MONITORING WELL INSTALLATION

AND

SOIL AND GROUND WATER QUALITY ANALYSES

SIDNEY COVITCH PROPERTIES

WHITINSVILLE, MASSACHUSETTS

CASWELL, EICHLER & HILL, INC.

PORTSMOUTH, NEW HAMPSHIRE

SEPTEMBER 1985

COPY

No Plates

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INTRODUCTION

The Massachusetts Department of Environmental Quality Engineering (DEQE) requested that a hydrogeologic site assessment be conducted at the former ATF/Davidson Company (ATF/D) facility in Whitinsville, Massachusetts that is presently owned by Mr. Sidney Covitch. In that ATF/D is a subsidiary of White Consolidated Industries (WCI) of Cleveland, Ohio, WCI and ATF/D retained Caswell, Eichler and Hill, Inc. (CEH) to develop and implement a plan that would satisfy DEQE requirements concerning the general hydrogeologic site assessment. This assessment would include the installation of monitoring wells, the collection of soil and groundwater samples, the measurement of groundwater elevations, the completion of a vertical and horizontal survey of the monitoring well locations, and completion of selected laboratory analyses for volatile organics (EPA 624), oil and grease, total phenols, barium, total cyanide and priority pollutant metals.

Early in the planning stages of the project, it became clear that a separate investigation from that described above would also be required on the parcel. On April 24, 1985, oil was noted on the surface of the water in the raceway, a man-made sluice that diverted water from the Mumford River for power generation. An investigation was begun to determine the source of contamination. Examination of the raceway walls and completion of several test pits showed the source to be oil saturated sediments and free oil at the water table between Building 9 and the raceway. Review of the past practices in this area confirmed that oil was discharged to the ground when large containers of metal cuttings were drained prior to shipment off the site. In May, 1985, CEH completed a brief solid stem auger probe investigation to determine both the vertical and horizontal extent of contamination. The results of that effort are shown in our May 30, 1985 letter report, which is contained in Appendix C. Further work characterizing this zone of degradation was subsequently completed, and is described in this report. For the purpose of clarity and ease of presentation, the Building 9/Raceway area is discussed somewhat separately from the general, overall site assessment.

CEH, a professional firm of geologists, hydrologists and geophysicists, assumed the project's lead role. Environmental Field Services (EFS) and Resource Analysts, Inc. (RAI) of Hampton, New Hampshire performed the ground water sampling and laboratory analyses. New England Boring Contractors, Inc. of Glastonbury, Connecticut performed the drilling, soil sampling and monitoring well construction. Bibeault and Florentz, Inc. of Woonsocket, Rhode Island performed the elevational and location survey to establish horizontal and vertical control on the monitoring wells.

WORK PERFORMED

A. DRILLING AND MONITORING WELL CONSTRUCTION: As shown on the SITE MAP (Figure 1), fifteen locations(MC-1 through MC-15) were chosen for the installation of shallow monitoring wells. Where possible, hollow stem augers (3 inch I.D.) were advanced to below the water table, and standard split-spoon sampling was completed to note stratigraphy. Threaded, flush joint, ten-slot PVC screen (1.5 inch I.D.) was set at and below the water table, and solid PVC riser of the same design and dimension was installed to roughly two feet above land surface. Ottawa sand was packed around the screen, and a two foot thick bentonite seal was installed approximately one foot above the top of the screen. Additional sand was added to within two feet of land surface in each boring, and a locking steel protective pipe was cemented in place. All wells were fully developed upon completion, and all augers were thoroughly washed between borings.

Five hollow stem auger probes (AP-101 through AP-105) were completed in the Building 9/Raceway area where oil and metals are known to be present in the subsurface. The purpose of this task was to obtain continuous soil samples in a vertical profile on each side of the raceway for chemical analyses. In this fashion, more precise information could be gathered on both the vertical distribution of contamination, and the possibility of transport beneath or through the raceway.

B. SURVEY FOR HORIZONTAL AND VERTICAL CONTROL: Upon completion of the drilling and monitoring well construction, the locations of the borings and wells were surveyed for horizontal and vertical control. Vertical control was established using a U.S.G.S. benchmark in feet above mean sea level (FT-MSL). Each well top and the immediately adjacent ground surface were surveyed to the nearest hundreth of a foot. Where a well could not be installed, the ground surface at the location of the boring was surveyed. These data, coupled with the subsurface data gathered during the drilling and water level measurement tasks, allowed for the construction of all figures and tables presented herein.

C. GROUND WATER AND SOIL SAMPLING AND LABORATORY ANALYSES: During construction of the monitoring wells, standard soil sampling was conducted in each boring. An eighteen inch split-spoon sample was taken at the surface and every five feet thereafter. A final sample was taken, or attempted in the case of hollow stem auger refusal, at the bottom of each boring. The samples were placed in standard soil sample jars and kept for future inspection and possible laboratory analysis.

As mentioned above, continuous split-spoon sampling was conducted from above the water table to the refusal surface in the Building 9/Raceway area. AP-101, AP-102, AP-103 encountered both hollow-stem auger and split-spoon refusal above the desired refusal elevation. AP-104 and AP-105, however, were able to be advanced to an elevation below that of the raceway's interior bottom. Samples from these probes were, therefore, selected for laboratory analyses. Each soil sample taken from AP-104 (S-1 through S-6) and AP-105 (S-1 through S-5) was analyzed for

Bldg. No.	Name	Year Built
1	Main Office Garage	1918
2	Main Office	1918-1943-1948
3	Pay Dept. Addition	1907
4	Machine Shop & Offices	1865
5	Supts. Office	1870 ?
6	Cylinder Grinding	1920
7	Nickel Plating	1917-1924-1944
8	Freight House	1891-1895-1916-1940
9	Machine Shop	1908-1916-1946
9A	Paint Spray	1951
10	Machine Shop	1922-1948
11	Pattern Loft	1909
12	Foundry	1908-1916-1941-1949
13	Machine Shop	1900-1943
14	" "	1847-1943
15	Oil Room & Lab	1921
16	Machine Shop	1910
16A	Storage	1929
17	"	1920
18	Fire Pump House	1921
19	Power House	1896-1909-1944-1946-1948
20	Heater House	1909
21	Storage	1910
22	Transformers	1920
23	Blacksmith Shop	1909
24	Annealing Room	1923
25	Motor House	1916-1938
26	Machine Shop	1921-1938

FIGURE 1
SITE MAP

barium, oil and grease, total phenols and priority pollutant metals. Additionally, AP-104 (S-4), AP-105 (S-1) and AP-105 (S-3) were analysed for volatile organic compounds (EPA 624). These samples were placed in a standard soil sample jar, and promptly delivered to the laboratory for chemical analysis.

Each completed monitoring well was either pumped dry six times, or six times its volume was extracted prior to sampling. Standard EPA approved sampling, sample preservation and analyses techniques were employed by EFS & RAI. Ground water samples that were to be tested for volatile organic compounds were taken with a stainless steel bailer. Samples that were to be tested for metals and inorganics were taken with a peristaltic pump. Dedicated tubing was used in each well, and all samples for metals and inorganics were field filtered. Chain of Custody and Field Data forms were completed for each well and set of samples. Please note that the Temperature (°C) Readings reported on the field data forms correspond to the Conductivity (umhos) when it was read, not when the sample was first extracted from the well.

Each ground water sample was analysed for volatile organic compounds (EPA 624), barium, priority pollutant metals, and total cyanide. Samples from MC-7 and MC-14 were also analysed for oil and grease, and total phenols.

HYDROGEOLOGIC SETTING

The Covitch properties in Whitinsville, Massachusetts that were the subjects of this hydrogeologic evaluation exist on both the north and south sides of the Mumford River. A large dam exists about 1000 feet inside the western property boundary, and a smaller dam is located at the eastern property boundary. The overall parcel is approximately 2500 feet long on both sides of the west to east flowing river, with most of the acreage existing on the north bank. In addition to the main property on the south side of the river, a separate small parcel that was formerly used as a coal ash disposal area was investigated. This parcel exists west of the main property, and along the south bank of the river on Douglas Road.

The main parcel is almost completely developed with a variety of large manufacturing facilities dating back to the last century. The property is bounded to the east by Town Hall, west by ATF/Davidson Company, Inc., north by Main Street, and south by Douglas Road. Because the site is completely developed, most of the overburden encountered during the drilling phase was considered to be borrow fill. It was generally noted to be brown (sometimes gray below the water table) silty fine to medium sand with occasional coarse gravel, cobbles and small boulders. This characterization also closely resembles the native till in the area, and thusly, the borrow was presumably obtained locally. The extreme western end of the property, however, was comprised of foundry fill, which is a fine to coarse sand and gravel with some pumice like material, foundry bed glass and ash. This foundry material was removed from the large foundry at the western end of the property and graded out into the river. This filling operation continued for years, creating a large land mass that stretches approximately 3200 feet further west of the present western boundary. This land mass presently supports a demolitions debris area for the ongoing renovations of the facilities, and the AFT/Davidson Company, Inc., Arcade Facility.

RESULTS AND CONCLUSIONS

A. SITE HYDROGEOLOGY: As mentioned, the contact between borrow fill and native till was difficult to discern over most of the site. Based mainly on density differences, however, native till was presumed encountered in the lower portions of borings MC-1, MC-2, MC-5, MC-7, MC-13 and MC-14. Washed sandy river bottom sediments were observed at the bottom of MC-11, and MC-15 encountered foundry fill throughout its entire depth.

In four locations (MC-4, MC-5, MC-8 and MC-9), refusal was encountered above the water table, precluding the placement of a monitoring well. These refusal elevations most likely correspond to the bedrock surface, or a boulder layer directly above the bedrock surface. This assumption is reinforced by the existence of a dam and large smoke stack adjacent to locations MC-8 and MC-9, both of which require a shallow bedrock foundation. Additionally, the Mumford River bottom consists of boulders and bedrock exposures from location MC-9, past locations MC-8 and MC-4, to location MC-5 where another dam is located. Location MC-6 was inaccessible to the drilling rig because construction of a loading dock was in progress. The locations where monitoring wells were and were not completed are shown on the Facility Map and Shallow Horizontal Flow Net (Figure 2). Further, data from the drilling and water level measurement tasks were used to construct Monitoring Well and Subsurface Data (Table I), and Cross Sections A-A' and B-B' (Figures 3 and 4). Examination of these constructs can educate the reader as to the hydrogeologic nature of the site far better than reading numurous descriptive paragraphs. Some time digesting these compilations is therefore recommended prior to, and while reading the remainder of the report.

Groundwater on the north side of the Mumford River generally flows south beneath the site, discharging to the river. The maximum velocity of groundwater flow probably occurs in the foundary fill area between MC-13 and MC-15. A flow line crossing the 310 water table contour (approximate upper end of foundary fill) to the 305 contour adjacent to MC-15 would be approximately 400 feet in length. Given the grain size characteristics of the foundry fill, we have estimated a hydraulic conductivity (K) of 1×10^{-3} cm/sec (3.28×10^{-5} ft/sec), and a corresponding effective porosity (n_e) of 0.2. Using these estimates and a hydraulic gradient (i) of 0.01 (where, $\frac{310'-305'}{400'}$), it is possible to estimate the seepage velocity ($\overline{v}$).

$$\overline{v} = \frac{Ki}{N_e} = \frac{(3.28 \times 10^{-5} \text{ ft/sec})(0.01)}{0.2}$$

$$= 1.6 \times 10^{-6} \text{ ft. sec}$$

$$= 52 \text{ ft/yr}$$

TABLE 1

MONITORING WELL AND SUBSURFACE ELEVATION DATA

COVITCH SITE

WELL #	LAND SURFACE ELEVATION (FT-MSL)	TOP OF PIPE ELEVATION (FT-MSL)	LENGTH OF RISER (FT)	WATER TABLE ELEVATION NOTED DURING DRILLING (FT-MSL)	7-24-85 WATER TABLE ELEVATION (FT-MSL)	7-30-85 WATER TABLE ELEVATION (FT-MSL)	BOTTOM OF BORING ELEVATION (FT-MSL)	TOP OF SCREEN ELEVATION (FT-MSL)	BOTTOM OF SCREEN ELEVATION (FT-MSL)
MC-1	310.30	312.65	2.35	304.80	305.26	305.31	298.80	305.30	300.30
MC-2	310.10	311.85	1.75	305.10	305.28	305.33	299.10	305.60	300.60
MC-3	298.07	300.47	2.40	290.07	290.69	290.83	287.07*	293.57	288.57
MC-4	290.89	-	-	286.39	-	-	285.89*	-	-
MC-5	289.05	-	-	282.55	-	-	282.05*	-	-
MC-6	-	-	-	-	-	-	-	-	-
MC-7	295.48	297.39	1.91	286.68	287.29	287.32	283.48*	288.48	283.48
MC-8	295.56	-	-	-	-	-	292.06*	-	-
MC-9	298.16	-	-	-	-	-	294.16*	-	-
MC-10	311.64	313.96	2.32	302.64	305.33	305.38	300.14*	305.14	300.14
MC-11	311.19	313.31	2.12	305.39	305.37	305.41	299.69	306.19	301.19
MC-12	311.12	313.81	2.69	304.82	305.43	305.37	299.62	306.12	301.12
MC-13	320.02	322.16	2.14	311.22	313.86	314.11	309.02*	314.02	309.02
MC-14	335.62	337.69	2.07	326.82	327.60	327.82	322.12	327.12	322.12
MC-15	310.36	313.31	2.95	305.36	305.39	305.43	299.36	305.86	300.86

*Split Spoon and/or Hollow Stem Auger Refusal

FIGURE 3

A - A'

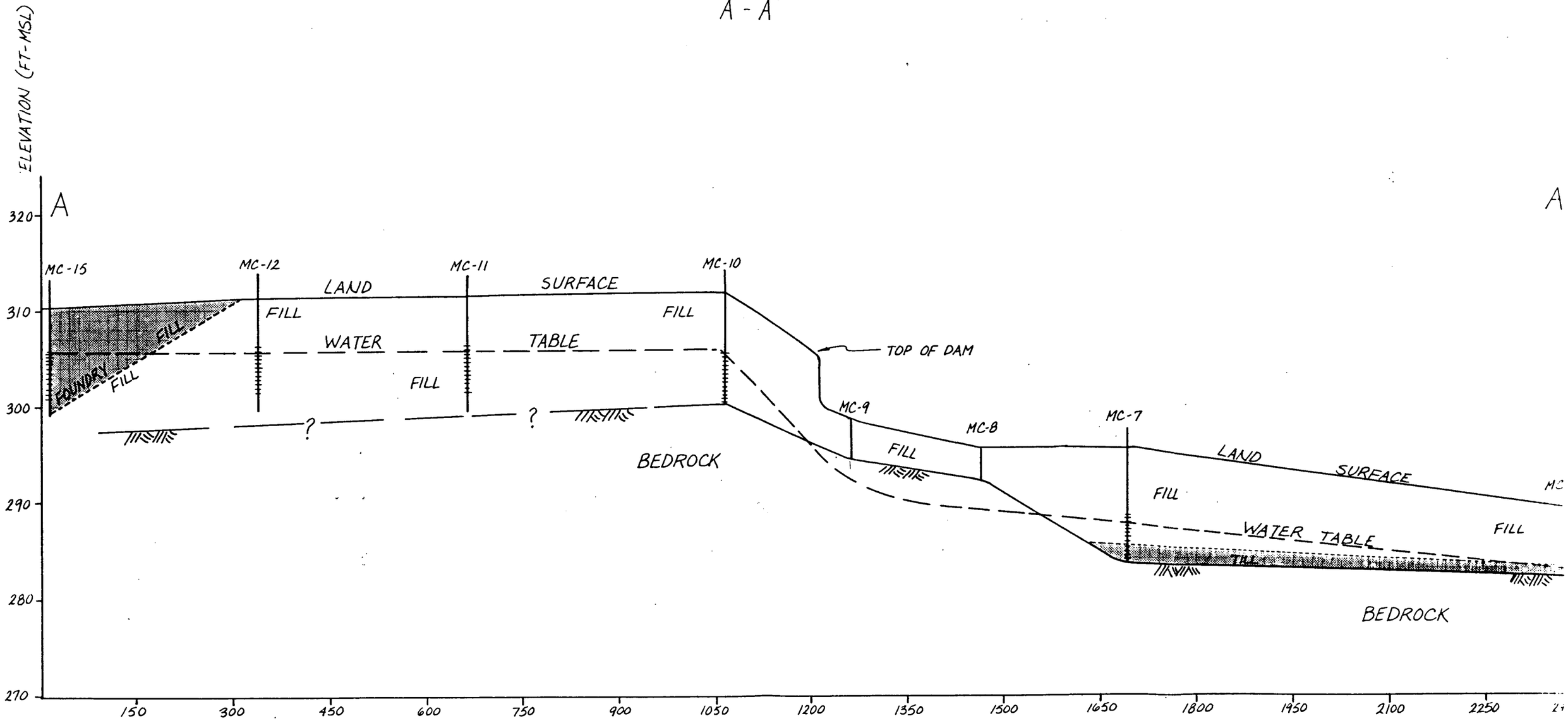
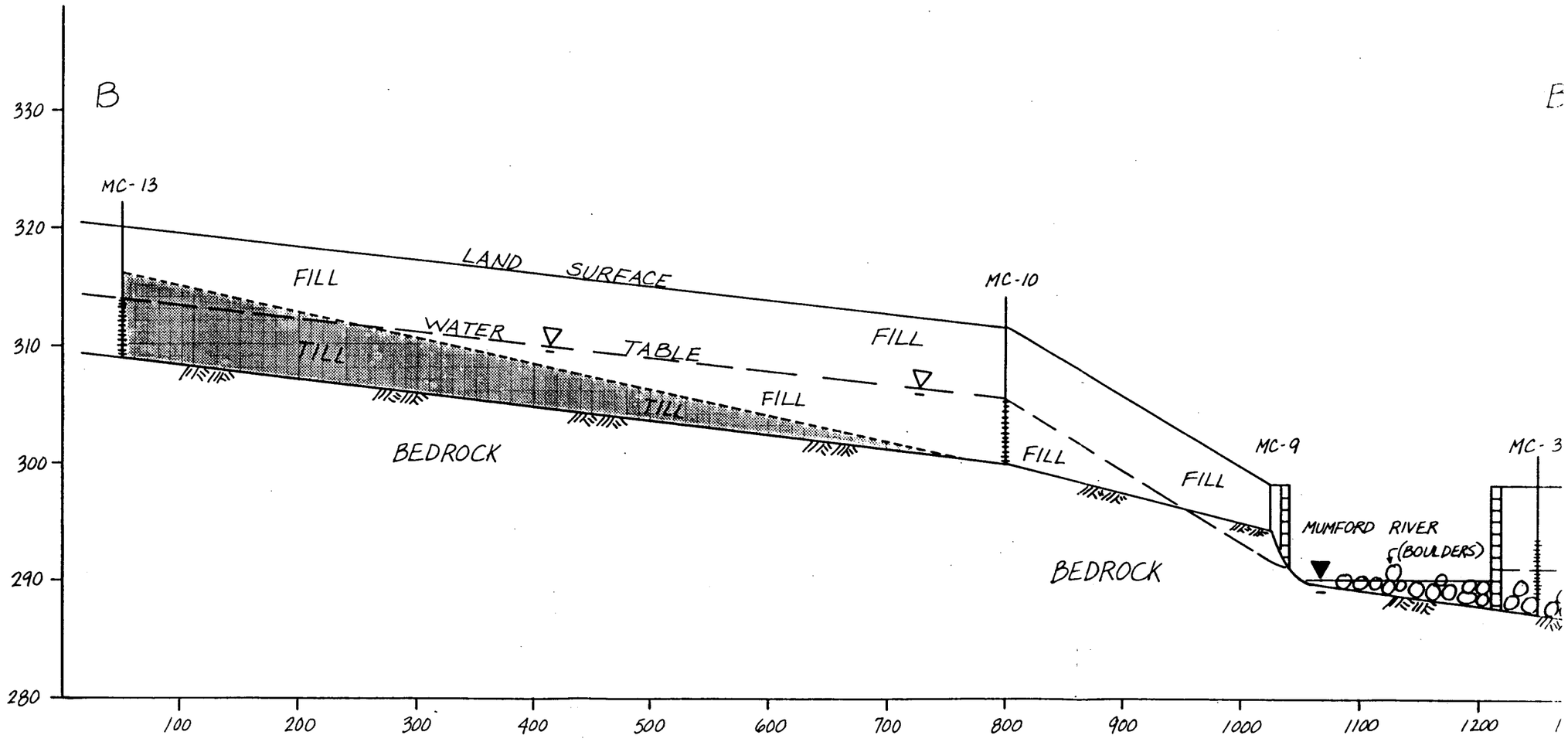

ELEVATION (FT-MSL)
A
A
320
310
300
290
280
270
MC-15
MC-12
MC-11
MC-10
MC-9
MC-8
MC-7
LAND SURFACE
FILL
FOUNDRY FILL
WATER TABLE
TOP OF DAM
BEDROCK
?
150
300
450
600
750
900
1050
1200
1350
1500
1650
1800
1950
2100
2250
DISTANCE (FT)
WEST
EAST
VERTICAL: 1"= 10'
HORIZONTAL: 1"= 150'

FIGURE 4

B - B'


B
E
330
320
310
300
290
280
MC-13
MC-10
MC-9
MC-3
LAND SURFACE
FILL
WATER TABLE
TILL
FILL
TILL
FILL
FILL
FILL
BEDROCK
BEDROCK
MUMFORD RIVER
(BOULDERS)
100
200
300
400
500
600
700
800
900
1000
1100
1200
DISTANCE (FT)
WEST
EAST
VERTICAL: 1" = 10'
HORIZONTAL: 1" = 100'

On much of the site proper, however, K is estimated at 1×10^{-5} cm/sec (3.28×10^{-7} ft/sec), and n_e is estimated at 0.15. A flow line running from MC-14 to MC-9, has a hydraulic gradient (i) of 0.05, and the seepage velocity would equal

$$\bar{v} = \frac{(3.28 \times 10^{-7} \text{ ft/sec})(0.05)}{0.15}$$

$$= 1.09 \times 10^{-7} \text{ ft.sec}$$

$$= 3.5 \text{ ft/yr}$$

Ground water on the south side of the Mumford River generally flows north, discharging to the river. The overburden encountered in MC-1, MC-2, MC-3 and MC-4 was very similar to that noted beneath much of the site proper. Seepage velocities in this area, therefore, are estimated at somewhat less than 3.5 ft/yr because of the flatter hydraulic gradient existing between the wells and the river.

B. GROUND WATER QUALITY: Appendix B contains the groundwater quality data for each well. Additionally, as seen on the field data form, conductivity, temperature (at the time of conductivity reading) and pH were also determined. As the results of these laboratory analyses show, no problem levels of volatile organics, priority pollutant metals, cyanide, barium or phenols were detected. MC-14, which is directly downgradient of Main Street, showed 24 mg/l of oil and grease. Most of the wells, especially MC-12, MC-10 and MC-14 showed elevated conductivity readings. An anion scan, including chloride, an alkalinity determination, and a total inorganic carbon (TIC) analysis could possibly show the reason for these relatively high conductivity readings in future sampling efforts.

C. BUILDING 9/RACEWAY AREA: As mentioned earlier, five hollow stem auger probes were completed in the Building 9/Raceway area. The locations of these auger probes are shown on the Facility Map and Shallow Horizontal Flownet (Figure 2). Additionally, Subsurface Auger Probe and Raceway Data (Table 2) delineates the subsurface elevations of the soil samples, water table, water level in the raceway, and bottom of the raceway. These data are graphically presented in Cross Section C-C' (Figure 5).

Before reading the following discussion of results, the reader should first become familiar with Figure 5 and its relationship to Figures 6-11.

Results of the hollow stem augering and sediment sampling both confirm and quantify our earlier findings (May 30, 1985 letter report; Appendix C). As shown on Vertical Distribution of Oil and Grease AP-104 (Figure 6), the most heavily contaminated zone exists between elevations 303-297, which is the zone immediately above and below the water table (301). From elevation 297 to 292.5 (292.5 = hollow stem auger and split-spoon sampler refusal; also projected to be the elevations of the bedrock surface and bottom of the raceway foundation), the level of oil contamination is still heavy, but concentrations are generally an order of magnitude less than what was noted at the water table.

TABLE 2

SUBSURFACE AUGER PROBE, CONTINUOUS SAMPLING AND RACEWAY DATA

AUGER PROBE AND SAMPLE	GROUND ELEV. (FT-MSL)	SAMPLE ELEV. (FT-MSL)	WATER TABLE ELEV. (FT-MSL)	RACEWAY WATER ELEV. (FT-MSL)	RACEWAY BOTTOM ELEV. (FT-MSL)
AP-014(S-1)	310.0	302-300	301.0	298.0	294.0
(S-2)	"	300-298	"	"	"
(S-3)	"	298-296.5	"	"	"
(S-4)	"	296-294.5	"	"	"
(S-5)	"	294.5-293	"	"	"
(S-6)	"	293-292.5	"	"	"
AP-105(S-1)	309.0	299-297	298.0	"	"
(S-2)	"	297-295	"	"	"
(S-3)	"	295-294.5	"	"	"
(S-4)	"	294-292.5	"	"	"
(S-5)	"	292.5-292	"	"	"

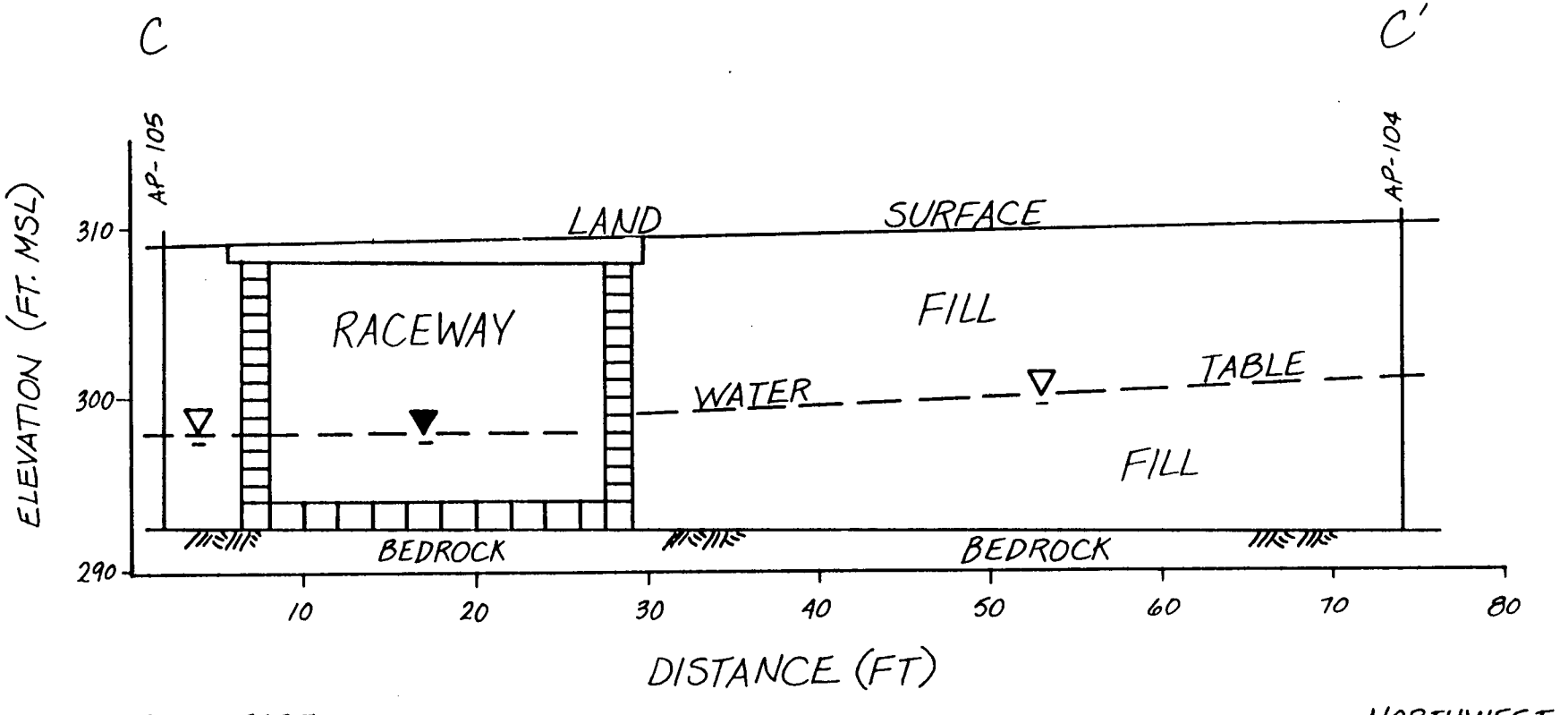
In an effort to determine the level of oil and grease contamination on the hydraulically downgradient side of the raceway, AP-105 was drilled and sampled. Given the history of oil spills on both sides of the raceway (north side = oil from drained metal cuttings; south side = oil tank leak in basement of the Power House), it is difficult to relate oil contamination on the south to contamination on the north. However, as Vertical Distribution of Oil and Grease AP-105 (Figure 7) shows, the absence of significant contamination at the water table (298), in AP-105 would suggest contamination from two separate sources. When viewed relative to AP-104 data where oil was concentrated at the water table (301), and the water surface elevation in the raceway (298) where oil was floating, oil would be expected at the water table elevation 298 in AP-105. In that the highest concentrations of oil and grease are found, however, at elevation 296 in AP-105 (two feet below the water table and two feet underwater in the adjacent raceway - see Figure 5), a source from the Power House side of the raceway must be strongly suspected.

Oil and grease concentrations in AP-105 (Figure 7) are far less than those found in AP-104 (Figure 6). Figure 7 was, however, graphically presented at the same scale as Figure 6 to facilitate comparison.

Although not a problem from an acute toxicity perspective, the vertical distribution of metals generally shows a trend toward pronounced increases in concentration at approximately elevation 293. A combination of leaching, transport by chelation with the oil, and higher naturally occuring levels in the native till at the bedrock surface are all probably somewhat

FIGURE 5

C - C'



VERTICAL 1" = 10'
HORIZONTAL 1" = 10'

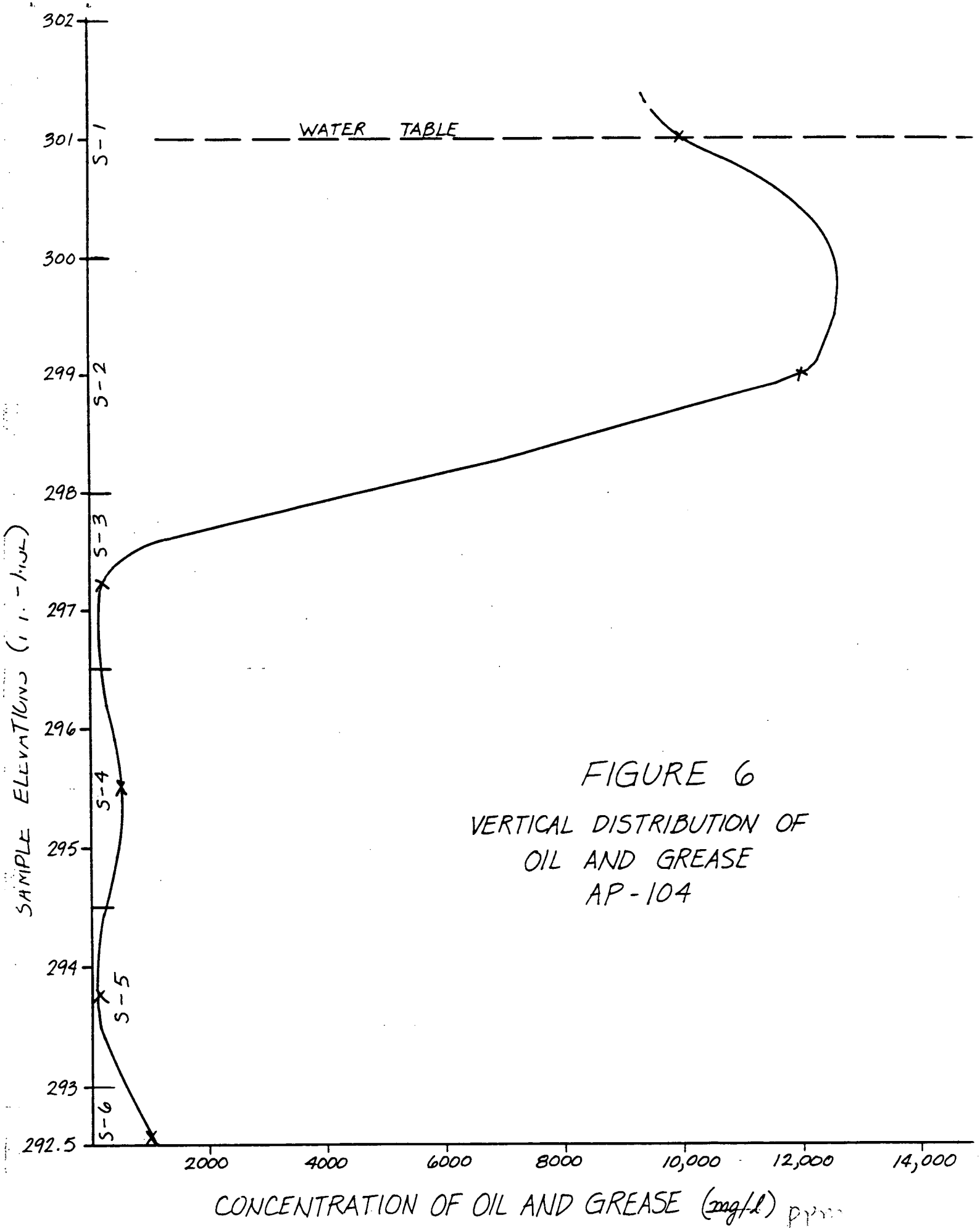


FIGURE 6

VERTICAL DISTRIBUTION OF
OIL AND GREASE
AP-104

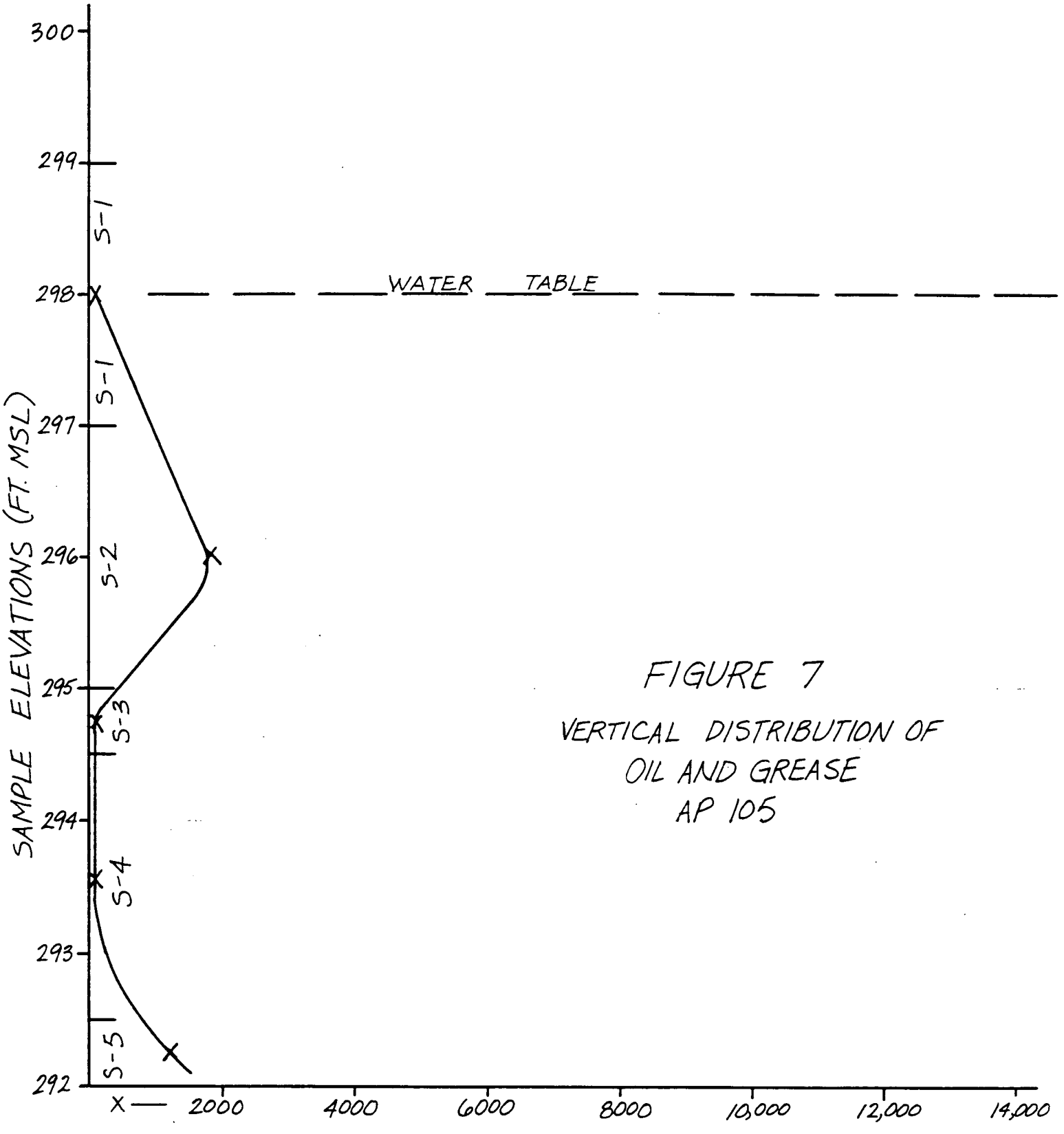


FIGURE 7

VERTICAL DISTRIBUTION OF
OIL AND GREASE
AP 105

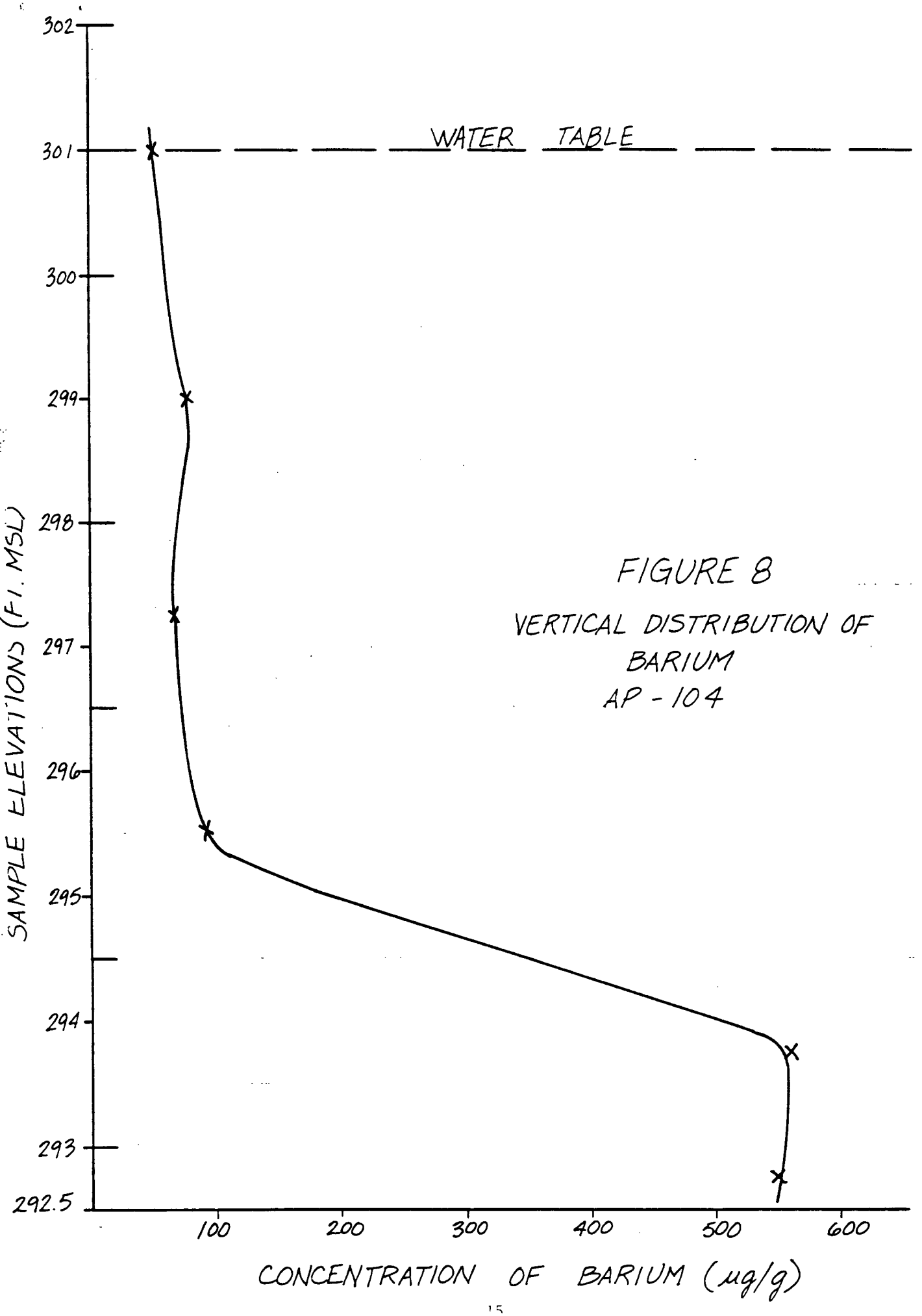
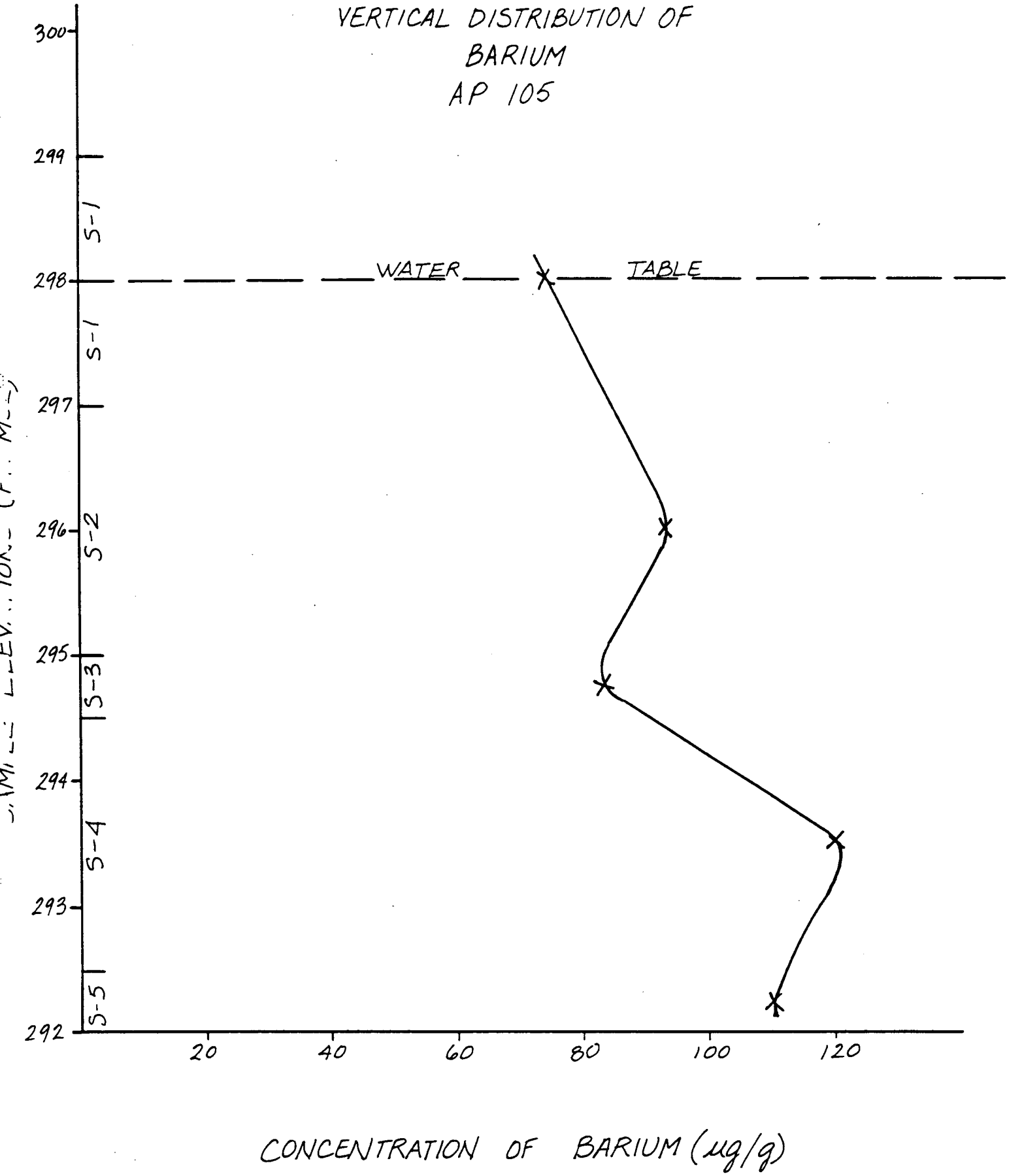


FIGURE 8

VERTICAL DISTRIBUTION OF BARIUM

AP - 104

FIGURE 9
VERTICAL DISTRIBUTION OF BARIUM AP 105



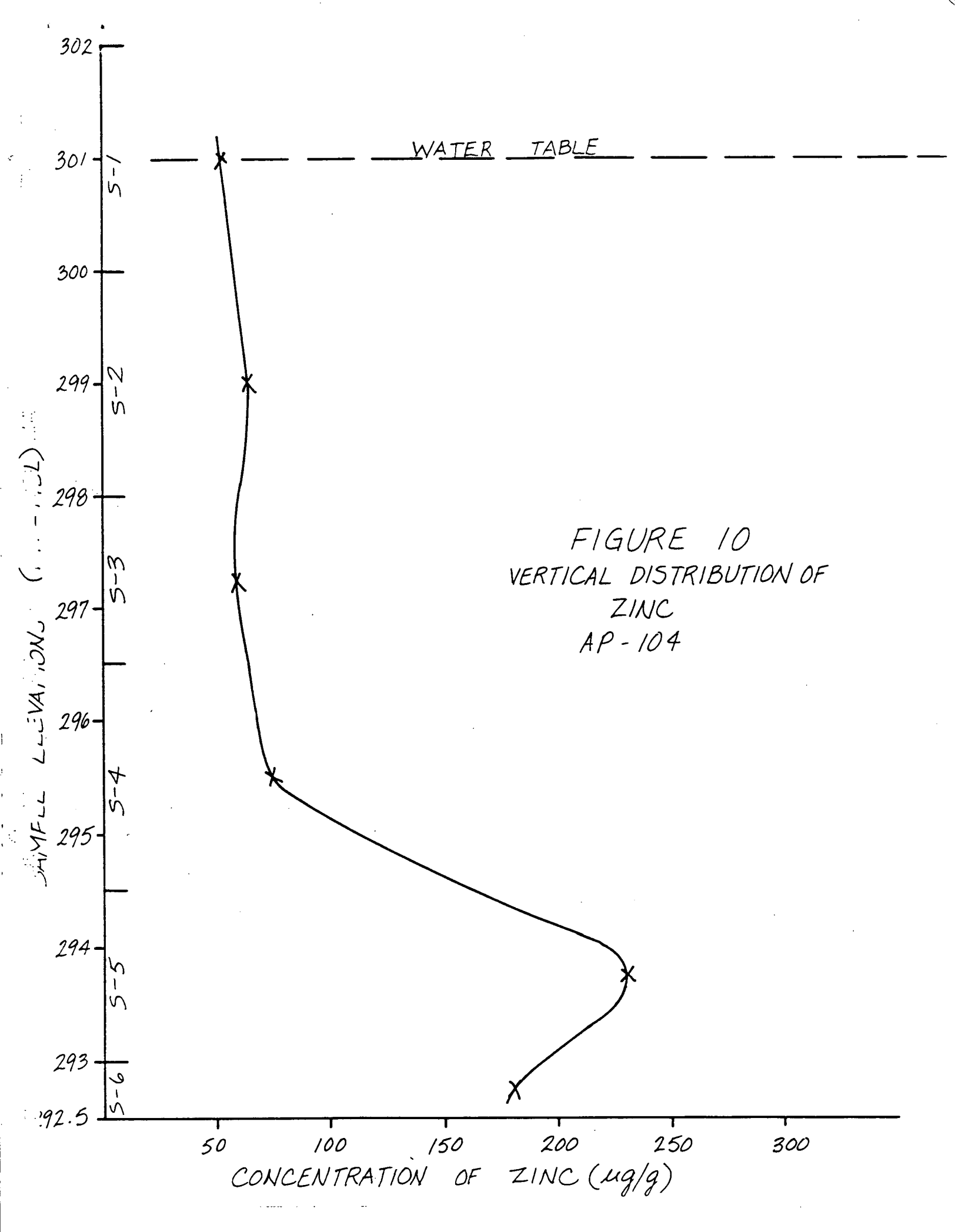


FIGURE 10
VERTICAL DISTRIBUTION OF
ZINC
AP-104

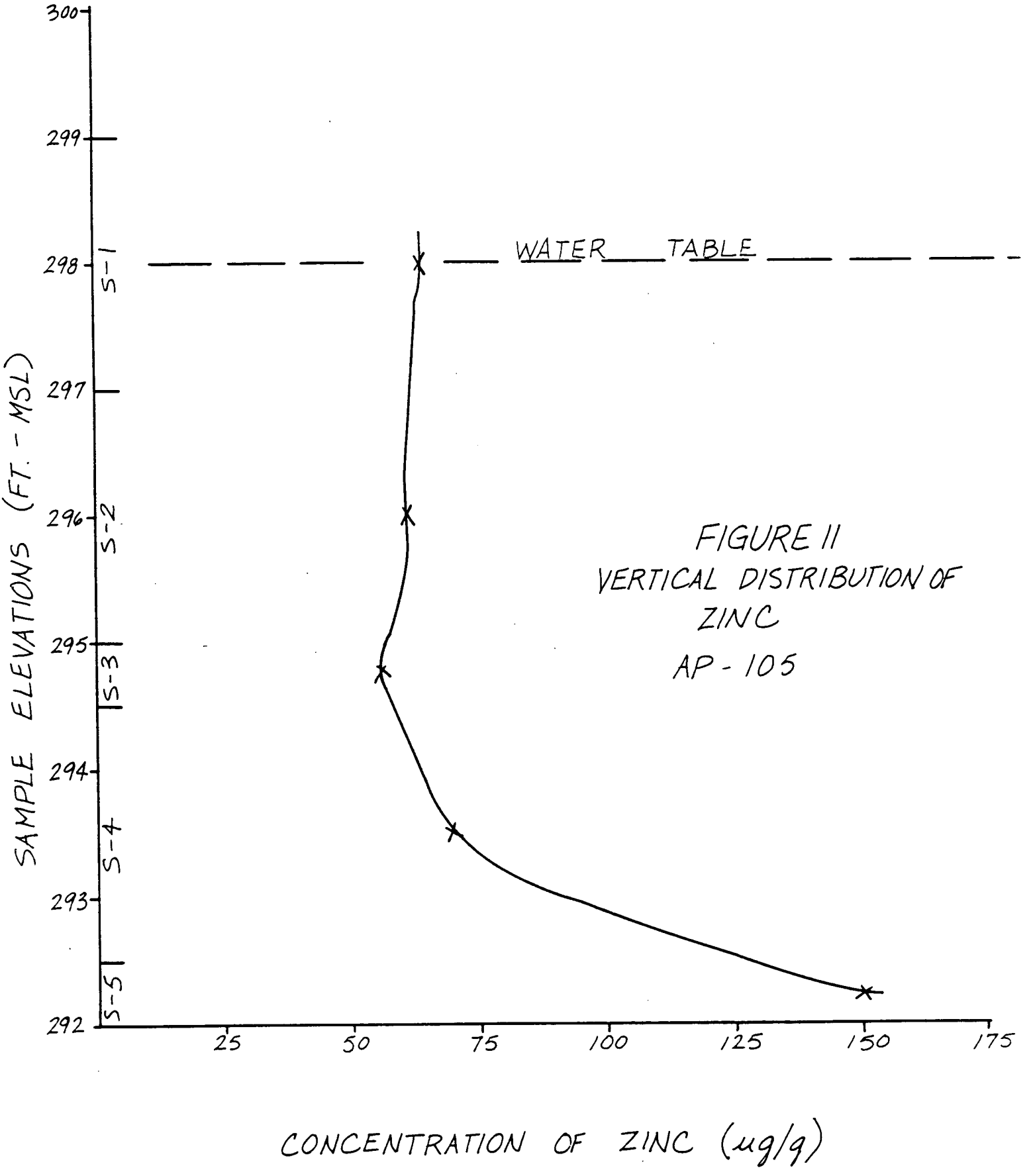


FIGURE II
VERTICAL DISTRIBUTION OF ZINC
AP - 105

responsible for this phenomenon. The concentrations of two constituents, zinc and barium, are graphically viewed in vertical section in Figures 8-11. To demonstrate the liklihood of more than one of the above methods of transport being responsible for the noted changes in vertical distribution of metals, zinc was chosen for its mobile nature in the subsurface, while barium was chosen for its generally immobile nature.

One inorganic constituent, arsenic, was noted at elevated concentrations in AP-104; S-4, S-5 and S-6. Its origin, whether being naturally occuring or having been implanted with borrow fill, is unknown. The acute toxicity level for Arsenic in the soil is 100 ug/g, however, and S-4 was very close at 98 ug/g.

Some discussion of EP Toxicity with respect to the soil samples is warranted. An EP Toxicity test evaluates both the concentration and mobility of materials such as metals in the subsurface. In terms of concentration, the leachable amount of a metal from a soil sample (ug/g) can not exceed 100 times the level set for that metal (mg/l) in the Primary Safe Drinking Water Standards. In the case of barium, 560 ug/g was found in AP-104, S-5, and the level at which barium is potentially EP Toxic in soil is 2000 ug/g. Zinc, not being controlled under the Primary Safe Drinking Water Standards, does not theoretically have a potential EP Toxic level of failure. If we were to apply the same regulations to zinc as barium, however, the EP Toxic level would be 10,000 ug/g.

As laboratory results for AP-104 (S-4), and AP-105 (S-1 and S-3) show, no problems were noted in terms of volatile organics (EPA 624). Additionally, phenols were consistently below detection limits in all samples.

SUMMARY AND RECOMMENDATIONS

The area of this investigation is generally comprised of a relatively thin (4-10 feet) mantel of fill (natural borrow to the east and foundary to the west), overlying several feet of glacial till, which in turn overlies bedrock. The area is traversed in a west-east direction by the Mumford River. Ground water beneath the northern portion of the site flows south, through the two types of fill, to the river. Existing seepage velocities range from 52 ft/yr in the foundary fill, to 3.5 ft/yr in the borrow fill. Ground water beneath the coal ash disposal area on the southern side of the Mumford flows north to the river at approximately 1 ft/yr.

Ground water quality beneath the site is generally good with respect to those organic and inorganic constituents evaluated, except in the Building 9/Raceway area. This area shows evidence of oil and grease contamination in both the soil and ground water, slight to moderately elevated levels of a few metals in the soil, and high arsenic concentrations in several soil samples. The oil and grease contamination appears to be eminating from at least two separate areas on either side of the raceway.

Several mitigation measures are presently being evaluated to address the Building 9/Raceway area contamination problem. It is recommended that these evaluations be completed with regard to technical feasibility and cost considerations. Upon completion, a meeting between all parties concerned should be convened, and one of the mitigation plans should be chosen for implementation.

APPENDIX A

DRILLERS LOGS

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-1
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/12/85
DATE FINISH: 7/12/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	0-1.5	7	11	32	6"			Br. Fine-Crs. Sand and Gravel, Some Silt, Occasional Cobbles, Bricks
								4.5	
5'	S2	5.0-6.5	1	0	1	14"			Gray Br. Silt, Some Fine Sand, Little Organics
								8.0	
10'	S3	10.0-11.5	41	49	33	16"			Gray Fine-Crs. Sand and Gravel, Some Silt, Many Cobbles, Boulders
								11.5	
15'									Bottom of Boring 11.5 Water @ 5.5 Installed Monitor Well @ 10.0 Materials: 5.0 - 1½" PVC Screen 6.5 - 1½" PVC Riser 1 - Bag Ottawa Sand 50 - lbs. Bentonite Pellet 1 - Bag Sand Mix 1 - Locking Protector Pip

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50+	Very Dense	16-30	V.Stiff

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-2
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/12/85
DATE FINISH: 7/12/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	0-1.5	3	9	12	6"			Br. Fine-Crs. Sand and Gravel, Some Silt, Occasional Cobbles and Boulders
5'	S2	5.0-6.5	8	18	23	14"		5.5	Gray Br. Fine-Crs. Sand and Gravel, Some Silt, Occasional Cobbles and Boulders
10'	S3	10.0-11.5	14	17	16	16"		11.0	
15'									Bottom of Boring 11.0 Water @ 5.0 Installed Monitor Well @ 9.5 Materials: 5.0 - 1½" PVC Screen 6.0 - 1½" PVC Riser 1 - Bag Ottawa Sand 50 - lbs. Bentonite Pellet 1 - Bag Sand Mix 1 - Locking Protector Pip

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50+	Very Dense	16-30	V-Stiff

PROPORTIONS USED

trace 0 to 10%
little 10 to 20%
some 20 to 35%
and 35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-3
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/11/85
DATE FINISH: 7/11/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	0-1.5	5	5	5	6"			Br. Fine-Crs. Sand and Gravel, Some Silt, Occasional Cobbles
5'	S2	5.0-6.5	3	3	7	6"			
	S3	9.5-11.0	23	20	8	10"			
10'								11.0	
15'									Bottom of Boring 11.0 HSA Refusal @ 9.5 Water @ 8.0 Installed Monitor Well @ 9.5 Materials: 5.0 - 1½" PVC Screen 6.0 - 1½" PVC Riser 1 - Bag Ottawa Sand 50 - lbs. Bentonite Pellet 1 - Bag Sand Mix 1 - Locking Protector Pip

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-4
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/12/85
DATE FINISH: 7/12/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	0-1.5	2	3	3	6"			Br. Fine-Crs. Sand and Gravel, Some Silt, Many Cobbles, Boulders, Bricks
5'	S2	5.0	100/0			WASH		5.0	
									HSA and Spoon Refusal @ 5.0
10'									Water @ 4.5
									Moved 10' Away Got HSA Refusal @ 3.0

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-5
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/11/85
DATE FINISH: 7/11/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	0-1.5	1	5	10	6"		4.0	Br. Fine-Crs. Sand and Gravel, Little Silt, Many Cobbles, Occasional Boulders
5'	S2	5.0-6.5	1	3	17	12"		6.0	Black Br. Fine Sand and Silt, Tr. Organics
								7.0	Gray Br. Fine-Crs. Sand and Gravel, Tr. Silt, Many Cobbles, Boulders
10'									HSA Refusal @ 7.0 Moist @ 7.0 Moved 10' Away and Got HSA Refusal @ 6.0

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-7
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/12/85
DATE FINISH: 7/12/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	0-1.5	5	6	7	6"			Dark Br. Fine-Med. Sand, Little Silt, Med.-Crs. Sand, Fine Gravel, Ash
5'	S2	5.0-6.5	1	1	1	3"		8.5	
10'	S3	10.0-11.5	8	21	31	14"		10.5	Br. Fine-Med. Sand, Little Silt, Crs. Sand
								12.5	Gray Br. Fine-Crs. Sand, Some Silt, Gravel, Few Cobbles, Boulders
15'									

HSA Refusal @ 12.0
Water @ 8.8

Installed Monitor Well @ 12.0
Materials:
5.0 - 1½" PVC Screen
8.5 - 1½" PVC Riser
1 - Bag Ottawa Sand
50 - lbs. Bentonite Pell
1 - Bag Sand Mix
1 - Locking Protector P

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-8
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/11/85
DATE FINISH: 7/11/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	Flight Sample						3.5	Br. Fine-Crs. Sand and Gravel, Some Silt, Many Cobbles, Boulders
5'									HSA Refusal @ 3.5

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler.

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff

PROPORTIONS USED

trace 0 to 10%
little 10 to 20%
some 20 to 35%
and 35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-9
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/11/85
DATE FINISH: 7/11/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	0-1.5	2	4	7	12"			Br. Fine-Crs. Sand and Gravel, Some Silt, Many Cobbles and Boulders
								4.0	
5'									HSA Refusal @ 4.0 No Water Moved to 3 Additional Spots, HSA Refusals @ 3.8; 4.5; 4.0

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Conesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-10
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/12/85
DATE FINISH: 7/12/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	0-1.5	7	7	10	8"		3.0	Br. Fine-Crs. Sand, Little Silt, Gravel, Occasional Cobbles
5'	S2	5.0-6.5	5	7	11	10"		11.5	Br. Gray Fine-Crs. Sand and Gravel, Little Silt, Few Cobbles and Boulders
10'	S3	10.0	100/0			WASH			
15'									HSA Refusal @ 11.5 Water @ 9.0 Installed Monitor Well @ 11.5 Materials: 5.0 - 1½" PVC Screen 7.5 - 1½" PVC Riser 50 - lbs. Bentonite Pellet 1 - Bag Ottawa Sand 1 - Bag Sand Mix 1 - Locking Protector Pip

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-11
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/11/85
DATE FINISH: 7/11/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	0-1.5	2	6	11	10"			
5'	S2	5.0-6.5	5	6	5	8"			Br.-Dark Br. Fine-Crs. Sand, Some Fine Gravel, Little Silt, Occasional Cobbles
10'	S3	10.0-11.5	3	3	4	4"		11.5	
15'									Bottom of Boring 11.5 Water @ 5.8 Installed Monitor Well @ 10.0 Materials: 5.0 - 1½" PVC Screen 6.5 - 1½" PVC Riser 1 - Bag Ottawa Sand 50 - lbs. Bentonite Pellet 1 - Bag Sand Mix 1 - Locking Protector Pip

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-12
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/10/85
DATE FINISH: 7/10/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	0-1.5	3	5	8	10"			Black Br. Fine-Crs. Sand and Gravel, Some Silt, Few Cobbles and Boulders
5'	S2	5.0-6.5	6	8	8	2"			
10'	S3	10.0-11.5	5	4	4	14"		11.5	
15'									Bottom of Boring 11.5 Water @ 6.3 Installed Monitor Well @ 10.0 Materials: 5.0 - 1½" PVC Screen 7.0 - 1½" PVC Riser 1 - Bag Ottawa Sand 25 - lbs. Bentonite Pellets 1 - Bag Sand Mix 1 - Locking Protector Pipe

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-13
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/10/85
DATE FINISH: 7/10/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	0-1.5	6	9	7	10"		4.0	Br. Fine-Crs. Sand and Gravel, Little Silt, Few Cobbles and Boulders
5'	S2	5.0-6.5	17	28	30	16"			Gray Br. Fine-Crs. Sand and Gravel, Some Silt, Many Cobbles and Boulders
10'	S3	10.0-10.1	100/1			1"		11.0	
15'									HSA Refusal @ 11.0 Water @ 8.8 Installed Monitor Well @ 11.0 Materials: 5.0 - 1½" PVC Screen 7.5 - 1½" PVC Riser 1 - Bag Ottawa Sand 25 - lbs. Bentonite Pelle 1 - Locking Protector Pi

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-14
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/10/85
DATE FINISH: 7/10/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	0-1.5	1	4	5	12"			Light Br. Fine Sand, Some Silt, Little Med.-Crs. Sand, Fine Gravel, Occasional Cobbles
5'	S2	5.0-6.5	7	27	27	14"		5.5	
10'	S3	10.0-11.5	8	10	10	10"			Gray Fine-Crs. Sand and Gravel, Little Silt, Many Cobbles and Boulders
15'								13.5	Bottom of Boring 13.5 Water @ 8.8 Installed Monitor Well @ 13.5 Materials: 5.0 - 1½" PVC Screen 10.0 - 1½" PVC Riser 1 - Bag Ottawa Sand 25 - lbs. Bentonite Pelle 1 - Bag Sand Mix 1 - Locking Protector Pi

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Conesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: MC-15
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/11/85
DATE FINISH: 7/11/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	0-1.5	2	4	5	8"			Br. Black Fine-Crs. Sand and Gravel, Little Silt, Occasional Cobbles, Ashes
5'	S2	5.0-6.5	1	1	0	4"			
	S3	9.5-11.0	3	3	4	14"			
10'								11.0	
15'									Bottom of Boring 11.0 Water @ 5.0 Installed Monitor Well @ 9.5 Materials: 5.0 - 1½" PVC Screen 6.0 - 1½" PVC Riser 1 - Bag Ottawa Sand 50 - Bentonite Pellets 1 - Bag Sand Mix 1 - Locking Protector Pi

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: AP-101
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/15/85
DATE FINISH: 7/15/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
								7.5	Dark Br. Fine-Crs. Sand and Gravel, Little Silt, Cobbles, Boulders
5'									
10'									HSA Refusal @ 7.5 No Water

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS USED

trace 0 to 10%
little 10 to 20%
some 20 to 35%
and 35 to 50%

REMARKS:

All M C Wells Development Time - 2 Hrs.

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: AP-102
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/15/85
DATE FINISH: 7/15/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
5'									Dark Br. Fine-Crs. Sand and Gravel, Little Silt, Cobbles, Boulders
	S1	8.0-10.0	WOR			1"			
10'	S2	10.0-12.0	WOR			1"			
	S3	12.0-14.0	WOR			1"			
	S4	14.0				WASH		14.0	
15'									HSA Refusal @ 14.0 Water @ 10.0

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS USED

trace 0 to 10%
little 10 to 20%
some 20 to 35%
and 35 to 50%

REMARKS:

All M C Wells Development
Time - 2 Hrs.
COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: AP-103
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/15/85
DATE FINISH: 7/15/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
5'									Dark Br. Fine-Crs. Sand and Gravel, Little Silt, Cobbles, Boulders
	S1	8.0-10.0	10	17					
				25	16	1"			
10'								10.0	
15'									Bottom of Boring 10.0 No Water

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff

PROPORTIONS USED

trace 0 to 10%
little 10 to 20%
some 20 to 35%
and 35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: AP-104
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/15/85
DATE FINISH: 7/15/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
5'	S1	8.0-10.0	15	17					Dark Br. Fine-Crs. Sand and Gravel, Little Silt, Cobbles, Boulders
				12	13	12"			
10'	S2	10.0-12.0	8	16					
				18	22	22"			
	S3	12.0-13.5	28	89	100/5	17"			
	S4	14.0-14.5	100/5			5"			
15'	S5	14.5-15.8	35	58	100/5	15"			
								16.5	
	S6	16.0-16.5	125/6			6"			
20'									Bottom of Boring 16.5 No Water Reading Taken

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTORS OF CONN. INC.

Glastonbury, CT 06033 — 203-633-4640
Springfield, MA 01103 — 413-733-1232

CLIENT: CEH
PROJECT NAME: ATF Davidson
LOCATION: Whitinsville, MA

BORING NUMBER: AP-105
SHEET No. 1 of 1

DRILLER: T. Roe
INSPECTOR: M. Eichler
DATE START: 7/15/85
DATE FINISH: 7/15/85

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	3-3/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
5'									Dark Br. Fine-Crs. Sand and Gravel, Little Silt, Cobbles, Boulders
10'	S1	10.0-12.0	7	66					
				20	27	16"			
	S2	12.0-14.0	15	26					
				41	43	20"			
	S3	14.0-14.5	125/6			6"			
15'	S4	15.0-16.5	28	89	100/5	16"			
								16.5	
20'									Bottom of Boring 16.5 No Water Reading Taken

SAMPLE IDENTIFICATION

S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

APPENDIX B

LABORATORY DATA

LOCATION: ATF Davidson, Whitinsville, MA

ENGINEERS: Caswell, Eichler, and Hill

SAMPLING DATE: 7/30/85

WELL NUMBER	TOTAL DEPTH	DIAMETER	TIME	STATIC LEVEL TO STEEL CASING	COND./TEMP. umhos/cm	°C	pH
MC-1	10.0'	1.5"	1127	7.34'	310	23.0	6.00
MC-2	9.5'	1.5"	1312	6.52'	68	21.0	5.50
MC-3	11.0'	1.5"	1500	9.64'	160	21.0	6.15
MC-7	12.0'	1.5"	1620	10.07'	345	21.5	6.75
MC-10	11.5'	1.5"	1450	8.58'	745	23.0	5.70
MC-11	10.0'	1.5"	1445	7.90'	390	25.0	7.20
MC-12	10.0'	1.5"	0952	8.44'	1410	23.5	8.00
MC-13	11.0'	1.5"	0945	8.05'	210	21.5	7.20
MC-14	13.5'	1.5"	0940	9.87'	698	22.5	6.30
MC-15	9.5'	1.5"	1040	7.88'	205	22.0	8.25

Total depths come from the well plans.

page 1 of 6

CHAIN OF CUSTODY DOCUMENTATION

CLIENT CEH
ADDRESS P.O. Box 4696
Portsmouth NH 03801

JOB NAME/NUMBER

PROJECT CONTACT Matt Eichler
SAMPLING LOCATION ATF Davidson, Whitinsville MA
SAMPLE COLLECTOR [illegible]

FIELD IDENTIFICATION List each container separately	LAB #	SAMPLE MATRIX	CONTAINER TYPE/VOLUME	FILTRATION	FIELD PRESERVATION	REMARKS/ANALYSIS REQUESTED
Date 7/30/85 MC-1 Time 1205	5070-1	○ Solid ● Liquid ○ Other	● P/ 250 mL ○ G/ mL ○ G/T/ mL	● field ○ lab ○ none	HNO_3 + cool	Metals - Barium + the Priority Pollutant Metals
Date MC-2 Time 1325	2	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-3 Time 1550	3	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-7 Time 1645	4	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-10 Time 1605	5	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-11 Time 1512	6	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-12 Time 1045	7	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-13 Time 1055	8	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		

Relinquished By:	Date	Time	Received By:	Date	Time
[signature]					
Relinquished By:	**Date**	**Time**	**Received For Laboratory By:**	**Date**	**Time**
			[signature]	7/31	10:00

Resource Analysts, Incorporated

CHAIN OF CUSTODY DOCUMENTATION

CLIENT CEH

ADDRESS

JOB NAME/NUMBER

PROJECT CONTACT Matt Eichler

SAMPLING LOCATION ATF Davidson

SAMPLE COLLECTOR D. Olson + Co

FIELD IDENTIFICATION List each container separately	LAB #	SAMPLE MATRIX	CONTAINER TYPE/VOLUME	FILTRATION	FIELD PRESERVATION	REMARKS/ANALYSIS REQUESTED
Date 7/30/85 MC-14 Time 1005	5070-9	○ Solid ● Liquid ○ Other	● P/ 250 mL ○ G/ mL ○ G/T/ mL	● field ○ lab ○ none	HNO_3 + cool	Metals - Barium + the Priority Pollutant Metals
Date MC-15 Time 1115	10	○ Solid ● Liquid ○ Other	● P/ 250 mL ○ G/ mL ○ G/T/ mL	● field ○ lab ○ none	↓	↓
Date MC-7 Time 1645	11	○ Solid ● Liquid ○ Other	○ P/ mL ○ G/ mL ● G/T/ 1000 mL	○ field ○ lab ● none	HCl + cool	Oil + Grease Please note: the sample had to be pumped out of the monitoring well, this may lower the results
Date MC-14 Time 1005	12	○ Solid ● Liquid ○ Other	○ P/ mL ○ G/ mL ● G/T/ 1000 mL	○ field ○ lab ● none	↓	↓
Date MC-7 Time 1645	13	○ Solid ● Liquid ○ Other	○ P/ mL ○ G/ mL ● G/T/ 1000 mL	○ field ○ lab ● none	H_3PO_4 + cool	Total Phenols
Date MC-14 Time 1005	14	○ Solid ● Liquid ○ Other	○ P/ mL ○ G/ (3) mL ● G/T/ 500 mL	○ field ○ lab ● none	↓	↓
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		

Relinquished By:	Date	Time	Received By:	Date	Time
M Vivanti					
Relinquished By:	**Date**	**Time**	**Received For Laboratory By:**	**Date**	**Time**
			Laurie Jo Clarke	7/31	10:00

Resource Analysts, Incorporated

CHAIN OF CUSTODY DOCUMENTATION

CLIENT CEH

ADDRESS

JOB NAME/NUMBER

PROJECT CONTACT Matt Eichler

SAMPLING LOCATION ATF Davidson

SAMPLE COLLECTOR D Desmond

FIELD IDENTIFICATION List each container separately	LAB #	SAMPLE MATRIX	CONTAINER TYPE/VOLUME	FILTRATION	FIELD PRESERVATION	REMARKS/ANALYSIS REQUESTED
7/30/85 Date MC-1 Time 1205	5070-15	○ Solid ● Liquid ○ Other	○ P/ mL ○ G/ mL ● G/1/40 mL	○ field ○ lab ● none	Cool	VOA - EPA 624
Date MC-2 Time 1325	16	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/1/ mL	○ field ○ lab ○ none		
Date MC-3 Time 1550	17	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/1/ mL	○ field ○ lab ○ none		
Date MC-7 Time 1645	18	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/1/ mL	○ field ○ lab ○ none		
Date MC-10 Time 1605	19	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/1/ mL	○ field ○ lab ○ none		
Date MC-11 Time 1512	20	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/1/ mL	○ field ○ lab ○ none		
Date MC-12 Time 1045	21	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/1/ mL	○ field ○ lab ○ none		
Date MC-13 Time 1055	22	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/1/ mL	○ field ○ lab ○ none		

Relinquished By:	Date	Time	Received By:	Date	Time
D Desmond					
Relinquished By:	**Date**	**Time**	**Received for Laboratory By:**	**Date**	**Time**
			Laurie Jo Clarke	7/31	10:00

Resource Analysts, Incorporated

CHAIN OF CUSTODY DOCUMENTATION

CLIENT CEH

ADDRESS

JOB NAME/NUMBER

PROJECT CONTACT Matt Eichler

SAMPLING LOCATION ATF Davidson

SAMPLE COLLECTOR [signature]

FIELD IDENTIFICATION list each container separately	LAB #	SAMPLE MATRIX	CONTAINER TYPE/VOLUME	FILTRATION	FIELD PRESERVATION	REMARKS/ANALYSIS REQUESTED
Date 7/30/85 MC-14 Time 1005	5070-23	○ Solid ● Liquid ○ Other	○ P/ mL ○ G/ mL ● G/T/ 40 mL	○ field ○ lab ● none	cool	VOA - EPA 624
Date ↓ MC-15 Time 1115	24	○ Solid ○ Liquid ○ Other ↓	○ P/ mL ○ G/ mL ○ G/T/ ↓ mL	○ field ○ lab ○ none ↓	↓	↓
Date Trip Blank Time	5070-35	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		↓
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		

Relinquished By:	Date	Time	Received By:	Date	Time
[signature]					
Relinquished By:	Date	Time	Received For Laboratory By: [signature]	Date 7/31	Time 10:00

Resource Analysts, Incorporated

CHAIN OF CUSTODY DOCUMENTATION

CLIENT CEH

ADDRESS

JOB NAME/NUMBER

PROJECT CONTACT Matt Eichler

SAMPLING LOCATION ATF Davidson

SAMPLE COLLECTOR

FIELD IDENTIFICATION (List each container separately)	LAB #	SAMPLE MATRIX	CONTAINER TYPE/VOLUME	FILTRATION	FIELD PRESERVATION	REMARKS/ANALYSIS REQUESTED
Date 7/30/85 MC-1 Time 1205	5070-25	○ Solid ● Liquid ○ Other	○ P/ mL ○ G/ mL ● G/T/1000 mL	○ field ○ lab ● none	NaOH + cool	Total Cyanide
Date MC-2 Time 1325	26	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-3 Time 1550	27	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-7 Time 1645	28	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-10 Time 1605	29	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-11 Time 1512	30	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-12 Time 1045	31	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-13 Time 1055	D	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		

Relinquished By:	Date	Time	Received By:	Date	Time
Relinquished By:	**Date**	**Time**	**Received For Laboratory By:**	**Date**	**Time**
			Laurie McClaine	7/31	10:00

Resource Analysts, Incorporated

CHAIN OF CUSTODY DOCUMENTATION

CLIENT: CEH

ADDRESS:

JOB NAME/NUMBER:

PROJECT CONTACT: Matt Eichler

SAMPLING LOCATION: ATF Davidson

SAMPLE COLLECTOR: [illegible signature]

FIELD IDENTIFICATION list each container separately	LAB #	SAMPLE MATRIX	CONTAINER TYPE/VOLUME	FILTRATION	FIELD PRESERVATION	REMARKS/ANALYSIS REQUESTED
Date 7/30/85 MC-14 Time 1005	5070-33	● Liquid	● G/T/ 1000 mL	● none	NaOH + cool	Total Cyanide
Date ↓ MC-15 Time 1115	34	↓	↓		↓	↓
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		

Relinquished By:	Date	Time	Received By:	Date	Time
[signature]					
Relinquished By:	Date	Time	Received For Laboratory By: [signature] Laurie Jo Clarke	7/31	10:00

Resource Analysis, Incorporated

RAI

Resource Analysts, Incorporated
Box 4778 Hampton, NH 03842
(603) 926-7777

TO:

Mr. Matt Eichler
Caswell, Eichler & Hill
P.O. Box 4696
Portsmouth, NH 03801

PO # Sidney Covich Properties

Date Received: 7-19-85 (8:00)

Lab Number: 5006

Date Reported: 8-13-85

Please find attached results for Volatile Organic Compounds, Oil and Grease, Phenols, Barium, and Priority Pollutant Metals.

Technical Director

Date 8/13/85

Chain of Custody

DATE SAMPLED 7-15-85 LAB NO. 5006

PROJECT NAME SIDNEY COYITCH PROPERTIES. LOCATION WHITINSVILLE, MA. (BLDG. 9/RACEWAY) PAGE 1 OF 1

COLLECTOR MATTHEW F. EICHLER III (CEH, INC.) CLIENT ATF/DAVIDSON/WHITE CONSOLIDATED INDUSTRIES

DESIGNATION	LAB NO.	TIME	SAMPLE TYPE	CONTAINER TYPE	VOL	FILTRATION	PRESERVE	REMARKS/ANALYSIS REQUIRED
AP104 # S-1 8-10 ft. S-4 14-14.5 ft. S-2 10-12 S-5 14.6-15.9 S-3 12-13.5 S-6 16-16.6	5006-1	9-8:30	SPLIT-SPOON SOIL SAMPLE	SOIL SAMPLE JAR	FULL JAR.			P.P.M., oil, total phenols ↑ 1° Pollutant metals
AP-105: # S-1 10-12 ft. S-4 15-16.5 ft. S-2 12-14 S-5 16.5-17 S-3 14-14.5	5006-2	"	"	"	"			P.P.M., oil, total phenols
							Do at least Total: As, Cr, Pb, Hg, Se, Ag	

RELINQUISHED BY MATTHEW F. EICHLER III — DATE TIME 7-18-85 11:00 AM — RECEIVED BY — DATE TIME 7/18 1145

RELINQUISHED BY — DATE TIME 7/18 1545 — RECEIVED FOR LABORATORY BY David M Page — DATE TIME 7/18/85 2000

Resource Analysts, Incorporated

Field Identification: AP104 S-1
Laboratory Number: 5006-1

Matrix: Solid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, recoverable (ug/g)	8-9-85	3050/303A	1/2	<0.5
Arsenic, recoverable (ug/g)	8-6-85	3050/304	1/2	8.4
Barium, recoverable (ug/g)	8-8-85	3050/303A	1/2	51
Beryllium, recoverable (ug/g)	8-9-85	3050/303A	1/2	0.11
Cadmium, recoverable (ug/g)	8-9-85	3050/303C	1/2	0.69
Chromium, recoverable (ug/g)	8-7-85	3050/303A	1/2	4.8
Copper, recoverable (ug/g)	8-7-85	3050/303A	1/2	8.2
Mercury, recoverable (ug/g)	7-29-85	7471	1	<0.02
Nickel, recoverable (ug/g)	8-9-85	3050/303A	1/2	3.9
Lead, recoverable (ug/g)	8-7-85	3050/303A	1/2	4.2
Antimony, recoverable (ug/g)	8-12-85	3050/303A	1/2	<80
Selenium, recoverable (ug/g)	7-25-85	3050/304	1/2	<1
Thallium, recoverable (ug/g)	8-12-85	3050/303A	1/2	<60
Zinc, recoverable (ug/g)	8-7-85	3050/303A	1/2	53
Oil and Grease (ug/g)	7-28-85	503D	2	10,000
Phenols (ug/g)	7-28-85	510A,B	2	<0.3

Field Identification: AP104 S-2
Laboratory Number: 5006-2

Matrix: Solid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, recoverable (ug/g)	8-9-85	3050/303A	1/2	<0.5
Arsenic, recoverable (ug/g)	8-6-85	3050/304	1/2	8.5
Barium, recoverable (ug/g)	8-8-85	3050/303A	1/2	77
Beryllium, recoverable (ug/g)	8-9-85	3050/303A	1/2	0.23
Cadmium, recoverable (ug/g)	8-9-85	3050/303C	1/2	0.59
Chromium, recoverable (ug/g)	8-7-85	3050/303A	1/2	5.1
Copper, recoverable (ug/g)	8-7-85	3050/303A	1/2	6.5
Mercury, recoverable (ug/g)	7-29-85	7471	1	<0.02
Nickel, recoverable (ug/g)	8-9-85	3050/303A	1/2	3.6
Lead, recoverable (ug/g)	8-7-85	3050/303A	1/2	<3
Antimony, recoverable (ug/g)	8-12-85	3050/303A	1/2	<80
Selenium, recoverable (ug/g)	7-25-85	3050/304	1/2	<1
Thallium, recoverable (ug/g)	8-12-85	3050/303A	1/2	<60
Zinc, recoverable (ug/g)	8-7-85	3050/303A	1/2	64
Oil and Grease (ug/g)	7-28-85	503D	2	12,000
Phenols (ug/g)	7-28-85	510A,B	2	<0.3

Reference: 1. EPA SW 846, 2nd Edition
2. Standard Methods, 16th edition

Field Identification: AP104 S-3
Laboratory Number: 5006-3

Matrix: Solid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, recoverable (ug/g)	8-9-85	3050/303A	1/2	<0.5
Arsenic, recoverable (ug/g)	8-6-85	3050/304	1/2	11
Barium, recoverable (ug/g)	8-8-85	3050/303A	1/2	65
Beryllium, recoverable (ug/g)	8-9-85	3050/303A	1/2	0.27
Cadmium, recoverable (ug/g)	8-9-85	3050/303C	1/2	0.56
Chromium, recoverable (ug/g)	8-7-85	3050/303A	1/2	7.8
Copper, recoverable (ug/g)	8-7-85	3050/303A	1/2	8.6
Mercury, recoverable (ug/g)	7-29-85	7471	1	<0.02
Nickel, recoverable (ug/g)	8-9-85	3050/303A	1/2	3.9
Lead, recoverable (ug/g)	8-7-85	3050/303A	1/2	4.2
Antimony, recoverable (ug/g)	8-12-85	3050/303A	1/2	<80
Selenium, recoverable (ug/g)	7-25-85	3050/304	1/2	<1
Thallium, recoverable (ug/g)	8-12-85	3050/303A	1/2	<60
Zinc, recoverable (ug/g)	8-7-85	3050/303A	1/2	58
Oil and Grease (ug/g)	7-28-85	503D	2	180
Phenols (ug/g)	7-28-85	510A,B	2	<0.3

Field Identification: AP104 S-4
Laboratory Number: 5006-4

Matrix: Solid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, recoverable (ug/g)	8-9-85	3050/303A	1/2	<0.5
Arsenic, recoverable (ug/g)	8-6-85	3050/304	1/2	98
Barium, recoverable (ug/g)	8-8-85	3050/303A	1/2	93
Beryllium, recoverable (ug/g)	8-9-85	3050/303A	1/2	0.28
Cadmium, recoverable (ug/g)	8-9-85	3050/303C	1/2	0.75
Chromium, recoverable (ug/g)	8-7-85	3050/303A	1/2	5.9
Copper, recoverable (ug/g)	8-7-85	3050/303A	1/2	8.5
Mercury, recoverable (ug/g)	7-29-85	7471	1	<0.02
Nickel, recoverable (ug/g)	8-9-85	3050/303A	1/2	3.9
Lead, recoverable (ug/g)	8-7-85	3050/303A	1/2	4.9
Antimony, recoverable (ug/g)	8-12-85	3050/303A	1/2	<80
Selenium, recoverable (ug/g)	7-25-85	3050/304	1/2	<1
Thallium, recoverable (ug/g)	8-12-85	3050/303A	1/2	<60
Zinc, recoverable (ug/g)	8-7-85	3050/303A	1/2	73
Oil and Grease (ug/g)	7-28-85	503D	2	470
Phenols (ug/g)	7-28-85	510A,B	2	<0.3

Reference: 1. EPA SW 846, 2nd Edition
2. Standard Methods, 16th Edition

Field Identification: AP104 S-5
Laboratory Number: 5006-5

Matrix: Solid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, recoverable (ug/g)	8-9-85	3050/303A	1/2	<0.5
Arsenic, recoverable (ug/g)	8-6-85	3050/304	1/2	71
Barium, recoverable (ug/g)	8-8-85	3050/303A	1/2	560
Beryllium, recoverable (ug/g)	8-9-85	3050/303A	1/2	1.5
Cadmium, recoverable (ug/g)	8-9-85	3050/303C	1/2	<0.4
Chromium, recoverable (ug/g)	8-7-85	3050/303A	1/2	1.3
Copper, recoverable (ug/g)	8-7-85	3050/303A	1/2	1.9
Mercury, recoverable (ug/g)	7-29-85	7471	1	<0.02
Nickel, recoverable (ug/g)	8-9-85	3050/303A	1/2	19
Lead, recoverable (ug/g)	8-7-85	3050/303A	1/2	7.5
Antimony, recoverable (ug/g)	8-12-85	3050/303A	1/2	<80
Selenium, recoverable (ug/g)	7-25-85	3050/304	1/2	<1
Thallium, recoverable (ug/g)	8-12-85	3050/303A	1/2	<60
Zinc, recoverable (ug/g)	8-7-85	3050/303A	1/2	230
Oil and Grease (ug/g)	7-28-85	503D	2	<80
Phenols (ug/g)	7-28-85	510A,B	2	<0.3

Field Identification: AP104 S-6
Laboratory Number: 5006-6

Matrix: Solid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, recoverable (ug/g)	8-9-85	3050/303A	1/2	<0.5
Arsenic, recoverable (ug/g)	8-6-85	3050/304	1/2	66
Barium, recoverable (ug/g)	8-8-85	3050/303A	1/2	550
Beryllium, recoverable (ug/g)	8-9-85	3050/303A	1/2	2.4
Cadmium, recoverable (ug/g)	8-9-85	3050/303C	1/2	<0.4
Chromium, recoverable (ug/g)	8-7-85	3050/303A	1/2	<0.5
Copper, recoverable (ug/g)	8-7-85	3050/303A	1/2	2.1
Mercury, recoverable (ug/g)	7-29-85	7471	1	<0.02
Nickel, recoverable (ug/g)	8-9-85	3050/303A	1/2	19
Lead, recoverable (ug/g)	8-7-85	3050/303A	1/2	<3
Antimony, recoverable (ug/g)	8-12-85	3050/303A	1/2	<80
Selenium, recoverable (ug/g)	7-25-85	3050/304	1/2	<1
Thallium, recoverable (ug/g)	8-12-85	3050/303A	1/2	<60
Zinc, recoverable (ug/g)	8-7-85	3050/303A	1/2	180
Oil and Grease (ug/g)	7-28-85	503D	2	1000
Phenols (ug/g)	7-28-85	510A,B	2	<0.3

Reference:
1. EPA SW 846, 2nd Edition
2. Standard Methods, 16th Edition

Field Identification: AP105 S-1
Laboratory Number: 5006-7

Matrix: Solid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, recoverable (ug/g)	8-9-85	3050/303A	1/2	<0.5
Arsenic, recoverable (ug/g)	8-6-85	3050/304	1/2	13
Barium, recoverable (ug/g)	8-8-85	3050/303A	1/2	74
Beryllium, recoverable (ug/g)	8-9-85	3050/303A	1/2	0.27
Cadmium, recoverable (ug/g)	8-9-85	3050/303C	1/2	0.48
Chromium, recoverable (ug/g)	8-7-85	3050/303A	1/2	9.8
Copper, recoverable (ug/g)	8-7-85	3050/303A	1/2	7
Mercury, recoverable (ug/g)	7-29-85	7471	1	<0.02
Nickel, recoverable (ug/g)	8-9-85	3050/303A	1/2	4.4
Lead, recoverable (ug/g)	8-7-85	3050/303A	1/2	5.7
Antimony, recoverable (ug/g)	8-12-85	3050/303A	1/2	<80
Selenium, recoverable (ug/g)	7-25-85	3050/304	1/2	<1
Thallium, recoverable (ug/g)	8-12-85	3050/303A	1/2	<60
Zinc, recoverable (ug/g)	8-7-85	3050/303A	1/2	64
Oil and Grease (ug/g)	7-28-85	503D	2	<80
Phenols (ug/g)	7-28-85	510A,B	2	<0.3

Field Identification: AP105 S-2
Laboratory Number: 5006-8

Matrix: Solid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, recoverable (ug/g)	8-9-85	3050/303A	1/2	<0.5
Arsenic, recoverable (ug/g)	8-6-85	3050/304	1/2	12
Barium, recoverable (ug/g)	8-8-85	3050/303A	1/2	93
Beryllium, recoverable (ug/g)	8-9-85	3050/303A	1/2	0.28
Cadmium, recoverable (ug/g)	8-9-85	3050/303C	1/2	0.60
Chromium, recoverable (ug/g)	8-7-85	3050/303A	1/2	9.1
Copper, recoverable (ug/g)	8-7-85	3050/303A	1/2	5.1
Mercury, recoverable (ug/g)	7-29-85	7471	1	<0.02
Nickel, recoverable (ug/g)	8-9-85	3050/303A	1/2	3.3
Lead, recoverable (ug/g)	8-7-85	3050/303A	1/2	<3
Antimony, recoverable (ug/g)	8-12-85	3050/303A	1/2	<80
Selenium, recoverable (ug/g)	7-25-85	3050/304	1/2	<1
Thallium, recoverable (ug/g)	8-12-85	3050/303A	1/2	<60
Zinc, recoverable (ug/g)	8-7-85	3050/303A	1/2	61
Oil and Grease (ug/g)	7-28-85	503D	2	1800
Phenols (ug/g)	7-28-85	510A,B	2	<0.3

Reference: 1. EPA SW 846, 2nd Edition
2. Standard Methods, 16th Edition

Field Identification: AP105 S-3
Laboratory Number: 5006-9

Matrix: Solid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, recoverable (ug/g)	8-9-85	3050/303A	1/2	<0.5
Arsenic, recoverable (ug/g)	8-6-85	3050/304	1/2	8.9
Barium, recoverable (ug/g)	8-8-85	3050/303A	1/2	83
Beryllium, recoverable (ug/g)	8-9-85	3050/303A	1/2	0.19
Cadmium, recoverable (ug/g)	8-9-85	3050/303C	1/2	0.65
Chromium, recoverable (ug/g)	8-7-85	3050/303A	1/2	4.8
Copper, recoverable (ug/g)	8-7-85	3050/303A	1/2	6.9
Mercury, recoverable (ug/g)	7-29-85	7471	1	<0.02
Nickel, recoverable (ug/g)	8-9-85	3050/303A	1/2	3
Lead, recoverable (ug/g)	8-7-85	3050/303A	1/2	8
Antimony, recoverable (ug/g)	8-12-85	3050/303A	1/2	<80
Selenium, recoverable (ug/g)	7-25-85	3050/304	1/2	<1
Thallium, recoverable (ug/g)	8-12-85	3050/303A	1/2	<60
Zinc, recoverable (ug/g)	8-7-85	3050/303A	1/2	56
Oil and Grease (ug/g)	7-28-85	503D	2	<15
Phenols (ug/g)	7-28-85	510A,B	2	<0.4

Field Identification: AP105 S-4
Laboratory Number: 5006-10

Matrix: Solid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, recoverable (ug/g)	8-9-85	3050/303A	1/2	<0.5
Arsenic, recoverable (ug/g)	8-6-85	3050/304	1/2	11
Barium, recoverable (ug/g)	8-8-85	3050/303A	1/2	120
Beryllium, recoverable (ug/g)	8-9-85	3050/303A	1/2	0.51
Cadmium, recoverable (ug/g)	8-9-85	3050/303C	1/2	<0.4
Chromium, recoverable (ug/g)	8-7-85	3050/303A	1/2	8.9
Copper, recoverable (ug/g)	8-7-85	3050/303A	1/2	21
Mercury, recoverable (ug/g)	7-29-85	7471	1	<0.02
Nickel, recoverable (ug/g)	8-9-85	3050/303A	1/2	8.9
Lead, recoverable (ug/g)	8-7-85	3050/303A	1/2	<3
Antimony, recoverable (ug/g)	8-12-85	3050/303A	1/2	<80
Selenium, recoverable (ug/g)	7-25-85	3050/304	1/2	<1
Thallium, recoverable (ug/g)	8-12-85	3050/303A	1/2	<60
Zinc, recoverable (ug/g)	8-7-85	3050/303A	1/2	68
Oil and Grease (ug/g)	7-28-85	503D	2	<15
Phenols (ug/g)	7-28-85	510A,B	2	<0.3

Reference: 1. EPA SW 846, 2nd Edition
2. Standard Methods, 16th Edition

Field Identification: AP105 S-5
Laboratory Number: 5006-11

Matrix: Solid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, recoverable (ug/g)	8-9-85	3050/303A	1/2	<0.5
Arsenic, recoverable (ug/g)	8-6-85	3050/304	1/2	15
Barium, recoverable (ug/g)	8-8-85	3050/303A	1/2	110
Beryllium, recoverable (ug/g)	8-9-85	3050/303A	1/2	0.31
Cadmium, recoverable (ug/g)	8-9-85	3050/303C	1/2	0.43
Chromium, recoverable (ug/g)	8-7-85	3050/303A	1/2	16
Copper, recoverable (ug/g)	8-7-85	3050/303A	1/2	22
Mercury, recoverable (ug/g)	7-29-85	7471	1	<0.02
Nickel, recoverable (ug/g)	8-9-85	3050/303A	1/2	9
Lead, recoverable (ug/g)	8-7-85	3050/303A	1/2	36
Antimony, recoverable (ug/g)	8-12-85	3050/303A	1/2	<80
Selenium, recoverable (ug/g)	7-25-85	3050/304	1/2	<1
Thallium, recoverable (ug/g)	8-12-85	3050/303A	1/2	<60
Zinc, recoverable (ug/g)	8-7-85	3050/303A	1/2	150
Oil and Grease (ug/g)	7-28-85	503D	2	1200
Phenols (ug/g)	7-28-85	510A,B	2	<0.3

Reference:
1. EPA SW 846, 2nd Edition
2. Standard Methods, 16th edition

Lab Number: 5006-6
Sample Designation: AP104 S-4
Date analyzed: 7-25-85

VOLATILE ORGANICS	CONCENTRATION (ug/g)	DETECTION LIMIT (ug/g)
CHLOROMETHANE	BDL	1
VINYL CHLORIDE	BDL	1
CHLOROETHANE	BDL	.5
BROMOMETHANE	BDL	1
METHYLENE CHLORIDE	BDL	.5
TRICHLOROFLUOROMETHANE	BDL	.5
1,1-DICHLOROETHYLENE	BDL	.5
1,1-DICHLOROETHANE	BDL	.5
1,2-trans-DICHLOROETHYLENE	BDL	.5
CHLOROFORM	BDL	.5
1,2-DICHLOROETHANE	BDL	.5
1,1,1-TRICHLOROETHANE	BDL	.5
CARBON TETRACHLORIDE	BDL	.5
BROMODICHLOROMETHANE	BDL	.5
1,2-DICHLOROPROPANE	BDL	.5
1,3-trans-DICHLOROPROPENE	BDL	.5
TRICHLOROETHYLENE	BDL	.5
BENZENE	BDL	.5
1,3-cis-DICHLOROPROPENE	BDL	.5
1,1,2-TRICHLOROETHANE	BDL	.5
2-CHLOROETHYL VINYL ETHER	BDL	.5
DIBROMOCHLOROMETHANE	BDL	.5
BROMOFORM	BDL	.5
TETRACHLOROETHYLENE	BDL	.5
1,1,2,2-TETRACHLOROETHANE	BDL	.5
TOLUENE	BDL	.5
CHLOROBENZENE	BDL	.5
ETHYLBENZENE	BDL	.5
ACETONE	BDL	2.5
CARBON DISULFIDE	BDL	.5
THF	BDL	2.5
MEK	BDL	2.5
MIBK	BDL	2.5
STYRENE	BDL	.5
XYLENES	BDL	.5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA METHOD 5030 (PEG)

Lab Number: 5006-7
Sample Designation: AP105 S-1
Date analyzed: 8-2-85

VOLATILE ORGANICS	CONCENTRATION (ug/g)	DETECTION LIMIT (ug/g)
CHLOROMETHANE	BDL	20
VINYL CHLORIDE	BDL	20
CHLOROETHANE	BDL	10
BROMOMETHANE	BDL	20
METHYLENE CHLORIDE	BDL	10
TRICHLOROFLUOROMETHANE	BDL	10
1,1-DICHLOROETHYLENE	BDL	10
1,1-DICHLOROETHANE	BDL	10
1,2-trans-DICHLOROETHYLENE	BDL	10
CHLOROFORM	BDL	10
1,2-DICHLOROETHANE	BDL	10
1,1,1-TRICHLOROETHANE	BDL	10
CARBON TETRACHLORIDE	BDL	10
BROMODICHLOROMETHANE	BDL	10
1,2-DICHLOROPROPANE	BDL	10
1,3-trans-DICHLOROPROPENE	BDL	10
TRICHLOROETHYLENE	BDL	10
BENZENE	BDL	10
1,3-cis-DICHLOROPROPENE	BDL	10
1,1,2-TRICHLOROETHANE	BDL	10
2-CHLOROETHYL VINYL ETHER	BDL	10
DIBROMOCHLOROMETHANE	BDL	10
BROMOFORM	BDL	10
TETRACHLOROETHYLENE	BDL	10
1,1,2,2-TETRACHLOROETHANE	BDL	10
TOLUENE	BDL	10
CHLOROBENZENE	BDL	10
ETHYLBENZENE	BDL	10
ACETONE	BDL	50
CARBON DISULFIDE	BDL	10
THF	BDL	50
MEK	BDL	50
MIBK	BDL	50
STYRENE	BDL	10
XYLENES	BDL	10

Detection limit raised by the presence of non-listed compounds.

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA METHOD 5030 (PEG)

Lab Number: 5006-9
Sample Designation: AP105 S-3
Date analyzed: 7-26-85

VOLATILE ORGANICS	CONCENTRATION (ug/g)	DETECTION LIMIT (ug/g)
CHLOROMETHANE	BDL	1
VINYL CHLORIDE	BDL	1
CHLOROETHANE	BDL	.5
BROMOMETHANE	BDL	1
METHYLENE CHLORIDE	BDL	.5
TRICHLOROFLUOROMETHANE	BDL	.5
1,1-DICHLOROETHYLENE	BDL	.5
1,1-DICHLOROETHANE	BDL	.5
1,2-trans-DICHLOROETHYLENE	BDL	.5
CHLOROFORM	BDL	.5
1,2-DICHLOROETHANE	BDL	.5
1,1,1-TRICHLOROETHANE	BDL	.5
CARBON TETRACHLORIDE	BDL	.5
BROMODICHLOROMETHANE	BDL	.5
1,2-DICHLOROPROPANE	BDL	.5
1,3-trans-DICHLOROPROPENE	BDL	.5
TRICHLOROETHYLENE	BDL	.5
BENZENE	BDL	.5
1,3-cis-DICHLOROPROPENE	BDL	.5
1,1,2-TRICHLOROETHANE	BDL	.5
2-CHLOROETHYL VINYL ETHER	BDL	.5
DIBROMOCHLOROMETHANE	BDL	.5
BROMOFORM	BDL	.5
TETRACHLOROETHYLENE	BDL	.5
1,1,2,2-TETRACHLOROETHANE	BDL	.5
TOLUENE	BDL	.5
CHLOROBENZENE	BDL	.5
ETHYLBENZENE	BDL	.5
ACETONE	Trace	2.5
CARBON DISULFIDE	BDL	.5
THF	BDL	2.5
MEK	BDL	2.5
MIBK	BDL	2.5
STYRENE	BDL	.5
XYLENES	BDL	.5

"Trace" denotes probable presence below listed detection limit.

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA METHOD 5030 (PEG)

RAI

Resource Analysts, Incorporated
Box 4778 Hampton, NH 03842
(603) 926-7777

TO:

Mr. Matt Eichler
Caswell, Eichler & Hill
P.O. Box 4696
Portsmouth, NH 03801

PO # ATF Davidson

Date Received: 7-31-85(10:30)

Lab Number: 5070

Date Reported: 8-15-85

Please find attached results for Volatile Organic Compounds, Priority Poilutant Metals, Barium, and Total Cyanide.

Field Identification: MC-7 Matrix: Liquid

Lab Number	Parameter	Date analyzed	Method	Ref.	Concentration
5070-11	Oil and Grease (mg/L)	8-8-85	413.2	1	<2.0
5070-13	Phenols (mg/L)	8-13-85	510A,B	2	0.012

Field Identification: MC-14 Matrix: Liquid

Lab Number	Parameter	Date analyzed	Method	Ref.	Concentration
5070-12	Oil and Grease (mg/L)	8-8-85	413.2	1	24
5070-14	Phenols (mg/L)	8-13-85	510A,B	2	<0.016

Reference: 1. Standard Methods, 16th Edition
2. EPA 600/4-79-020

David M. Rease Date 8/15/85

Technical Director

page 1 of 6

CHAIN OF CUSTODY DOCUMENTATION

CLIENT CEH

ADDRESS P.O. Box 4696
Portsmouth NH 03801

JOB NAME/NUMBER

PROJECT CONTACT Matt Eichler

SAMPLING LOCATION ATF Davidson, Whitinsville MA

SAMPLE COLLECTOR [illegible]

FIELD IDENTIFICATION List each container separately	LAB #	SAMPLE MATRIX	CONTAINER TYPE/VOLUME	FILTRATION	FIELD PRESERVATION	REMARKS/ANALYSIS REQUESTED
Date 7/30/85 MC-1 Time 1205	5070-1	○ Solid ● Liquid ○ Other	● P/ 250 mL ○ G/ mL ○ G/T/ mL	● field ○ lab ○ none	HNO_3 + cool	Metals - Barium + the Priority Pollutant Metals
Date MC-2 Time 1325	2	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-3 Time 1550	3	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-7 Time 1645	4	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-10 Time 1605	5	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-11 Time 1512	6	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-12 Time 1045	7	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-13 Time 1055	8	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		

Relinquished By:	Date	Time	Received By:	Date	Time
[signature]					
Relinquished By:	**Date**	**Time**	**Received For Laboratory By:**	**Date**	**Time**
			[signature]	7/31	10:00

Resource Analysts, Incorporated

page 2 of 6

CHAIN OF CUSTODY DOCUMENTATION

CLIENT CEH

ADDRESS

JOB NAME/NUMBER

PROJECT CONTACT Matt Eichler

SAMPLING LOCATION ATF Davidson

SAMPLE COLLECTOR Dilesandro

FIELD IDENTIFICATION List each container separately	LAB #	SAMPLE MATRIX	CONTAINER TYPE/VOLUME	FILTRATION	FIELD PRESERVATION	REMARKS/ANALYSIS REQUESTED
7/30/85 Date MC-14 Time 1005	5070-9	○ Solid ● Liquid ○ Other	● P/ 250 mL ○ G/ mL ○ G/T/ mL	● field ○ lab ○ none	HNO_3 + cool	Metals - Barium + the Priority Pollutant Metals
Date MC-15 Time 1115	10	○ Solid ● Liquid ○ Other	● P/ 250 mL ○ G/ mL ○ G/T/ mL	● field ○ lab ○ none	↓	↓
Date MC-7 Time 1645	11	○ Solid ● Liquid ○ Other	○ P/ mL ○ G/ mL ● G/T/ 1000 mL	○ field ○ lab ● none	HCl + cool	Oil + Grease Please note: the sample had to be pumped out of the monitoring well this was ↓ lower the results
Date MC-14 Time 1005	12	○ Solid ● Liquid ○ Other	○ P/ mL ○ G/ mL ● G/T/ 1000 mL	○ field ○ lab ● none	↓	↓
Date MC-7 Time 1645	13	○ Solid ● Liquid ○ Other	○ P/ mL ○ G/ mL ● G/T/ 1000 mL	○ field ○ lab ● none	H_3PO_4 + cool	Total Phenols
Date MC-14 Time 1005	14	○ Solid ● Liquid ○ Other	○ P/ mL ○ G/(2) mL ● G/T/ 1000 mL	○ field ○ lab ● none	↓	↓
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		

Relinquished By:	Date	Time	Received By:	Date	Time
M Dilesandro					
Relinquished By:	**Date**	**Time**	**Received For Laboratory By:**	**Date**	**Time**
			Laurie DeClark	7/31	10:00

Resource Analysts, Incorporated

CHAIN OF CUSTODY DOCUMENTATION

CLIENT CEH

ADDRESS

JOB NAME/NUMBER

PROJECT CONTACT Matt Eichler

SAMPLING LOCATION ATF Davidson

SAMPLE COLLECTOR D Abramson

FIELD IDENTIFICATION List each container separately	LAB #	SAMPLE MATRIX	CONTAINER TYPE/VOLUME	FILTRATION	FIELD PRESERVATION	REMARKS/ANALYSIS REQUESTED
7/30/85 Date MC-1 Time 1205	507015	○ Solid ● Liquid ○ Other	○ P/ mL ○ G/ mL ● G/T/40 mL	○ field ○ lab ● none	Cool	VOA - EPA 624
Date MC-2 Time 1325	16	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-3 Time 1550	17	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-7 Time 1645	18	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-10 Time 1605	19	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-11 Time 1512	20	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-12 Time 1045	21	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-13 Time 1055	22	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		

Relinquished By:	Date	Time	Received By:	Date	Time
D Abramson					
Relinquished By:	**Date**	**Time**	**Received for Laboratory By:**	**Date**	**Time**
			Laurie Jo Clarke	7/31	10:00

Resource Analysts, Incorporated

CHAIN OF CUSTODY DOCUMENTATION

CLIENT CEH

ADDRESS

JOB NAME/NUMBER

PROJECT CONTACT Matt Eichler

SAMPLING LOCATION ATF Davidson

SAMPLE COLLECTOR [signature]

FIELD IDENTIFICATION List each container separately	LAB #	SAMPLE MATRIX	CONTAINER TYPE/VOLUME	FILTRATION	FIELD PRESERVATION	REMARKS/ANALYSIS REQUESTED
Date 7/30/85 MC-14 Time 1005	5070-23	Liquid (marked)	G/T/ 40 mL (marked)	none (marked)	cool	VOA - EPA 624
Date ↓ MC-15 Time 1115	24	↓	↓	↓	↓	↓
Date TripBlank Time	5070-35					↓
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date Time		○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		

Relinquished By:	Date	Time	Received By:	Date	Time
[signature]					
Relinquished By:	Date	Time	Received For Laboratory By: Laurie Clarke	Date 7/31	Time 10:00

Resource Analysts, Incorporated

CHAIN OF CUSTODY DOCUMENTATION

CLIENT: CEH

ADDRESS:

JOB NAME/NUMBER:

PROJECT CONTACT: Matt Eichler

SAMPLING LOCATION: ATF Davidson

SAMPLE COLLECTOR:

FIELD IDENTIFICATION (List each container separately)	LAB #	SAMPLE MATRIX	CONTAINER TYPE/VOLUME	FILTRATION	FIELD PRESERVATION	REMARKS/ANALYSIS REQUESTED
7/30/85 Date MC-1 Time 1205	507025	○ Solid ● Liquid ○ Other	○ P/ mL ○ G/ mL ● G/T/1000 mL	○ field ○ lab ● none	NaOH + cool	Total Cyanide
Date MC-2 Time 1325	26	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-3 Time 1550	27	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-7 Time 1645	28	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-10 Time 1605	29	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-11 Time 1512	30	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-12 Time 1045	31	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		
Date MC-13 Time 1055	32	○ Solid ○ Liquid ○ Other	○ P/ mL ○ G/ mL ○ G/T/ mL	○ field ○ lab ○ none		

Relinquished By:	Date	Time	Received By:	Date	Time
Relinquished By:	**Date**	**Time**	**Received for Laboratory By:**	**Date**	**Time**
			Laurie McClain	7/31	10:00

Resource Analysts, Incorporated

CHAIN OF CUSTODY DOCUMENTATION

CLIENT: CEH

ADDRESS:

JOB NAME/NUMBER:

PROJECT CONTACT: Matt Eichler

SAMPLING LOCATION: ATF Davidson

SAMPLE COLLECTOR: [signature]

FIELD IDENTIFICATION List each container separately	LAB #	SAMPLE MATRIX	CONTAINER TYPE/VOLUME	FILTRATION	FIELD PRESERVATION	REMARKS/ANALYSIS REQUESTED
Date 7/30/85 MC-14 Time 1005	5070-33	Liquid	G/T/ 1000 mL	none	NaOH + cool	Total Cyanide
Date (same) MC-15 Time 1115	34	(same)	(same)	(same)	(same)	(same)
Date Time		Solid / Liquid / Other	P/ mL G/ mL G/T/ mL	field / lab / none		
Date Time		Solid / Liquid / Other	P/ mL G/ mL G/T/ mL	field / lab / none		
Date Time		Solid / Liquid / Other	P/ mL G/ mL G/T/ mL	field / lab / none		
Date Time		Solid / Liquid / Other	P/ mL G/ mL G/T/ mL	field / lab / none		
Date Time		Solid / Liquid / Other	P/ mL G/ mL G/T/ mL	field / lab / none		
Date Time		Solid / Liquid / Other	P/ mL G/ mL G/T/ mL	field / lab / none		

Relinquished By:	Date	Time	Received By:	Date	Time
[signature]					
Relinquished By:	Date	Time	Received For Laboratory By: Laurie Jo Clarke	Date 7/31	Time 10:00

Resource Analysts, Incorporated

Lab Number	Field ID	Parameter	Date analyzed	Method	Ref.	Concentration
5070-25	MC-1	Total Cyanide (mg/L)	8-15-85	335.2	1	<0.01
5070-26	MC-2	Total Cyanide (mg/L)	8-15-85	335.2	1	<0.01
5070-27	MC-3	Total Cyanide (mg/L)	8-15-85	335.2	1	<0.01
5070-28	MC-7	Total Cyanide (mg/L)	8-15-85	335.2	1	<0.01
5070-29	MC-10	Total Cyanide (mg/L)	8-15-85	335.2	1	<0.01
5070-30	MC-11	Total Cyanide (mg/L)	8-15-85	335.2	1	<0.01
5070-31	MC-12	Total Cyanide (mg/L)	8-15-85	335.2	1	<0.01
5070-32	MC-13	Total Cyanide (mg/L)	8-15-85	335.2	1	<0.01
5070-33	MC-14	Total Cyanide (mg/L)	8-15-85	335.2	1	<0.01
5070-34	MC-15	Total Cyanide (mg/L)	8-15-85	335.2	1	<0.01

Reference: 1. EPA 600/4-79-020

Field Identification: MC-1
Laboratory Number: 5070-1

Matrix: Liquid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, dissolved (mg/L)	8-9-85	303A	1	<0.005
Barium, dissolved (mg/L)	8-14-85	303C	1	<0.3
Beryllium, dissolved (mg/L)	8-8-85	304	1	<0.0005
Cadmium, dissolved (mg/L)	8-7-85	303A	1	<0.004
Chromium, dissolved (mg/L)	8-9-85	303A	1	<0.005
Mercury, dissolved (mg/L)	8-6-85	7470	2	<0.0005
Nickel, dissolved (mg/L)	8-9-85	303A	1	<0.03
Lead, dissolved (mg/L)	8-7-85	303A	1	<0.04
Antimony, dissolved (mg/L)	8-13-85	303A	1	<0.8
Thallium, dissolved (mg/L)	8-13-85	303A	1	<0.6
Zinc, dissolved (mg/L)	8-7-85	303A	1	0.033

Field Identification: MC-2
Laboratory Number: 5070-2

Matrix: Liquid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, dissolved (mg/L)	8-9-85	303A	1	<0.005
Barium, dissolved (mg/L)	8-14-85	303C	1	<0.3
Beryllium, dissolved (mg/L)	8-8-85	304	1	<0.0005
Cadmium, dissolved (mg/L)	8-7-85	303A	1	<0.004
Chromium, dissolved (mg/L)	8-9-85	303A	1	<0.005
Mercury, dissolved (mg/L)	8-6-85	7470	2	<0.0005
Nickel, dissolved (mg/L)	8-9-85	303A	1	<0.03
Lead, dissolved (mg/L)	8-7-85	303A	1	<0.04
Antimony, dissolved (mg/L)	8-13-85	303A	1	<0.8
Thallium, dissolved (mg/L)	8-13-85	303A	1	<0.6
Zinc, dissolved (mg/L)	8-7-85	303A	1	0.031

Reference:
1. Standard Methods, 16th Edition
2. EPA SW 846, 2nd Edition

Field Identification: MC-3
Laboratory Number: 5070-3

Matrix: Liquid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, dissolved (mg/L)	8-9-85	303A	1	<0.005
Barium, dissolved (mg/L)	8-14-85	303C	1	<0.3
Beryllium, dissolved (mg/L)	8-8-85	304	1	<0.0005
Cadmium, dissolved (mg/L)	8-7-85	303A	1	<0.004
Chromium, dissolved (mg/L)	8-9-85	303A	1	<0.005
Mercury, dissolved (mg/L)	8-6-85	7470	2	<0.0005
Nickel, dissolved (mg/L)	8-9-85	303A	1	<0.03
Lead, dissolved (mg/L)	8-7-85	303A	1	<0.04
Antimony, dissolved (mg/L)	8-13-85	303A	1	<0.8
Thallium, dissolved (mg/L)	8-13-85	303A	1	<0.6
Zinc, dissolved (mg/L)	8-7-85	303A	1	0.023

Field Identification: MC-7
Laboratory Number: 5070-4

Matrix: Liquid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, dissolved (mg/L)	8-9-85	303A	1	<0.005
Barium, dissolved (mg/L)	8-14-85	303C	1	<0.3
Beryllium, dissolved (mg/L)	8-8-85	304	1	<0.0005
Cadmium, dissolved (mg/L)	8-7-85	303A	1	<0.004
Chromium, dissolved (mg/L)	8-9-85	303A	1	<0.005
Mercury, dissolved (mg/L)	8-6-85	7470	2	<0.0005
Nickel, dissolved (mg/L)	8-9-85	303A	1	<0.03
Lead, dissolved (mg/L)	8-7-85	303A	1	<0.04
Antimony, dissolved (mg/L)	8-13-85	303A	1	<0.8
Thallium, dissolved (mg/L)	8-13-85	303A	1	<0.6
Zinc, dissolved (mg/L)	8-7-85	303A	1	0.031

Reference: 1. Standard Methods, 16th Edition
2. EPA SW 846, 2nd Edition

Field Identification: MC-10
Laboratory Number: 5070-5

Matrix: Liquid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, dissolved (mg/L)	8-9-85	303A	1	<0.005
Barium, dissolved (mg/L)	8-14-85	303C	1	<0.3
Beryllium, dissolved (mg/L)	8-8-85	304	1	<0.0005
Cadmium, dissolved (mg/L)	8-7-85	303A	1	<0.004
Chromium, dissolved (mg/L)	8-9-85	303A	1	<0.005
Mercury, dissolved (mg/L)	8-6-85	7470	2	<0.0005
Nickel, dissolved (mg/L)	8-9-85	303A	1	<0.03
Lead, dissolved (mg/L)	8-7-85	303A	1	<0.04
Antimony, dissolved (mg/L)	8-13-85	303A	1	<0.8
Thallium, dissolved (mg/L)	8-13-85	303A	1	<0.6
Zinc, dissolved (mg/L)	8-7-85	303A	1	0.059

Field Identification: MC-11
Laboratory Number: 5070-6

Matrix: Liquid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, dissolved (mg/L)	8-9-85	303A	1	<0.005
Barium, dissolved (mg/L)	8-14-85	303C	1	<0.3
Beryllium, dissolved (mg/L)	8-8-85	304	1	<0.0005
Cadmium, dissolved (mg/L)	8-7-85	303A	1	<0.004
Chromium, dissolved (mg/L)	8-9-85	303A	1	<0.005
Mercury, dissolved (mg/L)	8-6-85	7470	2	<0.0005
Nickel, dissolved (mg/L)	8-9-85	303A	1	<0.03
Lead, dissolved (mg/L)	8-7-85	303A	1	<0.04
Antimony, dissolved (mg/L)	8-13-85	303A	1	<0.8
Thallium, dissolved (mg/L)	8-13-85	303A	1	<0.6
Zinc, dissolved (mg/L)	8-7-85	303A	1	0.047

Reference:
1. Standard Methods, 16th Edition
2. EPA SW 846, 2nd Edition

Field Identification: MC-12
Laboratory Number: 5070-7

Matrix: Liquid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, dissolved (mg/L)	8-9-85	303A	1	<0.005
Barium, dissolved (mg/L)	8-14-85	303C	1	<0.3
Beryllium, dissolved (mg/L)	8-8-85	304	1	<0.0005
Cadmium, dissolved (mg/L)	8-7-85	303A	1	<0.004
Chromium, dissolved (mg/L)	8-9-85	303A	1	<0.005
Mercury, dissolved (mg/L)	8-6-85	7470	2	<0.0005
Nickel, dissolved (mg/L)	8-9-85	303A	1	<0.03
Lead, dissolved (mg/L)	8-7-85	303A	1	<0.04
Antimony, dissolved (mg/L)	8-13-85	303A	1	<0.8
Thallium, dissolved (mg/L)	8-13-85	303A	1	<0.6
Zinc, dissolved (mg/L)	8-7-85	303A	1	0.018

Field Identification: MC-13
Laboratory Number: 5070-8

Matrix: Liquid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, dissolved (mg/L)	8-9-85	303A	1	<0.005
Barium, dissolved (mg/L)	8-14-85	303C	1	<0.3
Beryllium, dissolved (mg/L)	8-8-85	304	1	<0.0005
Cadmium, dissolved (mg/L)	8-7-85	303A	1	<0.004
Chromium, dissolved (mg/L)	8-9-85	303A	1	<0.005
Mercury, dissolved (mg/L)	8-6-85	7470	2	<0.0005
Nickel, dissolved (mg/L)	8-9-85	303A	1	<0.03
Lead, dissolved (mg/L)	8-7-85	303A	1	<0.04
Antimony, dissolved (mg/L)	8-13-85	303A	1	<0.8
Thallium, dissolved (mg/L)	8-13-85	303A	1	<0.6
Zinc, dissolved (mg/L)	8-7-85	303A	1	0.025

Reference:
1. Standard Methods, 16th Edition
2. EPA SW 846, 2nd Edition

Field Identification: MC-14
Laboratory Number: 5070-9

Matrix: Liquid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, dissolved (mg/L)	8-9-85	303A	1	<0.005
Barium, dissolved (mg/L)	8-14-85	303C	1	<0.3
Beryllium, dissolved (mg/L)	8-8-85	304	1	<0.0005
Cadmium, dissolved (mg/L)	8-7-85	303A	1	<0.004
Chromium, dissolved (mg/L)	8-9-85	303A	1	<0.005
Mercury, dissolved (mg/L)	8-6-85	7470	2	<0.0005
Nickel, dissolved (mg/L)	8-9-85	303A	1	<0.03
Lead, dissolved (mg/L)	8-7-85	303A	1	<0.04
Antimony, dissolved (mg/L)	8-13-85	303A	1	<0.8
Thallium, dissolved (mg/L)	8-13-85	303A	1	<0.6
Zinc, dissolved (mg/L)	8-7-85	303A	1	0.020

Field Identification: MC-15
Laboratory Number: 5070-10

Matrix: Liquid

Parameter	Date analyzed	Method	Ref.	Concentration
Silver, dissolved (mg/L)	8-9-85	303A	1	<0.005
Barium, dissolved (mg/L)	8-14-85	303C	1	<0.3
Beryllium, dissolved (mg/L)	8-8-85	304	1	<0.0005
Cadmium, dissolved (mg/L)	8-7-85	303A	1	<0.004
Chromium, dissolved (mg/L)	8-9-85	303A	1	<0.005
Mercury, dissolved (mg/L)	8-6-85	7470	2	<0.0005
Nickel, dissolved (mg/L)	8-9-85	303A	1	<0.03
Lead, dissolved (mg/L)	8-7-85	303A	1	<0.04
Antimony, dissolved (mg/L)	8-13-85	303A	1	<0.8
Thallium, dissolved (mg/L)	8-13-85	303A	1	<0.6
Zinc, dissolved (mg/L)	8-7-85	303A	1	0.023

Reference:
1. Standard Methods, 16th Edition
2. EPA SW 846, 2nd Edition

Lab Number: 5070-15
Sample Designation: MC-1
Date analyzed: 8-9-85

VOLATILE ORGANICS	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
CHLOROMETHANE	BDL	10
VINYL CHLORIDE	BDL	10
CHLOROETHANE	BDL	5
BROMOMETHANE	BDL	10
METHYLENE CHLORIDE	BDL	5
TRICHLOROFLUOROMETHANE	BDL	5
1,1-DICHLOROETHYLENE	BDL	5
1,1-DICHLOROETHANE	BDL	5
1,2-trans-DICHLOROETHYLENE	BDL	5
CHLOROFORM	BDL	5
1,2-DICHLOROETHANE	BDL	5
1,1,1-TRICHLOROETHANE	BDL	5
CARBON TETRACHLORIDE	BDL	5
BROMODICHLOROMETHANE	BDL	5
1,2-DICHLOROPROPANE	BDL	5
1,3-trans-DICHLOROPROPENE	BDL	5
TRICHLOROETHYLENE	BDL	5
BENZENE	BDL	5
1,3-cis-DICHLOROPROPENE	BDL	5
1,1,2-TRICHLOROETHANE	BDL	5
2-CHLOROETHYL VINYL ETHER	BDL	5
DIBROMOCHLOROMETHANE	BDL	5
BROMOFORM	BDL	5
TETRACHLOROETHYLENE	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	5
TOLUENE	BDL	5
CHLOROBENZENE	BDL	5
ETHYLBENZENE	BDL	5
ACETONE	BDL	25
CARBON DISULFIDE	BDL	5
THF	BDL	25
MEK	BDL	25
MIBK	BDL	25
STYRENE	BDL	5
XYLENES	BDL	5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA 600/4-79-020 METHOD 624

Lab Number: 5070-16
Sample Designation: MC-2
Date analyzed: 8-12-85

VOLATILE ORGANICS	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
CHLOROMETHANE	BDL	10
VINYL CHLORIDE	BDL	10
CHLOROETHANE	BDL	5
BROMOMETHANE	BDL	10
METHYLENE CHLORIDE	BDL	5
TRICHLOROFLUOROMETHANE	BDL	5
1,1-DICHLOROETHYLENE	BDL	5
1,1-DICHLOROETHANE	BDL	5
1,2-trans-DICHLOROETHYLENE	BDL	5
CHLOROFORM	BDL	5
1,2-DICHLOROETHANE	BDL	5
1,1,1-TRICHLOROETHANE	BDL	5
CARBON TETRACHLORIDE	BDL	5
BROMODICHLOROMETHANE	BDL	5
1,2-DICHLOROPROPANE	BDL	5
1,3-trans-DICHLOROPROPENE	BDL	5
TRICHLOROETHYLENE	BDL	5
BENZENE	BDL	5
1,3-cis-DICHLOROPROPENE	BDL	5
1,1,2-TRICHLOROETHANE	BDL	5
2-CHLOROETHYL VINYL ETHER	BDL	5
DIBROMOCHLOROMETHANE	BDL	5
BROMOFORM	BDL	5
TETRACHLOROETHYLENE	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	5
TOLUENE	BDL	5
CHLOROBENZENE	BDL	5
ETHYLBENZENE	BDL	5
ACETONE	BDL	25
CARBON DISULFIDE	BDL	5
THF	BDL	25
MEK	BDL	25
MIBK	BDL	25
STYRENE	BDL	5
XYLENES	BDL	5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA 600/4-79-020 METHOD 624

Lab Number: 5070-17
Sample Designation: MC-3
Date analyzed: 8-12-85

VOLATILE ORGANICS	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
CHLOROMETHANE	BDL	10
VINYL CHLORIDE	BDL	10
CHLOROETHANE	BDL	5
BROMOMETHANE	BDL	10
METHYLENE CHLORIDE	BDL	5
TRICHLOROFLUOROMETHANE	BDL	5
1,1-DICHLOROETHYLENE	BDL	5
1,1-DICHLOROETHANE	BDL	5
1,2-trans-DICHLOROETHYLENE	BDL	5
CHLOROFORM	BDL	5
1,2-DICHLOROETHANE	BDL	5
1,1,1-TRICHLOROETHANE	BDL	5
CARBON TETRACHLORIDE	BDL	5
BROMODICHLOROMETHANE	BDL	5
1,2-DICHLOROPROPANE	BDL	5
1,3-trans-DICHLOROPROPENE	BDL	5
TRICHLOROETHYLENE	BDL	5
BENZENE	BDL	5
1,3-cis-DICHLOROPROPENE	BDL	5
1,1,2-TRICHLOROETHANE	BDL	5
2-CHLOROETHYL VINYL ETHER	BDL	5
DIBROMOCHLOROMETHANE	BDL	5
BROMOFORM	BDL	5
TETRACHLOROETHYLENE	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	5
TOLUENE	BDL	5
CHLOROBENZENE	BDL	5
ETHYLBENZENE	BDL	5
ACETONE	BDL	25
CARBON DISULFIDE	BDL	5
THF	BDL	25
MEK	BDL	25
MIBK	BDL	25
STYRENE	BDL	5
XYLENES	BDL	5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA 600/4-79-020 METHOD 624

Resource Analysts, Incorporated

Lab Number: 5070-18
Sample Designation: MC-7
Date analyzed: 8-9-85

VOLATILE ORGANICS	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
CHLOROMETHANE	BDL	10
VINYL CHLORIDE	BDL	10
CHLOROETHANE	BDL	5
BROMOMETHANE	BDL	10
METHYLENE CHLORIDE	BDL	5
TRICHLOROFLUOROMETHANE	BDL	5
1,1-DICHLOROETHYLENE	BDL	5
1,1-DICHLOROETHANE	BDL	5
1,2-trans-DICHLOROETHYLENE	BDL	5
CHLOROFORM	BDL	5
1,2-DICHLOROETHANE	BDL	5
1,1,1-TRICHLOROETHANE	BDL	5
CARBON TETRACHLORIDE	BDL	5
BROMODICHLOROMETHANE	BDL	5
1,2-DICHLOROPROPANE	BDL	5
1,3-trans-DICHLOROPROPENE	BDL	5
TRICHLOROETHYLENE	BDL	5
BENZENE	BDL	5
1,3-cis-DICHLOROPROPENE	BDL	5
1,1,2-TRICHLOROETHANE	BDL	5
2-CHLOROETHYL VINYL ETHER	BDL	5
DIBROMOCHLOROMETHANE	BDL	5
BROMOFORM	BDL	5
TETRACHLOROETHYLENE	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	5
TOLUENE	BDL	5
CHLOROBENZENE	BDL	5
ETHYLBENZENE	BDL	5
ACETONE	BDL	25
CARBON DISULFIDE	BDL	5
THF	BDL	25
MEK	BDL	25
MIBK	BDL	25
STYRENE	BDL	5
XYLENES	BDL	5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA 600/4-79-020 METHOD 624

Lab Number: 5070-19
Sample Designation: MC-10
Date analyzed: 8-9-85

VOLATILE ORGANICS	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
CHLOROMETHANE	BDL	10
VINYL CHLORIDE	BDL	10
CHLOROETHANE	BDL	5
BROMOMETHANE	BDL	10
METHYLENE CHLORIDE	BDL	5
TRICHLOROFLUOROMETHANE	BDL	5
1,1-DICHLOROETHYLENE	BDL	5
1,1-DICHLOROETHANE	BDL	5
1,2-trans-DICHLOROETHYLENE	BDL	5
CHLOROFORM	BDL	5
1,2-DICHLOROETHANE	BDL	5
1,1,1-TRICHLOROETHANE	BDL	5
CARBON TETRACHLORIDE	BDL	5
BROMODICHLOROMETHANE	BDL	5
1,2-DICHLOROPROPANE	BDL	5
1,3-trans-DICHLOROPROPENE	BDL	5
TRICHLOROETHYLENE	BDL	5
BENZENE	BDL	5
1,3-cis-DICHLOROPROPENE	BDL	5
1,1,2-TRICHLOROETHANE	BDL	5
2-CHLOROETHYL VINYL ETHER	BDL	5
DIBROMOCHLOROMETHANE	BDL	5
BROMOFORM	BDL	5
TETRACHLOROETHYLENE	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	5
TOLUENE	BDL	5
CHLOROBENZENE	BDL	5
ETHYLBENZENE	BDL	5
ACETONE	BDL	25
CARBON DISULFIDE	BDL	5
THF	BDL	25
MEK	BDL	25
MIBK	BDL	25
STYRENE	BDL	5
XYLENES	BDL	5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA 600/4-79-020 METHOD 624

Lab Number:	5070-20
Sample Designation:	MC-11
Date analyzed:	8-9-85

VOLATILE ORGANICS	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
CHLOROMETHANE	BDL	10
VINYL CHLORIDE	BDL	10
CHLOROETHANE	BDL	5
BROMOMETHANE	BDL	10
METHYLENE CHLORIDE	BDL	5
TRICHLOROFLUOROMETHANE	BDL	5
1,1-DICHLOROETHYLENE	BDL	5
1,1-DICHLOROETHANE	BDL	5
1,2-trans-DICHLOROETHYLENE	BDL	5
CHLOROFORM	BDL	5
1,2-DICHLOROETHANE	BDL	5
1,1,1-TRICHLOROETHANE	BDL	5
CARBON TETRACHLORIDE	BDL	5
BROMODICHLOROMETHANE	BDL	5
1,2-DICHLOROPROPANE	BDL	5
1,3-trans-DICHLOROPROPENE	BDL	5
TRICHLOROETHYLENE	BDL	5
BENZENE	BDL	5
1,3-cis-DICHLOROPROPENE	BDL	5
1,1,2-TRICHLOROETHANE	BDL	5
2-CHLOROETHYL VINYL ETHER	BDL	5
DIBROMOCHLOROMETHANE	BDL	5
BROMOFORM	BDL	5
TETRACHLOROETHYLENE	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	5
TOLUENE	BDL	5
CHLOROBENZENE	BDL	5
ETHYLBENZENE	BDL	5
ACETONE	BDL	25
CARBON DISULFIDE	BDL	5
THF	BDL	25
MEK	BDL	25
MIBK	BDL	25
STYRENE	BDL	5
XYLENES	BDL	5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA 600/4-79-020 METHOD 624

Resource Analysts, Incorporated

Lab Number: 5070-20 (Laboratory Duplicate)
Sample Designation: MC-11
Date analyzed: 8-9-85

VOLATILE ORGANICS	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
CHLOROMETHANE	BDL	10
VINYL CHLORIDE	BDL	10
CHLOROETHANE	BDL	5
BROMOMETHANE	BDL	10
METHYLENE CHLORIDE	BDL	5
TRICHLOROFLUOROMETHANE	BDL	5
1,1-DICHLOROETHYLENE	BDL	5
1,1-DICHLOROETHANE	BDL	5
1,2-trans-DICHLOROETHYLENE	BDL	5
CHLOROFORM	BDL	5
1,2-DICHLOROETHANE	BDL	5
1,1,1-TRICHLOROETHANE	BDL	5
CARBON TETRACHLORIDE	BDL	5
BROMODICHLOROMETHANE	BDL	5
1,2-DICHLOROPROPANE	BDL	5
1,3-trans-DICHLOROPROPENE	BDL	5
TRICHLOROETHYLENE	BDL	5
BENZENE	BDL	5
1,3-cis-DICHLOROPROPENE	BDL	5
1,1,2-TRICHLOROETHANE	BDL	5
2-CHLOROETHYL VINYL ETHER	BDL	5
DIBROMOCHLOROMETHANE	BDL	5
BROMOFORM	BDL	5
TETRACHLOROETHYLENE	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	5
TOLUENE	BDL	5
CHLOROBENZENE	BDL	5
ETHYLBENZENE	BDL	5
ACETONE	BDL	25
CARBON DISULFIDE	BDL	5
THF	BDL	25
MEK	BDL	25
MIBK	BDL	25
STYRENE	BDL	5
XYLENES	BDL	5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA 600/4-79-020 METHOD 624

Lab Number: 5070-21
Sample Designation: MC-12
Date analyzed: 8-9-85

VOLATILE ORGANICS	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
CHLOROMETHANE	BDL	10
VINYL CHLORIDE	BDL	10
CHLOROETHANE	BDL	5
BROMOMETHANE	BDL	10
METHYLENE CHLORIDE	BDL	5
TRICHLOROFLUOROMETHANE	BDL	5
1,1-DICHLOROETHYLENE	BDL	5
1,1-DICHLOROETHANE	BDL	5
1,2-trans-DICHLOROETHYLENE	BDL	5
CHLOROFORM	BDL	5
1,2-DICHLOROETHANE	BDL	5
1,1,1-TRICHLOROETHANE	BDL	5
CARBON TETRACHLORIDE	BDL	5
BROMODICHLOROMETHANE	BDL	5
1,2-DICHLOROPROPANE	BDL	5
1,3-trans-DICHLOROPROPENE	BDL	5
TRICHLOROETHYLENE	BDL	5
BENZENE	BDL	5
1,3-cis-DICHLOROPROPENE	BDL	5
1,1,2-TRICHLOROETHANE	BDL	5
2-CHLOROETHYL VINYL ETHER	BDL	5
DIBROMOCHLOROMETHANE	BDL	5
BROMOFORM	BDL	5
TETRACHLOROETHYLENE	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	5
TOLUENE	BDL	5
CHLOROBENZENE	BDL	5
ETHYLBENZENE	BDL	5
ACETONE	BDL	25
CARBON DISULFIDE	BDL	5
THF	BDL	25
MEK	BDL	25
MIBK	BDL	25
STYRENE	BDL	5
XYLENES	BDL	5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA 600/4-79-020 METHOD 624

Resource Analysts, Incorporated

Lab Number: 5070-22
Sample Designation: MC-13
Date analyzed: 8-9-85

VOLATILE ORGANICS	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
CHLOROMETHANE	BDL	10
VINYL CHLORIDE	BDL	10
CHLOROETHANE	BDL	5
BROMOMETHANE	BDL	10
METHYLENE CHLORIDE	BDL	5
TRICHLOROFLUOROMETHANE	BDL	5
1,1-DICHLOROETHYLENE	BDL	5
1,1-DICHLOROETHANE	BDL	5
1,2-trans-DICHLOROETHYLENE	BDL	5
CHLOROFORM	BDL	5
1,2-DICHLOROETHANE	BDL	5
1,1,1-TRICHLOROETHANE	BDL	5
CARBON TETRACHLORIDE	BDL	5
BROMODICHLOROMETHANE	BDL	5
1,2-DICHLOROPROPANE	BDL	5
1,3-trans-DICHLOROPROPENE	BDL	5
TRICHLOROETHYLENE	BDL	5
BENZENE	BDL	5
1,3-cis-DICHLOROPROPENE	BDL	5
1,1,2-TRICHLOROETHANE	BDL	5
2-CHLOROETHYL VINYL ETHER	BDL	5
DIBROMOCHLOROMETHANE	BDL	5
BROMOFORM	BDL	5
TETRACHLOROETHYLENE	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	5
TOLUENE	BDL	5
CHLOROBENZENE	BDL	5
ETHYLBENZENE	BDL	5
ACETONE	BDL	25
CARBON DISULFIDE	BDL	5
THF	BDL	25
MEK	BDL	25
MIBK	BDL	25
STYRENE	BDL	5
XYLENES	BDL	5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA 600/4-79-020 METHOD 624

Lab Number: 5070-23
Sample Designation: MC-14
Date analyzed: 8-13-85

VOLATILE ORGANICS	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
CHLOROMETHANE	BDL	10
VINYL CHLORIDE	BDL	10
CHLOROETHANE	BDL	5
BROMOMETHANE	BDL	10
METHYLENE CHLORIDE	BDL	5
TRICHLOROFLUOROMETHANE	BDL	5
1,1-DICHLOROETHYLENE	BDL	5
1,1-DICHLOROETHANE	BDL	5
1,2-trans-DICHLOROETHYLENE	BDL	5
CHLOROFORM	BDL	5
1,2-DICHLOROETHANE	BDL	5
1,1,1-TRICHLOROETHANE	BDL	5
CARBON TETRACHLORIDE	BDL	5
BROMODICHLOROMETHANE	BDL	5
1,2-DICHLOROPROPANE	BDL	5
1,3-trans-DICHLOROPROPENE	BDL	5
TRICHLOROETHYLENE	BDL	5
BENZENE	BDL	5
1,3-cis-DICHLOROPROPENE	BDL	5
1,1,2-TRICHLOROETHANE	BDL	5
2-CHLOROETHYL VINYL ETHER	BDL	5
DIBROMOCHLOROMETHANE	BDL	5
BROMOFORM	BDL	5
TETRACHLOROETHYLENE	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	5
TOLUENE	BDL	5
CHLOROBENZENE	BDL	5
ETHYLBENZENE	BDL	5
ACETONE	BDL	25
CARBON DISULFIDE	BDL	5
THF	BDL	25
MEK	BDL	25
MIBK	BDL	25
STYRENE	BDL	5
XYLENES	BDL	5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA 600/4-79-020 METHOD 624

Resource Analysts, Incorporated

Lab Number: 5070-24
Sample Designation: MC-15
Date analyzed: 8-9-85

VOLATILE ORGANICS	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
CHLOROMETHANE	BDL	10
VINYL CHLORIDE	BDL	10
CHLOROETHANE	BDL	5
BROMOMETHANE	BDL	10
METHYLENE CHLORIDE	BDL	5
TRICHLOROFLUOROMETHANE	BDL	5
1,1-DICHLOROETHYLENE	BDL	5
1,1-DICHLOROETHANE	BDL	5
1,2-trans-DICHLOROETHYLENE	BDL	5
CHLOROFORM	BDL	5
1,2-DICHLOROETHANE	BDL	5
1,1,1-TRICHLOROETHANE	BDL	5
CARBON TETRACHLORIDE	BDL	5
BROMODICHLOROMETHANE	BDL	5
1,2-DICHLOROPROPANE	BDL	5
1,3-trans-DICHLOROPROPENE	BDL	5
TRICHLOROETHYLENE	BDL	5
BENZENE	BDL	5
1,3-cis-DICHLOROPROPENE	BDL	5
1,1,2-TRICHLOROETHANE	BDL	5
2-CHLOROETHYL VINYL ETHER	BDL	5
DIBROMOCHLOROMETHANE	BDL	5
BROMOFORM	BDL	5
TETRACHLOROETHYLENE	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	5
TOLUENE	BDL	5
CHLOROBENZENE	BDL	5
ETHYLBENZENE	BDL	5
ACETONE	BDL	25
CARBON DISULFIDE	BDL	5
THF	BDL	25
MEK	BDL	25
MIBK	BDL	25
STYRENE	BDL	5
XYLENES	BDL	5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA 600/4-79-020 METHOD 624

Resource Analysts, Incorporated

Lab Number: 5070-35
Sample Designation: Trip Blank
Date analyzed: 8-2-85

VOLATILE ORGANICS	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
CHLOROMETHANE	BDL	10
VINYL CHLORIDE	BDL	10
CHLOROETHANE	BDL	5
BROMOMETHANE	BDL	10
METHYLENE CHLORIDE	BDL	5
TRICHLOROFLUOROMETHANE	BDL	5
1,1-DICHLOROETHYLENE	BDL	5
1,1-DICHLOROETHANE	BDL	5
1,2-trans-DICHLOROETHYLENE	BDL	5
CHLOROFORM	BDL	5
1,2-DICHLOROETHANE	BDL	5
1,1,1-TRICHLOROETHANE	BDL	5
CARBON TETRACHLORIDE	BDL	5
BROMODICHLOROMETHANE	BDL	5
1,2-DICHLOROPROPANE	BDL	5
1,3-trans-DICHLOROPROPENE	BDL	5
TRICHLOROETHYLENE	BDL	5
BENZENE	BDL	5
1,3-cis-DICHLOROPROPENE	BDL	5
1,1,2-TRICHLOROETHANE	BDL	5
2-CHLOROETHYL VINYL ETHER	BDL	5
DIBROMOCHLOROMETHANE	BDL	5
BROMOFORM	BDL	5
TETRACHLOROETHYLENE	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	5
TOLUENE	BDL	5
CHLOROBENZENE	BDL	5
ETHYLBENZENE	BDL	5
ACETONE	BDL	25
CARBON DISULFIDE	BDL	5
THF	BDL	25
MEK	BDL	25
MIBK	BDL	25
STYRENE	BDL	5
XYLENES	BDL	5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA 600/4-79-020 METHOD 624

Lab Number: 5070-35 (Laboratory Duplicate)
Sample Designation: Trip Blank
Date analyzed: 8-2-85

VOLATILE ORGANICS	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
CHLOROMETHANE	BDL	10
VINYL CHLORIDE	BDL	10
CHLOROETHANE	BDL	5
BROMOMETHANE	BDL	10
METHYLENE CHLORIDE	BDL	5
TRICHLOROFLUOROMETHANE	BDL	5
1,1-DICHLOROETHYLENE	BDL	5
1,1-DICHLOROETHANE	BDL	5
1,2-trans-DICHLOROETHYLENE	BDL	5
CHLOROFORM	BDL	5
1,2-DICHLOROETHANE	BDL	5
1,1,1-TRICHLOROETHANE	BDL	5
CARBON TETRACHLORIDE	BDL	5
BROMODICHLOROMETHANE	BDL	5
1,2-DICHLOROPROPANE	BDL	5
1,3-trans-DICHLOROPROPENE	BDL	5
TRICHLOROETHYLENE	BDL	5
BENZENE	BDL	5
1,3-cis-DICHLOROPROPENE	BDL	5
1,1,2-TRICHLOROETHANE	BDL	5
2-CHLOROETHYL VINYL ETHER	BDL	5
DIBROMOCHLOROMETHANE	BDL	5
BROMOFORM	BDL	5
TETRACHLOROETHYLENE	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	5
TOLUENE	BDL	5
CHLOROBENZENE	BDL	5
ETHYLBENZENE	BDL	5
ACETONE	BDL	25
CARBON DISULFIDE	BDL	5
THF	BDL	25
MEK	BDL	25
MIBK	BDL	25
STYRENE	BDL	5
XYLENES	BDL	5

BDL = BELOW DETECTION LIMIT
METHOD REFERENCE: EPA 600/4-79-020 METHOD 624

APPENDIX C

CORRESPONDENCE

April

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Quality Engineering
Central Region
75 Grove Street, Worcester, Massachusetts 01605

792-7653

April 30, 1985

Philip Whitney
A.T.F. Davidson
Main Street
Whitinsville, Massachusetts 01588

Re: Oil/Hazardous Material
Release/Threat of Release
At Main Street, Northbridge,
Massachusetts

WRITTEN NOTICE OF
RESPONSIBILITY

Dear Mr. Whitney:

As a result of an investigation conducted by the Department of Environmental Quality Engineering (DEQE) on April 24, 1985, the Department has determined that there is/has been a release/threat of release of oil/hazardous material including waste oil and mercury, at the former A.T.F. Davidson facility, Main Street, Whitinsville, Massachusetts.

This determination is based on the following information obtained during the site investigation:

1) Test pit excavations, along and adjacent to the south side of building #9, contained oil and oil contaminated soils; (In addition one of the test pits contained a small unknown quantity of mercury metal.)

2) That a water channel (raceway) transports water from Whitin Pond travels beneath the facility and empties into the Mumford River; (The raceway was used, in prior years, to produce hydroelectric power at the facility and is equipped with a number of water gate locks to control water flow.)

3) That the waters of the raceway located down gradient from the power plant (boiler room) at the gate lock in building #9 contained a large accumulation of unknown quantity of oil;

4) That the open drainage culvert located in base floor of the power plant contained an accumulation of unknown quantity of oil/water mixture;

5) That the raceway is/has discharged oil to the waters of the Mumford River for an unknown period of time;

6) That a heavy petroleum odor exists in the buildings and area adjacent to where oil has accumulated; and

7) That there are numerous locations at the facility where oil/hazardous materials are deposited or stored in containers at various stages of deterioration.

Such incident is governed by Chapter 21E of the General Laws of Massachusetts (hereinafter "M.G.L.c.21E"), the Massachusetts Oil and Hazardous Material Release Prevention and Response Act, which was enacted on March 24, 1983, through Section 5 of Chapter 7 of the Acts and Resolves of Massachusetts of 1983.

The Department has determined that you are, under the provisions of M.G.L.c.21E, §5(a), responsible for the occurrence of such release/threat of release. This letter is intended to (1) inform you, in writing, of the Department's determination that you are responsible for such release/threat of release; (2) provide you an opportunity immediately to accept such responsibility, and (3) advise you of the potential consequences of your failure to accept such responsibility.

Your acceptance of responsibility for such release/threat of release means that you will (1) enter into a contract with a consultant knowledgeable in hazardous waste site assessment, approved by the Department, to take any necessary remedial and/or preventive response actions (i.e. assessment, containment and/or removal actions) relative to such release/threat of release and (2) pay for (a) all response costs incurred by the Department due to such release/threat of release and (b) all damages sustained from any injury to or destruction or loss of natural resources due to such release/threat of release.

If you fail to accept responsibility for such release/threat of release, the Department will, pursuant to M.G.L.c.21E, §4, take or arrange for any necessary response actions relative thereto, and the Commissioner of the Department will, pursuant to M.G.L.c.21E, §11, request the Attorney General of the Commonwealth of Massachusetts to bring a civil and/or criminal action against you under M.G.L.c.21E. Specifically, the statute subjects any person who is responsible for a release/threat of release of oil/hazardous material to the following civil liability and penalties and criminal fines and sanctions:

(1) civil liability for (a) all response costs incurred by the Department due to such a release/threat of release and (b) all damages for any injury to or destruction or loss of natural resources due to such a release/threat of release. Such liability is imposed jointly and severally, and without regard to fault, upon any person who is responsible for such a release/threat of release (M.G.L.c.21E, §5(a)); and

(2) civil liability for up to three (3) times the amount of civil liability for costs and damages as described in paragraph (1) above. Such treble liability is imposed jointly and severally upon any person who is responsible for such a release/threat of release (M.G.L.c.21E, §5(e)); and

(3) a civil penalty of not more than twenty-five thousand dollars ($25,000.00) for each violation of M.G.L.c.21E or any ORDER issued or regulation adopted thereunder (M.G.L.c.21E, § 11); and/or

(4) a criminal fine of not more than twenty-five thousand dollars ($25,000.00) and/or imprisonment for not more than five (5) years for each such violation (M.G.L.c.21E, §11). Each day such violation occurs or continues constitutes a separate violation (M.G.L.c.21E, §11).

The Department advises you to accept responsibility for the aforementioned release/threat of release of oil/hazardous material and, thereby, avoid the financial consequences resulting from a successful legal action brought against you under M.G.L.c.21E by the Commonwealth of Massachusetts.

Your acceptance of responsibility must include the following at a minimum:

1) By May 3, 1985, the engaging of a consultant knowledgeable in assessing potential hazardous waste/material sites.

2) Attendance at a meeting on May 3, 1985, at 9:00 a.m. in the Central Region DEQE office, to discuss proposed site assessment and clean-up and to establish an acceptable schedule of implementation of this work.

3) To conduct, in a timely manner, whatever investigations, sampling, and remedial measures that are deemed appropriate by the Department to prevent a further release or threat of release at said site.

4) Your acknowledgement and acceptance of these responsibilities within five (5) days of your receipt of this letter.

A copy of the text of M.G.L.c.21E is available, upon written request, from the Bookstore, Room 116, State House, Boston, Massachusetts 02133.

Very truly yours,

Edmond G. Benoit
Deputy Regional Environmental Engineer

EGB/SHC/jc

cc: Spaulding R. Aldrich, LHWC
Northbridge Conservation Commission
Northbridge Board of Health
James Coleman, DEQE, Boston
Daniel Glanz, EPA
Stephen DeGabriele, DEQE, Boston

WHITE CONSOLIDATED INDUSTRIES, INC.
CLEVELAND, OHIO 44111

EXECUTIVE OFFICES

RICHARD E. HILL, P.E.
ENVIRONMENTAL ENGINEER

June 13, 1985

VIA EMERY OVERNIGHT MAIL

Ms. Susan Corderman
Division of Hazardous Waste
The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Central Region
75 Grove Street, Box 13
Worcester, Massachusetts 01605

Dear Susan:

White Consolidated Industries, Inc. submits for your review and approval, a plan for the containment and removal of oil in the area of building #9 of the Sidney Covich property.

With respect to mercury contamination, Dan Marques will deliver the results of metal analyses to your office on June 17, 1985. Your prompt review of the sampling results and any recommendations for further sampling will allow us to have these samples collected on Wednesday, June 19, 1985.

We anticipate being able to propose an overall site evaluation plan of the Covich property by July 8, 1985.

After you have reviewed this please call me at 216/252-3700.

Very truly yours,

Rich Hill

Richard E. Hill

/ecc
cc: D. Marques
M. F. Eichler
S. Covich

CEH Caswell, Eichler and Hill, Inc.
GEOLOGY HYDROLOGY GEOPHYSICS
P.O. Box 4696
Portsmouth, NH 03801
TEL. (603) 431-4899

May 30, 1985

RECEIVED
JUN 12 1985
WCI

Mr. Richard Hill, P.E.
White Consolidated Industries
11770 Berea Road
Cleveland, Ohio 44111

Re: Auger Investigation of Oil and Mercury Contamination Area

Dear Rich:

We have completed the auger probe investigation of the oil and mercury contamination area adjacent to Building 9 and the raceway on the Covitch property. As the attached schematic shows, seven probes (AP-1 through AP-7) were advanced to a depth of fifteen feet below land surface. In this fashion, we were able to observe the nature of both the subsurface stratigraphy and contamination above and below the water table. The water table was observed to exist at ten feet below land surface adjacent to Building 9, and twelve feet below land surface adjacent to the raceway.

In vertical section, the probes showed the area to consist of two to three feet of gravel and crushed stone (fill) overlying twelve to thirteen feet of silty, clayey fine/medium/coarse sand and gravel, and occasional cobbles. This is commonly known as glacial till. The upper fill was permeated with dark oil of the variety that was commonly used to create a roadbed. The glacial till showed some evidence of oil contamination above the water table where more permeable layers have allowed for preferential horizontal permeability. The zone existing from several feet above the water table to below the water table showed evidence of oil contamination best characterized as saturated. It is assumed that the natural fluctuation of the water table over the years is responsible for the observed thickness of the zone of oil saturation.

Horizontally, the till matrix at AP-1 and AP-2 contained a lesser percentage of fines than did the other probes. The silty, clayey nature of the overburden generally increased in the direction of AP-5, the matrix of which exhibited the greatest percentage of fines.

At the conclusion of the field investigation, the results were discussed with Dan Marques. At that time he expressed a desire to construct a cut-off trench along the wall of the small building attached to Building 9 where AP-1 was completed. The trench would be excavated to several feet below the existing water table, and gently sloped toward AP-1 where a sump and oil separation

unit would be located. The trench would be lined with concrete and the entire face of the raceway and trench along the small building wall would be sealed and grouted as is customary in the construction of a swimming pool wall. The trench would then be backfilled with coarse sand and gravel. In this fashion, given the coarser nature of the native material in the vicinity of AP-1 and AP-2, the area's water table could be depressed and flow would be directed toward the sump. The oil would be removed from the influent, and the effluent water could be recirculated to drainage tiles placed along the foundation of Building 9. This would insure the hydraulic gradient and flushing action necessary to keep the system operational.

Dan requested an estimate of how much influent could be expected to enter the sump. Given an estimated hydraulic gradient of 0.25 ft/ft, an estimated in-situ permeability of 3.3×10^{-7} ft/sec. and a seepage face area of 370 ft^2, the influent rate should approximate 1800 gallons per day, or slightly more than 1 gallon per minute. The amount of oil that can be separated from this groundwater discharge is indeterminate at this time.

Several factors are important to note in the design stage of the separation system:

A backhoe with approximately an 18 foot reach will be required for construction of the cut-off trench, and constant dewatering will be required.

The entire area of excavation should be paved to prevent infiltration of precipitation.

A subsurface sump inside a "man hole" is envisioned, and therefore, crushed stone should be used to backfill the trenches in the vicinity of the sump. The retaining mesh that will line the sump should be selected, therefore, to contain the thirtieth percentile (d_{30}) diameter of crushed stone employed.

In that field estimates have been used in the calculations contained herein, and some variability exists in the nature of the subsurface stratigraphy, system monitoring and adjustment will undoubtedly be required.

We understand that mercury was detected in the oil samples collected by IPC, Inc. during their clean-up work at the site. We would recommend the collection of soil samples in several locations between Building 9 and the raceway, and subsequent analysis for mercury. This testing will give us an idea of the extent of contamination, and the work can be completed during the planned monitoring well installation at the Covitch site. We would advance hollow stem augers to the water table where oil contamination was noted, and take split-spoon soil samples.

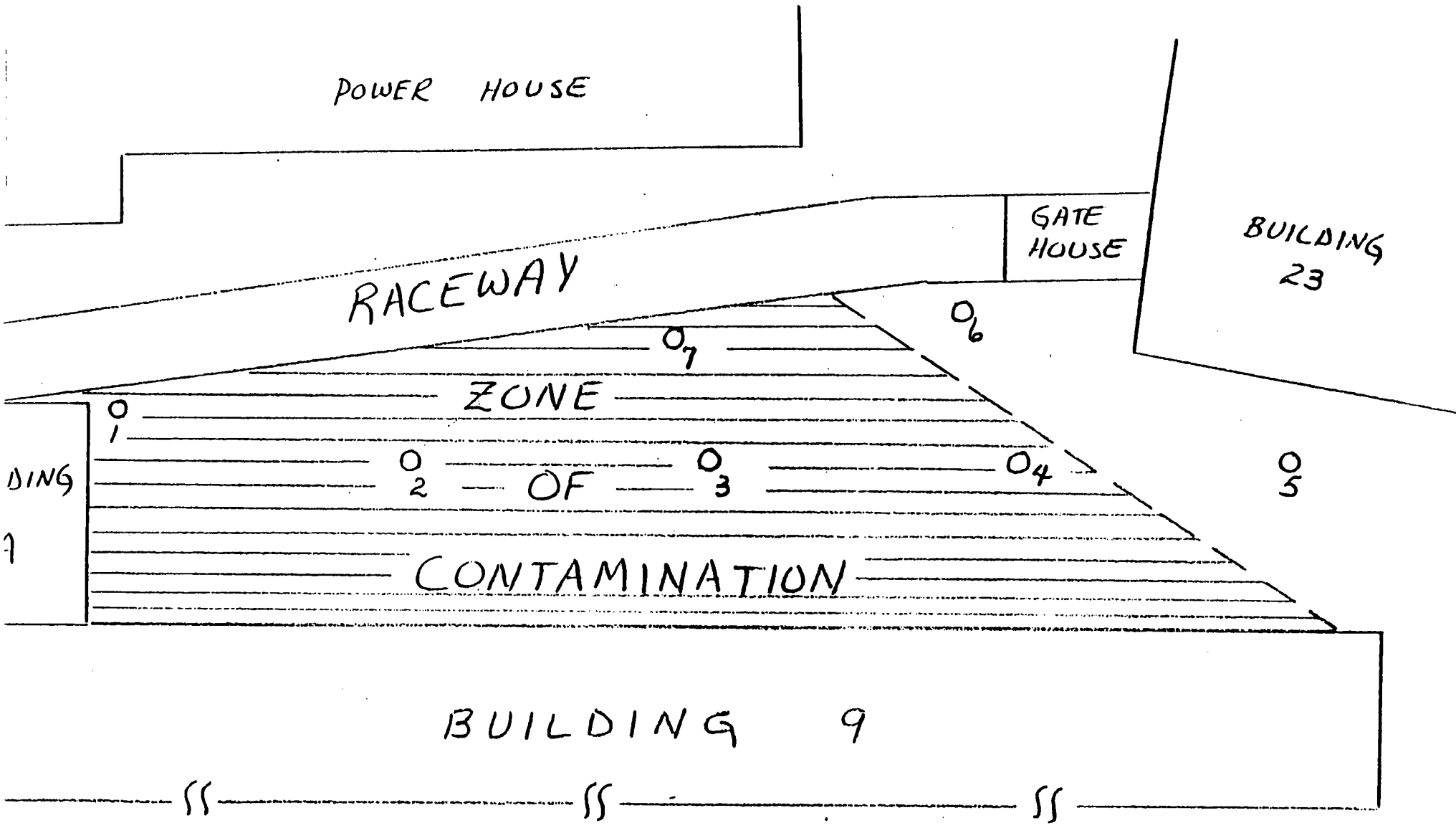
Should you have any questions or further informational needs regarding this letter, please call.

Very truly yours,
CASWELL, EICHLER AND HILL, INC.

Matthew F. Eichler III
Principal

cc: D. Marques

MFE/SKK



APPROXIMATE SCALE : 1" = 25'

O_7 = AUGER PROBE

CEH 5-85

WHITE CONSOLIDATED INDUSTRIES, INC.
CLEVELAND, OHIO 44111

EXECUTIVE OFFICES

RICHARD E. HILL, P.E.
ENVIRONMENTAL ENGINEER

June 13, 1985

VIA EMERY OVERNIGHT MAIL

Ms. Susan Corderman
Division of Hazardous Waste
The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Central Region
75 Grove Street, Box 13
Worcester, Massachusetts 01605

Dear Susan:

With respect to our proposal dated May 17, 1985 relative to hydrogeological evaluation of the landfill, you raised certain questions which we believe to have been satisfactorily answered by Matthew Eichler's letter to you of June 3, 1985 (copy attached).

This is to confirm our understanding that our plans are approved by your agency. This being the case, the work is scheduled to commence on July 8, 1985.

I would appreciate it if you could meet with me at the landfill site at 1:30 p.m. on July 8th, 1985 to review the status on all projects of our mutual interest.

Very truly yours,

Rich Hill

Richard E. Hill

/ecc
Attachment

cc: D. Marques
M. F. Eichler

CEH Caswell, Eichler and Hill, Inc.
GEOLOGY HYDROLOGY GEOPHYSICS
P.O. Box 4696
Portsmouth, NH 03801
TEL. (603) 431-4899

RECEIVED
JUN 12 1985
WCI

June 3, 1985

Ms. Susan Corderman
Massahcusetts DEQE - DSHW
75 Grove Street
Worcester, MA 01605

Re: ATF/Davidson and Sidney Covitch Properties (Formerly AFT/Davidson), Whitinsville, Massachusetts

Site Assessment for the Massachusetts DEQE Phases I & II - Site Investigation/Remedial Action Guidelines

a) Hydrogeologic Site Assessment
b) Monitoring Well Installation

Written Response to Work Plan Comments as Discussed in 5-30-85 Telephone Conversation

Dear Ms. Corderman:

The purpose of this letter is to provide the DEQE - DSHW with a written response to the seven items we discussed on the telephone regarding the above referenced work plan. The items are as follows:

1. We will be gathering split-spoon samples during the monitoring well construction phase of the project.

2. We will take one boring to refusal on both properties

3. The specificity with which we described our boring and well construction work was not meant to preclude other judgements being made in the field. The detail was, rather, meant to give a detailed description of our general approach should field conditions exist as described. We will, however, set a screen at the water table in all cases as discussed in our telephone conversation.

4. We will be providing a water table map,and plume delineation map should contamination be detected.

5. The laboratory (Resource Analysts, Inc.) will be conducting the sampling as described in Attachment E of our submitted Work Plan.

6. We will survey the monitoring wells for vertical and horizontal control to an arbitrary datum, or a U.S.G.S. datum should one be conveniently located.

7. We plan to use a background monitoring well completed near the ATF/ Davidson and Covitch property line as a background well for both investigations.

Should you have any further comments, please call.

Very truly yours,
CASWELL, EICHLER AND HILL, INC.

Matthew F. Eichler
Principal

MFE/SKK

cc: R. Hill
D. Marques

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Quality Engineering
Central Region
75 Grove Street, Worcester, Massachusetts 01605
792-7653

July 16, 1985

Mr. Richard Hill
White Consolidated Industries, Inc.
11770 Berea Road
Cleveland, Ohio 44111

Re: Northbridge, Massachusetts
Former ATF Davidson Facility
Sidney Covich Property

Dear Mr. Hill:

The Department of Environmental Quality Engineering is in receipt of your July 1, 1985 letter and enclosed proposal for the Sidney Covich property by Caswell, Eichler & Hill, Inc., entitled "Site Assessment for the Massachusetts Department of Environmental Quality Engineering Phases I and II - Site Remedial Action Guidelines". Based on the Department's review of this proposal and conversations with you and your consultant, the proposed scope of work is approved for implementation. Please be reminded that as a result of this field testing, the Department may require further site assessment and/or remedial actions that will have to be performed at this site.

If you have any questions, please contact Susan Corderman at 792-7653.

Very truly yours,

John A. Desmond

John A. Desmond, Chief
Solid and Hazardous Waste

JAD/SHC/jc

cc: Sidney Covich
Spaulding R. Aldrich, LHWC
Matthew Eichler
Stephen DeGabriele, DEQE, Boston
Dan Marques