James P. Bowers, PE
R. William Rudo[illegible], Jr., PE

March 1, 1991
SCI 643.001

Mr. Terry Bouquenoy
HydroChem Services, Inc.
Hunters Point Ship Yard
Building 418
San Francisco, California 94124

Bound w/ Cover

Status Report
Preliminary Contamination Assessment
Former Cryer Boatyard
1899 Dennison Street
Oakland, California

Dear Mr. Bouquenoy:

This letter records the results of subsurface investigations and analytical tests performed at the referenced site. A plan showing the location of the site and pertinent structures is presented on Plate 1. The studies to date have been performed within the yard areas of the property; they have not addressed conditions within and beneath buildings.

In brief, the site has been used by the William Cryer & Son Company for the repair, maintenance, and construction of marine vessels for at least the past fifty years. The site is currently used by the Oceanic Boat Works Company for ship building/repair operations. Our research to date has indicated that in the early 1900's the property may have been owned/utilized by the Standard Gas Engine Company.

The property north of the site, across Dennison Street, was previously a facility used to manufacture chemicals, some of which were used in the wood treatment industry. Significant contamination exists on the property and is currently under investigation.

Subsurface Investigation

Six test borings were drilled in areas of potential environmental concern. The locations of the borings are indicated on the Site Plan, Plate 1. The test borings extended to depths of approximately 15 feet below the groundsurface. The test borings

were drilled using 8-inch-diameter hollow stem auger drilling equipment. Our geologist observed drilling operations, prepared detailed logs of materials encountered, and obtained undisturbed samples of the soils encountered. Soil samples were retained in brass sample liners. The ends of the liners were covered with Teflon sheeting, capped, and sealed with duct tape. Samples were refrigerated on-site in ice chests and remained so until delivery to the analytical laboratory. Chain of Custody records accompanied the samples to the analytical laboratory. Copies of the test boring logs are presented on Plates 4 through 8. Chain-of-Custody documents are attached.

Grab groundwater samples were obtained from three temporary wells installed in Borings 1, 2 and 3. The wells were about 15 feet deep and consisted of 2-inch-diameter PVC well pipe. The wells were developed by bailing until the water was relatively clear. After development, groundwater samples were obtained from the wells using a pre-cleaned Teflon sampler. After sampling, the well casings were removed. Water samples were retained in pre-cleaned sample containers and refrigerated until delivery to the analytical laboratory.

Upon conclusion of drilling and sampling, all boreholes were backfilled with cement grout. Soils generated during drilling were placed in steel barrels and left on-site.

Soil and Groundwater Conditions

Our test borings indicate that the site is blanketed by a surface layer fill which is in turn underlain by soft clayey marine marsh soils, locally known as Bay Mud. The Bay Mud extends beyond the depths explored, about 15 feet below the groundsurface. The fill is composed of a variety of materials, primarily consisting of clayey soils. However, relatively clean sands, representing sand blast grit, blankets the surface over a large portion of the property. The sand blast grit varies in thickness, but on average is about one foot thick.

Groundwater was encountered at depths varying from of about 3 to 6 feet below the groundsurface during drilling. These levels likely do not represent stabilized groundwater conditions. Data regarding past and present groundwater flow directions is currently unavailable. However, the proximity of the site to Alameda Harbor would suggest that (1) shallow groundwater may flow toward the west, and (2) groundwater may be tidally influenced.

Analytical Testing

Soil samples from the borings were in part selected for analytical testing based on visual/olfactory inspection and organic vapor meter (OVM) screening. The soil samples were analyzed by Curtis and Tompkins, Ltd., a laboratory certified by the Department of Health Services for the tests performed. Selected samples were analyzed for total extractable hydrocarbons (TEH), benzene, toluene, xylene, ethylbenzene (BTXE), total extractable hydrocarbons (TEH), total oil and grease (TOG), chlorinated hydrocarbons (EPA 8010), Title 26 metals, and semi-volatile organics and selected pesticides (EPA 8270). The results of the analytical tests are presented in the following tables.

Conclusions

Based on the analytical data generated to date, we conclude that the on-site soils have been impacted by heavy metals (particularly copper, lead and zinc) and by petroleum hydrocarbons (oil and grease, and diesel). In addition, low concentrations of several polynuclear aromatic hydrocarbons (PNA's) were detected in a composite soil sample from Borings 2, 5 and 6. Analytical data from grab groundwater samples obtained from Borings 1, 2 and 3 suggest that the shallow groundwater has not been impacted significantly by volatile organic chemicals. The following paragraphs discuss these items in more detail.

Heavy Metal Contamination

The shallow fill materials appear to contain concentrations of copper, lead and zinc which are well above those which could be expected to represent background levels. Analysis by others of the sand blast grit blanketing much of the site has revealed that the materials contain relatively high concentrations of these metals. For completeness, we have presented a summary of this data below. The analysis was performed on a composite sample, made up of 3 individual samples of the sand bland grit.

Table 1. Hydrocarbon Concentrations in Soil

Boring and Depth[1]	TOG[2]	TEH[3]
1 @ 3.5'	640	3600
2 @ 1.0'	840	5000
2 @ 6.0'	ND[4]	2
5 @ 4.0'	ND	3

1 Depth in feet
2 Total oil and grease concentration in mg/kg, parts per million (ppm)
3 Total extractable hydrocarbons (as diesel)
4 None detected: see analytical test results for detection limits

Table 2. Selected Total Heavy Metal Concentrations in Soil

Boring and Depth[1]	Copper[2]	Lead[2]	Zinc[2]
1 @ 1.0'	20	ND	42
1 @ 3.5'	24	ND	69
2 @ 1.0'	75	24	120
2 @ 3.5'	31	ND	50
3 @ 1.5'	1700	550	220
4 @ 1.5'	230	21	120
5 @ 1.0'	770	190	350
5 @ 4.0'	25	2.9	45
6 @ 1.0'	490	190	130

1 Depth in feet
2 Concentrations in mg/kg

Table 3. EPA 8270 Compounds in Soil Composites (in ug/kg or parts per billion)

		Concentration
Composite 1 (Boring 1 @ 1', 3 @ 1.5' and 4 @ 1.5')	EPA 8270 Compounds	ND
Composite 2 (Boring 2 @ 1.0', 5 @ 1.0' and 6 @ 1.0')	2- Methylnaphthalene	380
	Fluorene	190
	Phenanthrene	260
	Fluoranthene	240
	Pyrene	180
	Benzo (b) fluoranthene	240
	All other 8270 compounds	ND

Table 4. Volatile Organic Chemical Concentrations in Groundwater

Boring	EPA 8010 Compounds	Benzene	Toluene	Xylene	Ethylbenzene
1	ND	ND	ND	ND	ND
2	ND	ND	ND	ND	ND
3	ND	ND	ND	ND	ND

Compound	Concentration (mg/kg)
Antimony	ND
Arsenic	8
Barium	200
Beryllium	ND
Cadmium	ND
Chromium (total)	140
Cobalt	33
Copper	2400
Lead	320
Mercury	0.85
Molybdenum	ND
Nickel	90
Selenium	ND
Silver	0.6
Vanadium	46
Zinc	2400

The concentrations of the metals in the sand blast grit are sufficiently high that removal of the materials from the site will be appropriate. The data generated by our study suggests that the heavy metal contamination is largely limited to the sand blast grit, and the upper 6 to 12 inches of the underlying clayey fill. Locally deeper areas of heavy metal contamination appear to exist, such as near Test Boring 3. Sand blast grit was not present in this area; the elevated metal concentrations may be associated with the fill and be unrelated to present on-site activities, or possibly, other past uses of the site.

Petroleum Hydrocarbons

The analytical data indicates that the soils in Borings 1 and 2 have been impacted by oil and grease, and diesel fuel. Oil and grease concentrations up to 840 mg/kg and diesel concentrations up to 5000 mg/kg have been detected. These concentrations are sufficiently high that they exceed current regulatory agency clean-up guidelines for hydrocarbon contamination. Accordingly, we judge that remediation of these contaminated soils will be required.

We judge that the vertical extent of hydrocarbon contamination does not extend deeper than the underlying Bay Mud. These soils typically possess very low permeability and hence, limit the migration of contaminants. The lateral extent of the hydrocarbon contamination has not been defined by the studies to date. Accordingly, we recommend that additional subsurface investigation and analytical testing be undertaken to define the lateral extent of contamination from petroleum hydrocarbons. We recommend that this work be completed prior to developing remediation strategies. Additionally, in accordance with regulatory agency guidelines, it will likely be necessary to install groundwater monitoring wells in areas of hydrocarbon contamination to evaluate impacts to groundwater quality.

Polynuclear Aromatic Hydrocarbons

Analytical test results indicate that relatively low concentrations of several polynuclear aromatic hydrocarbons (PNA's) exist in the composite sample from Borings 2, 5 and 6. PNA's are a class of hydrocarbons commonly found in coal tars, pitch, oils, and fire debris. Some PNA's are known or suspected carcinogens and are currently regulated as hazardous substances. Because the PNA data is from a composite sample, we are uncertain in which boring(s) the PNA's exist. We recommend that the individual samples making up the composite be analyzed for PNA's. Subsequently, additional test borings/analytical tests may be required to (1) evaluate the lateral and vertical extent of PNA contamination, and (2) draw conclusions regarding the need for remediation.

The studies performed to date were intended to serve as a preliminary means of screening the property for indications of significant contamination as a result of commonly encountered chemicals. The property has had a varied past with regard to industrial activity and the use of materials which are currently considered hazardous and/or toxic. Other areas of contamination may exist on-site in areas not investigated by the test borings drilled to date. Further study may modify the conclusions recorded herein.

If you have any questions regarding our services to date or conclusions, please call.

Yours very truly,

Subsurface Consultants, Inc.

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

CRF:JPB:sld

6 copies submitted:

Attachments:	Plate 1	-	Site Plan
	Plate 2	-	Hydrocarbon Contamination in soil
	Plate 3	-	Heavy Metal Concentrations in soil
	Plates 4 thru 8	-	Boring Logs
	Plate 9	-	Unified Soil Classification System
			Analytical Test Report
			Chain of Custody Documents

LOG OF TEST BORING 1

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 2/8/91
ELEVATION --

LABORATORY TESTS	MOISTURE CONTENT %	DRY DENSITY (PCF)	OVM (ppm)	DEPTH (FT)	SAMPLE	BLOWS PER FOOT	
				0			BROWN SILTY SAND (SM-SP)
						8	loose, moist (fill)
			0				MOTTLED BROWN AND GRAY SANDY CLAY (CL)
						3	medium stiff, moist (fill)
			41.2	5			GRAY AND BLACK CLAYEY SILT (MH)
			30.8			4	soft, moist (Bay Mud)
			0				
					▼		GROUNDWATER LEVEL DURING DRILLING
			0			4	
				10			
			0			3	
				15			
			0			5	
							BORING BACKFILLED WITH CEMENT GROUT
				20			
				25			
				30			
				35			
				40			

HAMMER WEIGHT: 140 pounds
HAMMER DROP: 30 inches

Subsurface Consultants

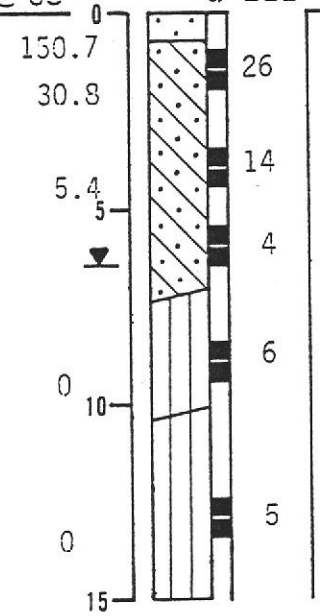
CRYER BOATYARD - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
643.001	2/13/91	CMF

PLATE 4

LOG OF TEST BORING 2

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 2/8/91
ELEVATION --



BROWN SAND (SP)
loose, moist
LIGHT BROWN CLAYEY SAND (SC)
medium dense, moist (fill)

GROUNDWATER LEVEL DURING DRILLING

BLACK CLAYEY SILT (MH)
soft, moist (Bay Mud)

GRAY CLAYEY SILT (MH)
soft, moist (Bay Mud)

BORING BACKFILLED WITH CEMENT GROUT

Subsurface Consultants

CRYER BOATYARD - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
643.001	2/13/91	CKF

PLATE 5

LOG OF TEST BORING 3

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 2/8/91
ELEVATION --

LABORATORY TESTS	MOISTURE CONTENT %	DRY DENSITY (PCF)	OVM (ppm)	DEPTH (FT)	SAMPLE	BLOWS PER FOOT	
				0			MOTTLED BROWN SANDY CLAY (CL) medium stiff, moist (fill)
			1.8			37	
							GRAY CLAYEY SAND (SC) medium dense, moist (fill)
						3	
							GROUNDWATER LEVEL DURING DRILLING
			0	5			GRAY CLAYEY SILT (MH) soft, wet (fill)
						3	
							GRAY SAND (SP) loose, wet (fill)
						6	
				10			GRAY CLAYEY SILT (MH) soft, moist (Bay Mud)
				15		push	
			0				BORING BACKFILLED WITH CEMENT GROUT
				20			
				25			
				30			
				35			
				40			

Subsurface Consultants

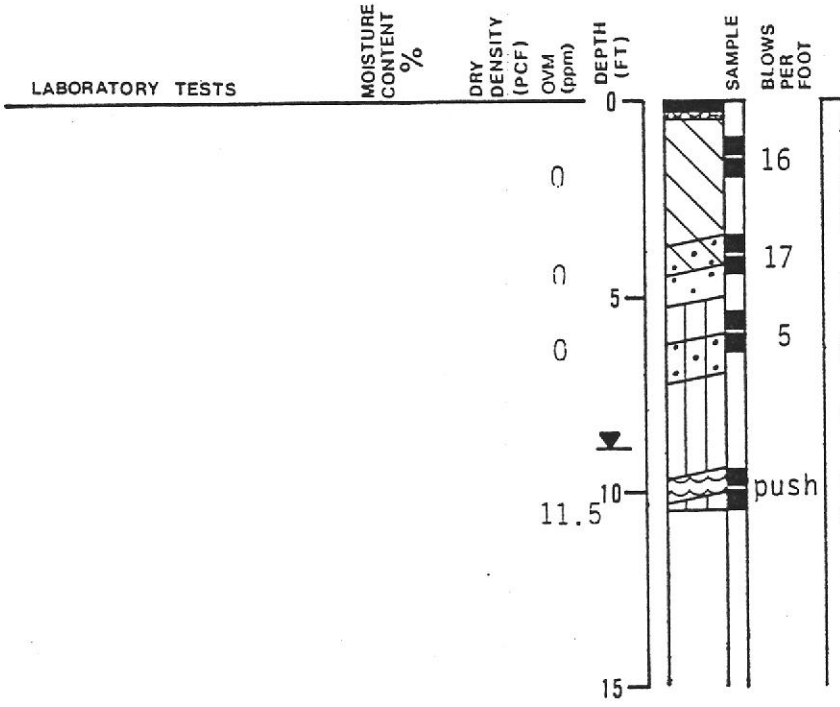
CRYER BOATYARD - OAKLAND, CA

JOB NUMBER 643.001 | DATE 2/13/91 | APPROVED Cef

PLATE 6

LOG OF TEST BORING 4

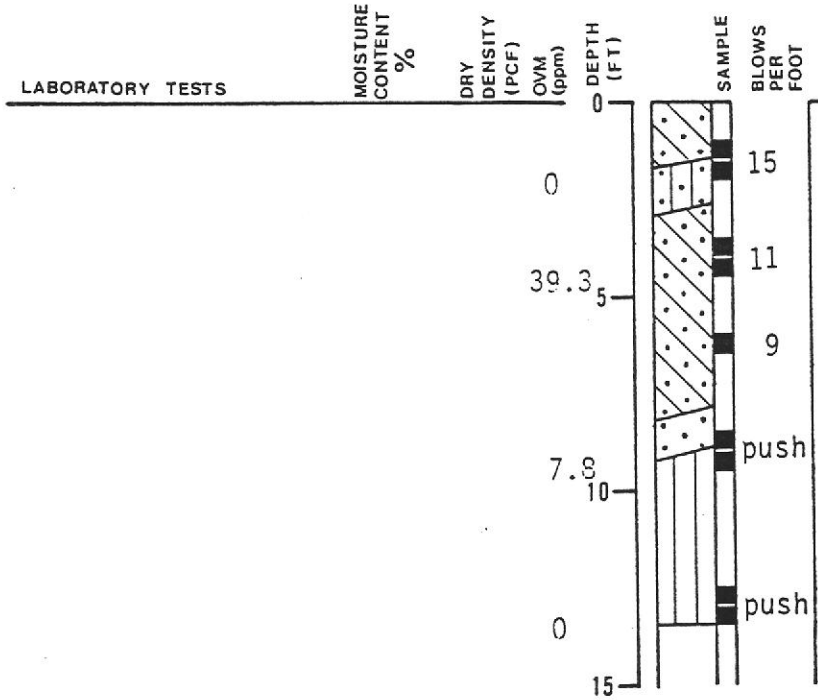
EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 2/8/91
ELEVATION --



ASPHALTIC CONCRETE - 2" thick
BASE ROCK - 4" thick
MOTTLED BROWN AND GRAY SILTY CLAY (CL)
medium stiff, moist (fill)
BROWN CLAYEY SAND (SC)
medium dense, wet (fill)
GRAY SAND (SP)
loose, wet (fill)
GRAY CLAYEY SILT (MH)
soft, wet (fill)
GROUNDWATER LEVEL DURING DRILLING
GRAY SILTY SAND (SM)
loose, wet (fill)
GRAY CLAYEY SILT (MH)
soft, moist (Bay Mud)
GRAY BROWN PEAT (Pt)
soft, moist
GRAY CLAYEY SILT (MH)
soft, moist (Bay Mud)
BORING BACKFILLED WITH CEMENT GROUT

LOG OF TEST BORING 5

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 2/8/91
ELEVATION --



BROWN CLAYEY SAND (SC)
medium dense, moist (fill)
BROWN SILTY SAND (SM)
medium dense, moist (fill)
GRAY AND BROWN CLAYEY SAND (SC)
medium dense, moist (fill)
GRAY SAND (SP)
loose, wet
DARK GRAY CLAYEY SILT (MH)
medium stiff, moist (Bay Mud)
BORING BACKFILLED WITH CEMENT GROUT

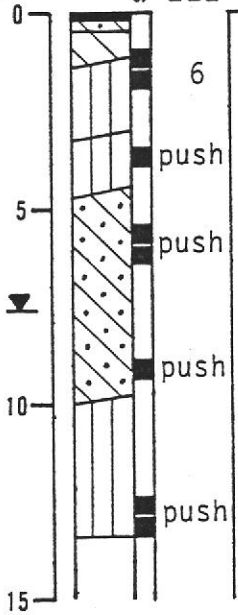
Subsurface Consultants

CRYER BOATYARD - OAKLAND, CA

JOB NUMBER	DATE	APPROVED	PLATE
643.001	2/13/91	CAF	7

LOG OF TEST BORING 6

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 2/8/91
ELEVATION --



LABORATORY TESTS	MOISTURE CONTENT %	DRY DENSITY (PCF)	OVM (ppm)
			1.8
			23.6
			0

ASPHALTIC CONCRETE - 2" thick
RED BROWN CLAYEY SAND (SC)
(fill)
BLACK SANDY CLAY (CL)
medium stiff, moist, contains metal slag (fill)
GRAY CLAYEY SILT (MH)
soft, moist (fill)
GROUNDWATER LEVEL DURING DRILLING
GRAY CLAYEY SILT (MH)
soft, moist (fill)
BROWN GRAY CLAYEY SAND (SC)
medium dense, wet (fill)
GRAY CLAYEY SILT (MH)
soft, moist (Bay Mud)
BORING BACKFILLED WITH CEMENT GROUT

Subsurface Consultants

CRYER BOATYARD - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
643.001	2/13/91	CBG

PLATE 8

GENERAL SOIL CATEGORIES			SYMBOLS	TYPICAL SOIL TYPES
COARSE GRAINED SOILS More than half is larger than No. 200 sieve	GRAVEL More than half coarse fraction is larger than No. 4 sieve size	Clean Gravel with little or no fines	GW	Well Graded Gravel, Gravel-Sand Mixtures
			GP	Poorly Graded Gravel, Gravel-Sand Mixtures
		Gravel with more than 12% fines	GM	Silty Gravel, Poorly Graded Gravel-Sand-Silt Mixtures
			GC	Clayey Gravel, Poorly Graded Gravel-Sand-Clay Mixtures
	SAND More than half coarse fraction is smaller than No. 4 sieve size	Clean sand with little or no fines	SW	Well Graded Sand, Gravelly Sand
			SP	Poorly Graded Sand, Gravelly Sand
		Sand with more than 12% fines	SM	Silty Sand, Poorly Graded Sand-Silt Mixtures
			SC	Clayey Sand, Poorly Graded Sand-Clay Mixtures
FINE GRAINED SOILS More than half is smaller than No. 200 sieve	SILT AND CLAY Liquid Limit Less than 50%		ML	Inorganic Silt and Very Fine Sand, Rock Flour, Silty or Clayey Fine Sand, or Clayey Silt with Slight Plasticity
			CL	Inorganic Clay of Low to Medium Plasticity, Gravelly Clay, Sandy Clay, Silty Clay, Lean Clay
			OL	Organic Clay and Organic Silty Clay of Low Plasticity
	SILT AND CLAY Liquid Limit Greater than 50%		MH	Inorganic Silt, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silt
			CH	Inorganic Clay of High Plasticity, Fat Clay
			OH	Organic Clay of Medium to High Plasticity, Organic Silt
HIGHLY ORGANIC SOILS			PT	Peat and Other Highly Organic Soils

UNIFIED SOIL CLASSIFICATION SYSTEM

Subsurface Consultants

CRYER BOATYARD - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
643.001	2/13/91	CLF

PLATE 9

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 02/13/91
DATE REPORTED: 02/19/91

LAB NUMBER: 102987

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 WATER SAMPLES, 10 SOIL SAMPLES & 2 SOIL COMPOSITE SAMPLES

PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LAB NUMBER: 102987
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 643.001
LOCATION: CRYER SHIPYARD

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/15/91
DATE REPORTED: 02/19/91

ANALYSIS: HYDROCARBON OIL AND GREASE
METHOD: SMWW 17:5520EF

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
102987-5	1 @ 3.5	640	mg/Kg	50
102987-6	2 @ 1.0	840	mg/Kg	50
102987-8	2 @ 6.0	ND	mg/Kg	50
102987-13	5 @ 4.0	ND	mg/Kg	50

ND = Not detected at or above reporting limit

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	83

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD

DATE RECEIVED: 02/13/91
DATE EXTRACTED: 02/13/91
DATE ANALYZED: 02/15/91
DATE REPORTED: 02/19/91

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
102987-5	1 @ 3.5	ND	3,600	10
102987-6	2 @ 1.0	ND	5,000	100
102987-8	2 @ 6.0	ND	2	1
102987-13	5 @ 4.0	ND	3	1

ND = Not Detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	5
RECOVERY, %	96

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: BORING 1

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/13/91
DATE REPORTED: 02/19/91

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	REPORTING LIMIT ug/L
chloromethane	ND	2.0
bromomethane	ND	2.0
vinyl chloride	ND	2.0
chloroethane	ND	2.0
methylene chloride	ND	1.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
1,2-dichloroethene (total)	ND	1.0
chloroform	ND	1.0
freon 113	ND	1.0
1,2-dichloroethane	ND	1.0
1,1,1-trichloroethane	ND	1.0
carbon tetrachloride	ND	1.0
bromodichloromethane	ND	1.0
1,2-dichloropropane	ND	1.0
cis-1,3-dichloropropene	ND	1.0
trichloroethylene	ND	1.0
1,1,2-trichloroethane	ND	1.0
trans-1,3-dichloropropene	ND	1.0
dibromochloromethane	ND	1.0
2-chloroethylvinyl ether	ND	2.0
bromoform	ND	1.0
tetrachloroethene	ND	1.0
1,1,2,2-tetrachloroethane	ND	1.0
chlorobenzene	ND	1.0
1,3-dichlorobenzene	ND	1.0
1,2-dichlorobenzene	ND	1.0
1,4-dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	12
RECOVERY, %	94

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: BORING 1

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/13/91
DATE REPORTED: 02/19/91

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene	ND	1.0
Toluene	ND	1.0
Ethyl Benzene	ND	1.0
Total Xylenes	ND	1.0
Chlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	99

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-2
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: BORING 2

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/14/91
DATE REPORTED: 02/19/91

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	REPORTING LIMIT ug/L
chloromethane	ND	2.0
bromomethane	ND	2.0
vinyl chloride	ND	2.0
chloroethane	ND	2.0
methylene chloride	ND	1.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
1,2-dichloroethene (total)	ND	1.0
chloroform	ND	1.0
freon 113	ND	1.0
1,2-dichloroethane	ND	1.0
1,1,1-trichloroethane	ND	1.0
carbon tetrachloride	ND	1.0
bromodichloromethane	ND	1.0
1,2-dichloropropane	ND	1.0
cis-1,3-dichloropropene	ND	1.0
trichloroethylene	ND	1.0
1,1,2-trichloroethane	ND	1.0
trans-1,3-dichloropropene	ND	1.0
dibromochloromethane	ND	1.0
2-chloroethylvinyl ether	ND	2.0
bromoform	ND	1.0
tetrachloroethene	ND	1.0
1,1,2,2-tetrachloroethane	ND	1.0
chlorobenzene	ND	1.0
1,3-dichlorobenzene	ND	1.0
1,2-dichlorobenzene	ND	1.0
1,4-dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	100

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-2
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: BORING 2

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/14/91
DATE REPORTED: 02/19/91

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene	ND	1.0
Toluene	ND	1.0
Ethyl Benzene	ND	1.0
Total Xylenes	ND	1.0
Chlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	101

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-3
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: BORING 3

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/13/91
DATE REPORTED: 02/19/91

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	REPORTING LIMIT ug/L
chloromethane	ND	2.0
bromomethane	ND	2.0
vinyl chloride	ND	2.0
chloroethane	ND	2.0
methylene chloride	ND	1.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
1,2-dichloroethene (total)	ND	1.0
chloroform	ND	1.0
freon 113	ND	1.0
1,2-dichloroethane	ND	1.0
1,1,1-trichloroethane	ND	1.0
carbon tetrachloride	ND	1.0
bromodichloromethane	ND	1.0
1,2-dichloropropane	ND	1.0
cis-1,3-dichloropropene	ND	1.0
trichloroethylene	ND	1.0
1,1,2-trichloroethane	ND	1.0
trans-1,3-dichloropropene	ND	1.0
dibromochloromethane	ND	1.0
2-chloroethylvinyl ether	ND	2.0
bromoform	ND	1.0
tetrachloroethene	ND	1.0
1,1,2,2-tetrachloroethane	ND	1.0
chlorobenzene	ND	1.0
1,3-dichlorobenzene	ND	1.0
1,2-dichlorobenzene	ND	1.0
1,4-dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	12
RECOVERY, %	94

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-3
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: BORING 3

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/13/91
DATE REPORTED: 02/19/91

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene	ND	1.0
Toluene	ND	1.0
Ethyl Benzene	ND	1.0
Total Xylenes	ND	1.0
Chlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	99

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-11
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: COMPOSITE 1@1.0,3@1.5 & 4@1.5

DATE RECEIVED: 02/13/91
DATE REQUESTED: 02/19/91
DATE EXTRACTED: 02/15/91
DATE ANALYZED: 02/15/91
DATE REPORTED: 02/19/91

EPA 8270: Base/Neutral and Acid Extractables in Soils & Wastes
Extraction Method: EPA 3550 Sonication

ACID COMPOUNDS	RESULT ug/kg	REPORTING LIMIT ug/kg
Phenol	ND	330
2-Chlorophenol	ND	330
Benzyl Alcohol	ND	330
2-Methylphenol	ND	330
4-Methylphenol	ND	330
2-Nitrophenol	ND	1650
2,4-Dimethylphenol	ND	330
Benzoic Acid	ND	1650
2,4-Dichlorophenol	ND	330
4-Chloro-3-methylphenol	ND	330
2,4,6-Trichlorophenol	ND	330
2,4,5-Trichlorophenol	ND	1650
2,4-Dinitrophenol	ND	1650
4-Nitrophenol	ND	1650
4,6-Dinitro-2-methylphenol	ND	1650
Pentachlorophenol	ND	1650
BASE/NEUTRAL COMPOUNDS		
N-Nitrosodimethylamine	ND	330
Aniline	ND	330
Bis(2-chloroethyl)ether	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl)ether	ND	330
N-Nitroso-di-n-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
Bis(2-chloroethoxy)methane	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	330
4-Chloroaniline	ND	330
Hexachlorobutadiene	ND	330
2-Methylnaphthalene	ND	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
2-Nitroaniline	ND	1650

LABORATORY NUMBER: 102987-11
SAMPLE ID: COMPOSITE 1@1.0,3@1.5 & 4@1..5

EPA 8270

BASE/NEUTRAL COMPOUNDS	RESULT ug/kg	REPORTING LIMIT ug/kg
Dimethylphthalate	ND	330
Acenaphthylene	ND	330
2,6-Dinitrotoluene	ND	330
3-Nitroaniline	ND	1650
Acenaphthene	ND	330
Dibenzofuran	ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
4-Chlorophenyl-phenylether	ND	330
Fluorene	ND	330
4-Nitroaniline	ND	1650
N-Nitrosodiphenylamine	ND	330
Azobenzene	ND	330
4-Bromophenyl-phenylether	ND	330
Hexachlorobenzene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Di-n-butylphthalate	ND	330
Fluoranthene	ND	330
Benzidine	ND	330
Pyrene	ND	330
Butylbenzylphthalate	ND	330
3,3'-Dichlorobenzidine	ND	1650
Benzo (a) anthracene	ND	330
Chrysene	ND	330
Bis (2-ethylhexyl)phthalate	ND	330
Di-n-octylphthalate	ND	330
Benzo (b) fluoranthene	ND	330
Benzo (k) fluoranthene	ND	330
Benzo (a) pyrene	ND	330
Indeno (1,2,3-cd) pyrene	ND	330
Dibenzo (a,h) anthracene	ND	330
Benzo (g,h,i) perylene	ND	330

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-11
SAMPLE ID: COMPOSITE 1@1.0,3@1.5 & 4@1.5

EPA 8270

COMPOUND	RESULT ug/kg	REPORTING LIMIT ug/kg
CHLORINATED PESTICIDES		
alpha-BHC	ND	330
beta-BHC	ND	330
gamma-BHC	ND	330
delta-BHC	ND	330
Heptachlor	ND	330
Aldrin	ND	330
Heptachlor Epoxide	ND	330
Endosulfan I	ND	330
4,4'-DDE	ND	330
Dieldrin	ND	330
Endrin	ND	330
Endosulfan II	ND	330
4,4'-DDD	ND	330
Endrin Aldehyde	ND	330
Endosulfan Sulfate	ND	330
4,4'-DDT	ND	330
Chlordane	ND	1650
Toxaphene	ND	1650
Methoxychlor	ND	1650
Aroclor 1016	ND	1650
Aroclor 1221	ND	1650
Aroclor 1232	ND	1650
Aroclor 1242	ND	1650
Aroclor 1248	ND	1650
Aroclor 1254	ND	1650
Aroclor 1260	ND	1650

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	108 %	Nitrobenzene-d5	103 %
Phenol-d6	144 %	2-Fluorobiphenyl	98 %
2,4,6-Tribromophenol	106 %	Terphenyl-d14	77 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-15
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: COMPOSITE 2@1.0,5@1.0 & 6@1.0

DATE RECEIVED: 02/13/91
DATE REQUESTED: 02/19/91
DATE EXTRACTED: 02/15/91
DATE ANALYZED: 02/15/91
DATE REPORTED: 02/19/91

EPA 8270: Base/Neutral and Acid Extractables in Soils & Wastes
Extraction Method: EPA 3550 Sonication

	RESULT ug/kg	REPORTING LIMIT ug/kg
ACID COMPOUNDS		
Phenol	ND	330
2-Chlorophenol	ND	330
Benzyl Alcohol	ND	330
2-Methylphenol	ND	330
4-Methylphenol	ND	330
2-Nitrophenol	ND	1650
2,4-Dimethylphenol	ND	330
Benzoic Acid	ND	1650
2,4-Dichlorophenol	ND	330
4-Chloro-3-methylphenol	ND	330
2,4,6-Trichlorophenol	ND	330
2,4,5-Trichlorophenol	ND	1650
2,4-Dinitrophenol	ND	1650
4-Nitrophenol	ND	1650
4,6-Dinitro-2-methylphenol	ND	1650
Pentachlorophenol	ND	1650
BASE/NEUTRAL COMPOUNDS		
N-Nitrosodimethylamine	ND	330
Aniline	ND	330
Bis(2-chloroethyl)ether	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl)ether	ND	330
N-Nitroso-di-n-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
Bis(2-chloroethoxy)methane	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	330
4-Chloroaniline	ND	330
Hexachlorobutadiene	ND	330
2-Methylnaphthalene	380	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
2-Nitroaniline	ND	1650

LABORATORY NUMBER: 102987-15
SAMPLE ID: COMPOSITE 2@1.0,5@1.0 & 6@1.0

EPA 8270

BASE/NEUTRAL COMPOUNDS	RESULT ug/kg	REPORTING LIMIT ug/kg
Dimethylphthalate	ND	330
Acenaphthylene	ND	330
2,6-Dinitrotoluene	ND	330
3-Nitroaniline	ND	1650
Acenaphthene	ND	330
Dibenzofuran	ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
4-Chlorophenyl-phenylether	ND	330
Fluorene	DETECTED (190)	330
4-Nitroaniline	ND	1650
N-Nitrosodiphenylamine	ND	330
Azobenzene	ND	330
4-Bromophenyl-phenylether	ND	330
Hexachlorobenzene	ND	330
Phenanthrene	DETECTED (260)	330
Anthracene	ND	330
Di-n-butylphthalate	ND	330
Fluoranthene	DETECTED (240)	330
Benzidine	ND	330
Pyrene	DETECTED (180)	330
Butylbenzylphthalate	ND	330
3,3'-Dichlorobenzidine	ND	1650
Benzo (a) anthracene	ND	330
Chrysene	ND	330
Bis (2-ethylhexyl)phthalate	ND	330
Di-n-octylphthalate	ND	330
Benzo (b) fluoranthene	DETECTED (240)	330
Benzo (k) fluoranthene	ND	330
Benzo (a) pyrene	ND	330
Indeno (1,2,3-cd) pyrene	ND	330
Dibenzo (a,h) anthracene	ND	330
Benzo (g,h,i) perylene	ND	330

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-15
SAMPLE ID: COMPOSITE 2@1.0,5@1.0 & 6@1.0

EPA 8270

COMPOUND	RESULT ug/kg	REPORTING LIMIT ug/kg
CHLORINATED PESTICIDES		
alpha-BHC	ND	330
beta-BHC	ND	330
gamma-BHC	ND	330
delta-BHC	ND	330
Heptachlor	ND	330
Aldrin	ND	330
Heptachlor Epoxide	ND	330
Endosulfan I	ND	330
4,4'-DDE	ND	330
Dieldrin	ND	330
Endrin	ND	330
Endosulfan II	ND	330
4,4'-DDD	ND	330
Endrin Aldehyde	ND	330
Endosulfan Sulfate	ND	330
4,4'-DDT	ND	330
Chlordane	ND	1650
Toxaphene	ND	1650
Methoxychlor	ND	1650
Aroclor 1016	ND	1650
Aroclor 1221	ND	1650
Aroclor 1232	ND	1650
Aroclor 1242	ND	1650
Aroclor 1248	ND	1650
Aroclor 1254	ND	1650
Aroclor 1260	ND	1650

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	81 %	Nitrobenzene-d5	81 %
Phenol-d6	108 %	2-Fluorobiphenyl	77 %
2,4,6-Tribromophenol	93 %	Terphenyl-d14	54 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-4
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: 1 @ 1.0

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/14/91
DATE REPORTED: 02/19/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	5	EPA 6010
Arsenic	2.8	2.5	EPA 7060
Barium	36	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	2.0	0.5	EPA 6010
Chromium (total)	36	0.5	EPA 6010
Cobalt	5.7	0.5	EPA 6010
Copper	20	1	EPA 6010
Lead	ND	2.5	EPA 7420
Mercury	ND	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	19	0.5	EPA 6010
Selenium	ND	2.5	EPA 7760
Silver	16	1	EPA 6010
Thallium	ND	5	EPA 6010
Vanadium	20	1	EPA 6010
Zinc	42	0.5	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	3	89	Mercury	7	102
Arsenic	13	89	Molybdenum	<1	94
Barium	<1	101	Nickel	3	101
Beryllium	<1	96	Selenium	2	90
Cadmium	5	103	Silver	6	105
Chromium	<1	98	Thallium	5	88
Cobalt	1	95	Vanadium	<1	98
Copper	<1	98	Zinc	<1	98
Lead	5	87			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-5
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: 1 @ 3.5

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/14/91
DATE REPORTED: 02/19/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	5	EPA 6010
Arsenic	ND	2.5	EPA 7060
Barium	55	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	1.4	0.5	EPA 6010
Chromium (total)	27	0.5	EPA 6010
Cobalt	3.4	0.5	EPA 6010
Copper	24	1	EPA 6010
Lead	ND	2.5	EPA 7420
Mercury	ND	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	23	0.5	EPA 6010
Selenium	ND	2.5	EPA 7740
Silver	ND	1	EPA 6010
Thallium	ND	5	EPA 6010
Vanadium	14	1	EPA 6010
Zinc	69	0.5	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	3	89	Mercury	7	102
Arsenic	13	89	Molybdenum	<1	94
Barium	<1	101	Nickel	3	101
Beryllium	<1	96	Selenium	2	90
Cadmium	5	103	Silver	6	105
Chromium	<1	98	Thallium	5	88
Cobalt	1	95	Vanadium	<1	98
Copper	<1	98	Zinc	<1	98
Lead	5	87			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-6
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: 2 @ 1.0

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/14/91
DATE REPORTED: 02/19/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	5	EPA 6010
Arsenic	ND	2.5	EPA 7060
Barium	100	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	2.1	0.5	EPA 6010
Chromium (total)	27	0.5	EPA 6010
Cobalt	9.0	0.5	EPA 6010
Copper	75	1	EPA 6010
Lead	24	2.5	EPA 7420
Mercury	0.2	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	32	0.5	EPA 6010
Selenium	ND	2.5	EPA 7740
Silver	ND	1	EPA 6010
Thallium	ND	5	EPA 6010
Vanadium	15	1	EPA 6010
Zinc	120	0.5	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	3	89	Mercury	7	102
Arsenic	13	89	Molybdenum	<1	94
Barium	<1	101	Nickel	3	101
Beryllium	<1	96	Selenium	2	90
Cadmium	5	103	Silver	6	105
Chromium	<1	98	Thallium	5	88
Cobalt	1	95	Vanadium	<1	98
Copper	<1	98	Zinc	<1	98
Lead	5	87			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-7
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: 2 @ 3.5

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/14/91
DATE REPORTED: 02/19/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	5	EPA 6010
Arsenic	ND	2.5	EPA 7060
Barium	57	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	1.0	0.5	EPA 6010
Chromium (total)	30	0.5	EPA 6010
Cobalt	7.0	0.5	EPA 6010
Copper	31	1	EPA 6010
Lead	ND	2.5	EPA 7420
Mercury	0.2	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	34	0.5	EPA 6010
Selenium	ND	2.5	EPA 6010
Silver	ND	1	EPA 6010
Thallium	ND	5	EPA 6010
Vanadium	11	1	EPA 6010
Zinc	50	0.5	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	3	89	Mercury	7	102
Arsenic	13	89	Molybdenum	<1	94
Barium	<1	101	Nickel	3	101
Beryllium	<1	96	Selenium	2	90
Cadmium	5	103	Silver	6	105
Chromium	<1	98	Thallium	5	88
Cobalt	1	95	Vanadium	<1	98
Copper	<1	98	Zinc	<1	98
Lead	5	87			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-9
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: 3 @ 1.5

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/14/91
DATE REPORTED: 02/19/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	14	5	EPA 7041
Arsenic	5.9	2.5	EPA 7060
Barium	50	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	4.2	0.5	EPA 6010
Chromium (total)	39	0.5	EPA 6010
Cobalt	10	0.5	EPA 6010
Copper	1,700	1	EPA 6010
Lead	550	2.5	EPA 6010
Mercury	0.6	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	65	0.5	EPA 6010
Selenium	ND	2.5	EPA 6010
Silver	ND	1	EPA 6010
Thallium	ND	5	EPA 6010
Vanadium	25	1	EPA 6010
Zinc	220	0.5	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	3	89	Mercury	7	102
Arsenic	13	89	Molybdenum	<1	94
Barium	<1	101	Nickel	3	101
Beryllium	<1	96	Selenium	2	90
Cadmium	5	103	Silver	6	105
Chromium	<1	98	Thallium	5	88
Cobalt	1	95	Vanadium	<1	98
Copper	<1	98	Zinc	<1	98
Lead	5	87			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-10
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: 4 @ 1.5

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/14/91
DATE REPORTED: 02/19/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	5	EPA 6010
Arsenic	3.1	2.5	EPA 7060
Barium	62	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	2.3	0.5	EPA 6010
Chromium (total)	47	0.5	EPA 6010
Cobalt	7.7	0.5	EPA 6010
Copper	230	1	EPA 6010
Lead	21	2.5	EPA 7420
Mercury	2.3	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	35	0.5	EPA 6010
Selenium	ND	2.5	EPA 7740
Silver	5.8	1	EPA 6010
Thallium	ND	5	EPA 6010
Vanadium	22	1	EPA 6010
Zinc	120	0.5	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	3	89	Mercury	7	102
Arsenic	13	89	Molybdenum	<1	94
Barium	<1	101	Nickel	3	101
Beryllium	<1	96	Selenium	2	90
Cadmium	5	103	Silver	6	105
Chromium	<1	98	Thallium	5	88
Cobalt	1	95	Vanadium	<1	98
Copper	<1	98	Zinc	<1	98
Lead	5	87			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-12
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: 5 @ 1.0

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/14/91
DATE REPORTED: 02/19/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	5	EPA 6010
Arsenic	4.9	2.5	EPA 7060
Barium	120	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	3.4	0.5	EPA 6010
Chromium (total)	26	0.5	EPA 6010
Cobalt	7.5	0.5	EPA 6010
Copper	770	1	EPA 6010
Lead	190	2.5	EPA 6010
Mercury	0.5	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	33	0.5	EPA 6010
Selenium	ND	2.5	EPA 6010
Silver	ND	1	EPA 6010
Thallium	ND	5	EPA 6010
Vanadium	19	1	EPA 6010
Zinc	350	0.5	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	3	89	Mercury	7	102
Arsenic	13	89	Molybdenum	<1	94
Barium	<1	101	Nickel	3	101
Beryllium	<1	96	Selenium	2	90
Cadmium	5	103	Silver	6	105
Chromium	<1	98	Thallium	5	88
Cobalt	1	95	Vanadium	<1	98
Copper	<1	98	Zinc	<1	98
Lead	5	87			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-13
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: 5 @ 4.0

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/14/91
DATE REPORTED: 02/19/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	5	EPA 6010
Arsenic	ND	2.5	EPA 7060
Barium	100	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	1.1	0.5	EPA 6010
Chromium (total)	33	0.5	EPA 6010
Cobalt	7.7	0.5	EPA 6010
Copper	25	1	EPA 6010
Lead	2.9	2.5	EPA 7420
Mercury	ND	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	54	0.5	EPA 6010
Selenium	ND	2.5	EPA 6010
Silver	ND	1	EPA 6010
Thallium	ND	5	EPA 6010
Vanadium	9.7	1	EPA 6010
Zinc	45	0.5	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	3	89	Mercury	7	102
Arsenic	13	89	Molybdenum	<1	94
Barium	<1	101	Nickel	3	101
Beryllium	<1	96	Selenium	2	90
Cadmium	5	103	Silver	6	105
Chromium	<1	98	Thallium	5	88
Cobalt	1	95	Vanadium	<1	98
Copper	<1	98	Zinc	<1	98
Lead	5	87			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102987-14
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 643.001
LOCATION: CRYER SHIPYARD
SAMPLE ID: 6 @ 10

DATE RECEIVED: 02/13/91
DATE ANALYZED: 02/14/91
DATE REPORTED: 02/19/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	5	EPA 6010
Arsenic	5.8	2.5	EPA 7060
Barium	77	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	5.1	0.5	EPA 6010
Chromium (total)	31	0.5	EPA 6010
Cobalt	10	0.5	EPA 6010
Copper	490	1	EPA 6010
Lead	190	2.5	EPA 6010
Mercury	ND	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	22	0.5	EPA 6010
Selenium	ND	2.5	EPA 6010
Silver	ND	1	EPA 6010
Thallium	ND	5	EPA 6010
Vanadium	25	1	EPA 6010
Zinc	130	0.5	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	3	89	Mercury	7	102
Arsenic	13	89	Molybdenum	<1	94
Barium	<1	101	Nickel	3	101
Beryllium	<1	96	Selenium	2	90
Cadmium	5	103	Silver	6	105
Chromium	<1	98	Thallium	5	88
Cobalt	1	95	Vanadium	<1	98
Copper	<1	98	Zinc	<1	98
Lead	5	87			

Subsurface Consulta...s

1/3

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: CLYER SHIPYARD

SCI Job Number: 643.001

Project Contact at SCI: J. BOWERS

Sampled By: J. WOLFE

Analytical Laboratory: CURTIS + TOMPKINS

TEH = EPA 8015 MOD / 3550
O+G = 5520 E+F

Analytical Turnaround: NORMAL

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
1 @ 1.0	S	T	2/8/91		TITLE 26 METALS, ~~O+G~~ / ~~TEH~~	
1 @ 3.5	S	T			TITLE 26 METALS, O+G, TEH	
2 @ 1.0	S	T			TITLE 26 METALS, TEH, O+G	
2 @ 3.5	S	T			TITLE 26 METALS	
2 @ 6.0	S	T			O+G, TEH	
3 @ 1.5	S	T			TITLE 26 METALS	
4 @ 1.5	S	T			TITLE 26 METALS	
COMPOSITE	1 @ 1.0, 3 @ 1.5 AND 4 @ 1.5				EPA 8270	

* * * * * *

Released by: [signature] Received by: _____ Date: 2-13-91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: [signature] Date: 2/13/91

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

[1] Sample Type: W = Water, S = Soil, O = Other (specify)
[2] Container Type: V = VOA, P = Plastic, G = Glass, T = Brass Tube, O = Other (specify)

NOTES TO LABORATORY:
- Notify SCI if there are any anomalous peaks on GC or other scans
- Questions/clarifications - Contact SCI at (415) 268-0461

Subsurface Consultants

2/3

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: CRYER SHIPYARD

SCI Job Number: 643.001

Project Contact at SCI: J. BOWERS

Sampled By: J. WOLFE

Analytical Laboratory: CURTIS & TOMPKINS

Analytical Turnaround: NORMAL

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
5@1.0	S	T	2/8/91		TITLE 26 METALS	
5@4.0	S	T	2/8/91		TITLE 26 METALS, O+G, TEH	
6@1.0	S	T	2/8/91		TITLE 26 METALS	
COMPOSITE	2@1.0, 5@1.0 AND 6@1.0				EPA 8270	

NOTE: TAKE SAMPLE FROM TOP END OF TUBE

* * * * * *

Released by: Jon L. B. Received by: _____ Date: 2-13-91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: Joanne Rueth Date: 2/13

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

[1] Sample Type: W = Water, S = Soil, O = Other (specify)
[2] Container Type: V = VOA, P = Plastic, G = Glass, T = Brass Tube, O = Other (specify)

NOTES TO LABORATORY:
- Notify SCI if there are any anomalous peaks on GC or other scans
- Questions/clarifications - Contact SCI at (415) 268-0461

Subsurface Consultants

3/3

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: CRYER SHIPYARD

SCI Job Number: 643.001

Project Contact at SCI: J. BOWERS

Sampled By: J. WAFE

Analytical Laboratory: CURTIS + TOMPKINS

Analytical Turnaround: NORMAL

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
BORING 1	W	6 - VOA's 2 - G LITER	2/8/91		EPA 8010	8020
BORING 2	W	6 - VOA's 2 - G LITER	2/8/91		EPA 8010	8020
BORING 3	W	6 - VOA's 2 - G LITER	2/8/91		EPA 8010	8020

* * * * * *

Released by: [signature] Received by: _____ Date: 2-13-91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: [signature] Date: 2/13/91

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

1 Sample Type: W = Water, S = Soil, O = Other (specify)
2 Container Type: V = VOA, P = Plastic, G = Glass, T = Brass Tube, O = Other (specify)

NOTES TO LABORATORY:
- Notify SCI if there are any anomalous peaks on GC or other scans
- Questions/clarifications - Contact SCI at (415) 268-0461