40E-05		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Benzo(a)pyrene			3	8.25	252.32	5.0E-09	4.30E-02	4.80E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
														CUMULATIVE RISKS		0	3.72E-08

CONTAMINANT VAPOR FATE AND TRANSPORT MODEL
MCAS CHERRY POINT, NORTH CAROLINA – Site 4

Site Characteristics

Flux Area :	1500	(m2)
Building Volume :	15000	(m3)
Mean Windspeed:	4	(m/sec)
Unpaved Length :	0	(m)

Soil Properties

Temperature :	60	(Degrees Fahrenheit)
Total Porosity :	0.31	(Unitless Fraction)

Receptor Exposure Parameters:

Inhalation Rate:	0.6	(m3/hr)
Exposure Time:	8	(hrs/day)
Exposure Frequency:	250	(day/yr)
Exposure Duration:	25	(yr)
Body Weight:	70	(Kg)
Lifetime:	70	(y)

Chemical	Maximum Detected Soil Concentration (mg/Kg)	Maximum Detected GW Concentration (mg/L)	Minimum Contaminant Depth (feet)	Depth to Groundwater (feet BGS)	Molecular Weight (gm/mol)	Vapor Pressure (mm Hg)	Diffusivity in Air (cm2/s)	Henry's Law Constant (m3-atm/mol)	Soil Gas Concentration (mg/m3)	Flux Rate (mg/m2-hr)	Indoor Air Contaminant Concentration (mg/m3)	Reference Dose (inhalation) (mg/Kg-day)	Cancer Slope Factor (inhalation) (Kg-day/mg)	Noncarcinogenic Intake (mg/Kg-day)	Carcinogenic Intake (mg/Kg-day)	Hazard Quotient	Incremental Cancer Risk
Chlorobenzene			3	8.25	112.56	95.2	7.30E-02	3.93E-03		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Chloroform		0.0008	3	8.25	119.38	160	1.04E-01	3.38E-03	6.88E-02	4.8E-05	9.2E-06	NA	6.0E-02	4.3E-07	1.5E-07	NA	1.2E-08
1,2-DiChlorobenzene			3	8.25	147	1.5	6.90E-02	2.89E-03		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
1,4-DiChlorobenzene			3	8.25	147	1.8	6.90E-02	4.33E-03		0.0E+00	0.0E+00	2.3E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Dichlorodifluoromethane			3	8.25	120.91	4250	1.04E-01	3.90E-01		0.0E+00	0.0E+00	6.0E-02	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Trichlorofluoromethane			3	8.25	137.38	667	1.04E-01	9.83E-02		0.0E+00	0.0E+00	2.0E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
1,1-Dichloroethane			3	8.25	98.96	234	1.04E-01	5.87E-03		0.0E+00	0.0E+00	1.0E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
cis-1,2-Dichloroethene		0.0011	3	8.25	96.94	202	1.04E-01	4.08E-03	1.88E-01	1.0E-04	2.0E-05	NA	NA	9.8E-07	3.4E-07	NA	0.0E+00
1,1,2,2-Tetrachloroethane			3	8.25	167.85	4	7.10E-02	3.80E-04		0.0E+00	0.0E+00	NA	2.0E-01	0.0E+00	0.0E+00	NA	0.0E+00
Tetrachloroethene		0.58	3	8.25	165.83	18	7.20E-02	2.88E-02	8.58E+02	3.5E-01	7.1E-02	NA	2.0E-06	3.3E-05	1.2E-05	NA	2.4E-08
Trichloroethene		0.0026	3	8.25	131.38	77	7.90E-02	1.17E-02	1.43E+00	7.7E-04	1.5E-04	NA	6.0E-06	7.2E-06	2.8E-06	NA	1.6E-04
Vinyl chloride		0.0016	3	8.25	62.5	2580	1.06E-01	2.78E-02	1.88E+00	1.0E-03	2.0E-04	NA	3.0E-01	8.5E-06	3.4E-06	NA	1.0E-06
2-Butanone			3	8.25	72.11	100	8.08E-02	4.88E-05		0.0E+00	0.0E+00	3.0E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Toluene			3	8.25	92.14	28	8.70E-02	5.83E-03		0.0E+00	0.0E+00	1.1E-01	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Xylenes			3	8.25	106.17	10	8.70E-02	4.33E-03		0.0E+00	0.0E+00	8.8E-02	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Phenanthrene			3	8.25	178.23	1	5.00E-02	3.93E-05		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Fluoranthene			3	8.25	202.26	5.0E-06	5.00E-02	6.50E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Pyrene			3	8.25	202.26	2.5	5.00E-02	5.10E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Benzo(a)anthracene			3	8.25	228.29	5.0E-08	5.10E-02	6.80E-07		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Chrysene			3	8.25	228.29	6.3E-09	5.00E-02	1.06E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
bis(2-Ethylhexyl)phthalate	0.13		3	8.25	390.54	1.2	3.31E-02	3.00E-07	1.88E-05	2.4E-08	4.8E-07	NA	NA	2.3E-08	8.2E-09	NA	0.0E+00
Benzo(b)fluoranthene			3	8.25	252.32	5.0E-07	5.00E-02	1.20E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Benzo(k)fluoranthene			3	8.25	252.32	9.6E-11	5.00E-02	1.40E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
Benzo(a)pyrene			3	8.25	252.32	5.0E-09	4.30E-02	4.90E-06		0.0E+00	0.0E+00	NA	NA	0.0E+00	0.0E+00	NA	0.0E+00
														CUMULATIVE RISKS		0	3.42E-08